ADDENDUM NO. 1

February 2, 2024

J. Everett Light Career Center Renovation
1901 E. 86TH Street
Indianapolis, IN 46240

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated December 8, 2023, by Schmidt Associates. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 1-1, ADD 1-2, and Schmidt Associates Addendum No. 1 dated February 1, 2024, consisting of 5 Addendum Pages, and 35 attachment pages.

A. SPECIFICATION SECTION 01 12 00 MULTIPLE CONTRACT SUMMARY

3.03 Bid Categories

B. BID CATEGORY No. 2 – PLUMBING AND HVAC
Delete the following specification sections:

Section	23 73 13	Modular Outdoor Central Station Air Handling Units
Section	23 73 23.99	VAV Custom Air Handling Units

Add the following specification section:

Section	23 73 23.99	Custom Air Handling Units

B. SPECIFICATION SECTION 01 23 00 ALTERNATES

Add the following Alternate:

E. ALTERNATE NO. 5: DOOR CLOSERS MANUFACTURER
Base Bid: Door Closers by LCN as indicated in Section 08 71 00 2,13 A.1.
Alternate: State the cost to provide door closers by Dormakaba as indicated in Section 08 71 00 2,13 A.2.

ADDENDUM NO. 1
FEBRUARY 1, 2024

PREPARED BY SCHMIDT ASSOCIATES FOR:
J EVERETT LIGHT CAREER CENTER RENOVATION
WASHINGTON TOWNSHIP, M.S.D. OF

This Addendum consists of 5 Addendum pages and 35 attachment pages totaling 40 pages.

Acknowledge receipt of this Addendum by inserting its number on the Bid Form. Failure to do so may subject the Bid to disqualification. This Addendum is part of the Contract Documents.

Bidder is encouraged to verify with reprographer of record all Addenda issued (do not rely exclusively on third party plan room services).

PART 1 - CHANGES TO PRIOR ADDENDA (NOT APPLICABLE)

PART 2 - CHANGES TO THE PROJECT MANUAL

Modifications described herein shall be incorporated in the Project Manual. All other Work shall remain unchanged.

A. **Section 024119 "SELECTIVE DEMOLITION"**

1. ADD Subparagraphs 1.10 A. 1. a. through d. as follows:

"a. Roofer: Henry C. Smithers Roofing
b. Roof Manufacturer: Soprema
c. Year installed: 2010
d. Warranty Expiration Date: 10/25/2935. "

2.2 DIVISION 08 – OPENINGS

A. **Section 087100 "DOOR HARDWARE"**

1. DELETE Hardware Groups 16 and 24 in their entirety and replace with the attached revised Hardware Groups 16 and 24.

2.3 DIVISION 09 – FINISHES

A. **Section 099600.99 "HIGH PERFORMANCE COATINGS"**

1. MODIFY Text 2.4, A. 1.,a., 1) as follows:

"1) Sherwin-Williams Extreme Bond Primer, B51W01150, applied at DFT 1.0 mils."

2. MODIFY Text 2.7, A. 1. as follows:

"1. Sand, Clean, and dry for a dull finish."

3. MODIFY Text 2.7, A. 2.,C. as follows:

"C. Sherwin-Williams Extreme Bond Primer, B51W01150, applied at DFT 1.0 mils."

2.4 DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING(HVAC)

A. **Section 237313 "MODULAR OUTDOOR CENTRAL-STATION AIR-HANDLING UNITS"**

1. DELETE Section in its entirety.

B. **Section 237323.99 "VAV CUSTOM AIR HANDLING UNITS"**

1. DELETE AND REPLACE Section in its entirety and replace with the following:

a. SECTION 237323.99 CUSTOM AIR HANDLING UNITS.

C. Section 230900.99 "DIRECT DIGITAL CONTROL SYSTEMS"

1. ADD Article 4.1 per the attached.

a. "Article 4.1 includes 119 pages of 11x17 Temperature Control Services (TCS) drawings dated 2/1/2024 under TCS job number J-2312002 that includes installation standards, riser diagrams, and temperature control schematics including points and wiring diagram details that shall be installed by the control installation contractor (CIC) as performed by the mechanical, technology, and electrical contractors and indicated on the M-701 to M-706 drawings."

PART 3 - CHANGES TO THE DRAWINGS

Modifications described herein shall be incorporated in the Drawings. All other Work shall remain un-changed.

3.1 DRAWING SHEETS: ADDITIONS, DELETIONS AND REPLACEMENTS

DRAWING NO.	INDICATE ACTION: ADD (A), DELETE (D), DELETE & REPLACE (R),
A-SERIES DRAWINGS	
A-310	DELETE AND REPLACE
A-600	DELETE AND REPLACE
M-SERIES DRAWINGS	
M-601	DELETE AND REPLACE
M-603	DELETE AND REPLACE
M-706	DELETE AND REPLACE
E-SERIES DRAWINGS	
ED1A1	DELETE AND REPLACE
ED1C1	DELETE AND REPLACE
ED1D1	DELETE AND REPLACE
EL1A1	DELETE AND REPLACE
EL1C1	DELETE AND REPLACE
EL1D1	DELETE AND REPLACE
EP1E1	DELETE AND REPLACE

E-606	DELETE AND REPLACE
E-609	DELETE AND REPLACE
E-612	DELETE AND REPLACE
E-613	DELETE AND REPLACE

3.2 A-SERIES DRAWINGS

A. **Sheet Number A-001**

1. ADD Note B. to the General Roof Plan Notes as follows:

   "B. Maintain existing roof warranty for all work on the roof, including but not limited to penetrations, flashings for new equipment, and modified roof edges. Existing warranty information is as follows:
   Roofer: Henry C. Smithers Roofing
   Roof Manufacturer: Soprema
   Year Installed: 2010
   Warranty expiration date: 10/25/2035."

B. **Sheet Numbers AD1A1 through AD1F1**

1. ADD the following sentence to the end of Demolition Floor Plan Note 12:
   "…MAINTAIN EXISTING LIMESTONE SILL – SEE SECTION."

2. ADD the following sentence to the end of Demolition Floor Plan Note 27:
   "….DEMO FLOOR PLAN NOTE 38 SHALL OVERRIDE THIS NOTE RELATIVE TO FLOORING IF PRESENT IN THE ROOM."

3. ADD Demolition Floor Plan Notes 38 and 39 as follows:
   "38. EXISTING FLOORING FINISH, BASE AND ASSOCIATED ADHESIVE TO BE REMOVED BY OWNER IN THIS ROOM.
   39. SINK PIPE INSULATION TO BE REMOVED BY OWNER"

C. **Sheet AD1B1**

1. ADD Demolition floor plan note 38 In Health Room A-405 and Office A-405A.

2. DELETE Demolition floor plan note 15 from Clinic A-406 and replace with Demolition floor plan note 38.

3. ADD Demolition floor Plan Note 27 to Toilet A-C-129.

D. **Sheet AD1D1**

1. DELETE Demolition Floor Plan Note 27 from Law Enforcement D-430.

2. ADD Demolition Floor Plan Note 3 to the cabinets along the south wall of EMT D-435.

3. ADD Demolition Floor Plan Note 39 to the sink in the cabinets along the south wall of EMT D-435.

E. **Sheets AC1A1 through AC1F1 and A-001**

1. ADD Note F. to the General Refl. Ceiling Plan Notes as follows:
"F. Ceiling height indicated for Corridors is approximate. Intent is to locate new ceiling grid at same height as existing. VIF existing ceiling elevation prior to removal."

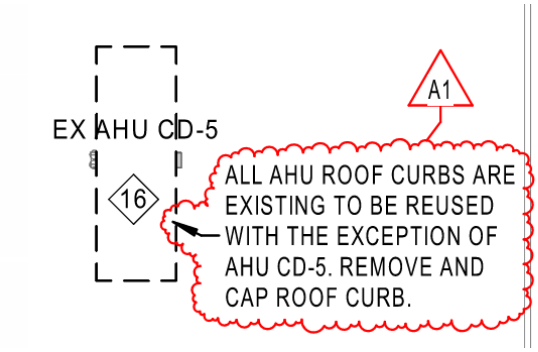
F. **Sheets AC1E1 and AC1F1**

1. MODIFY the ceiling elevation for Corridor E-102 from "12'-0" AFF" to "9'-10" VIF".

3.3 M-SERIES DRAWINGS

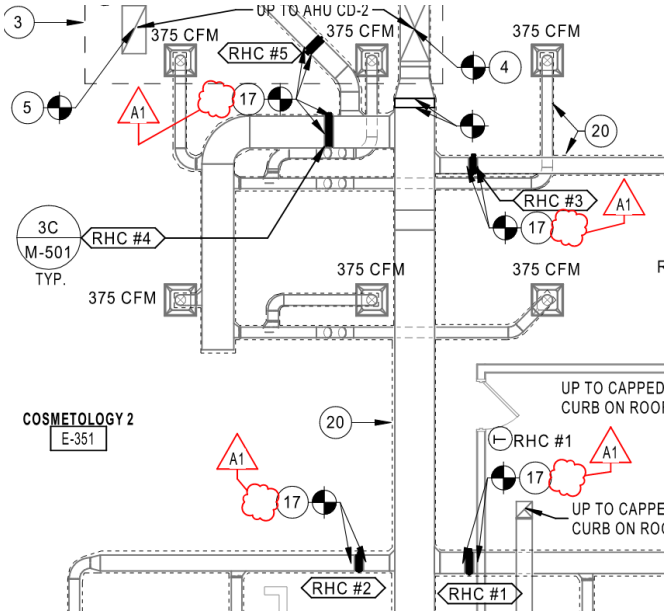
A. **Drawing Number MDR101**

1. INSERT Note as follows:



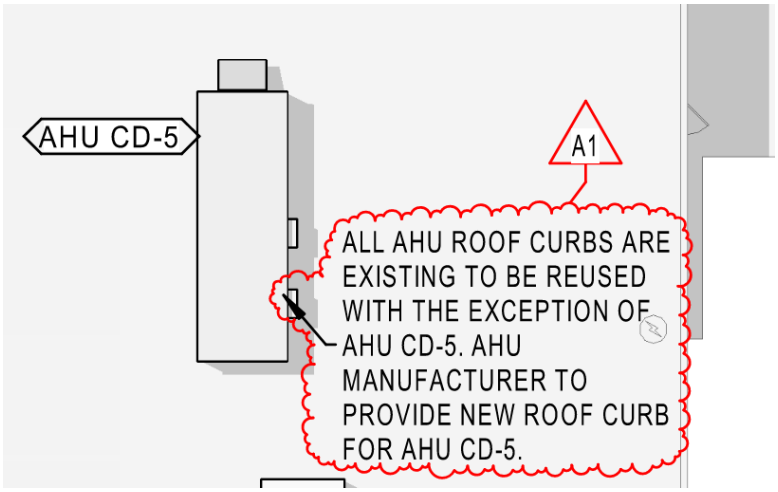
B. Drawing Number **MH1F1**

1. DELETE Note #14 as follows:



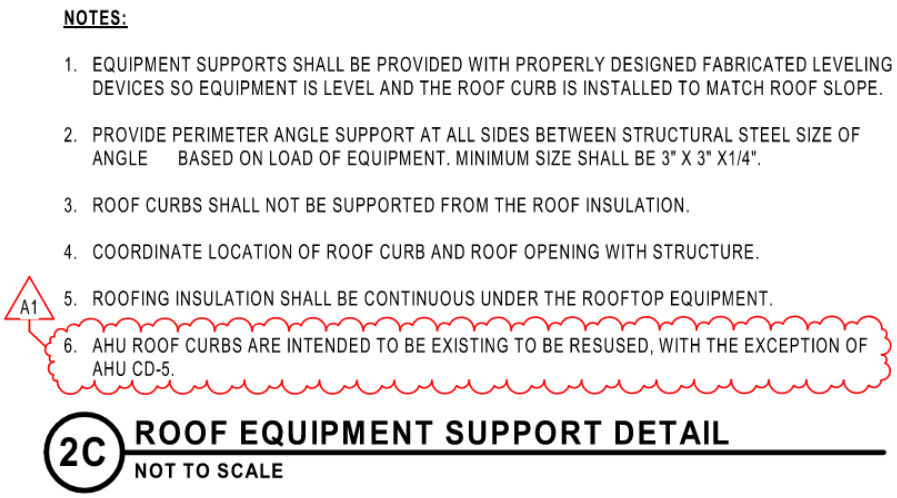
C. Drawing Number **MR101**

1. ADD Note as follows:



D. Drawing Number **M-501**

1. ADD Note #6 TO DETAIL 2C as follows:



END OF ADDENDUM 1

102514 OPT0351067

V1 11/9/2023 vs. V2 2/1/2024

Hardware Group No. 16

For use on Door #(s):
A-B-101.1

Provide each OPENING with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	STOREROOM LOCK	L9080BDC 17N	626	SCH
1	EA	PERMANENT CORE	1C7*2	626	BES
1	EA	ELECTRIC STRIKE	**6211 FSE DS 12/16/24/28 VAC/VDC** ~~(6111 FSE DS 12/24 VAC/VDC)~~	630	VON
1	EA	OH STOP	410S	652	GLY
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	MOUNTING PLATE	4040XP-18PA	689	LCN
1	EA	BLADE STOP SPACER	4040XP-61	689	LCN
1	EA	REMOTE RELEASE	BY DIV 28		B/O
1	EA	DOOR CONTACT	BY DIV 28	BLK	SCE
1	EA	POWER SUPPLY (CENTRALIZED)	BY DIV 28	LGR	SCE

DOOR NORMALLY CLOSED AND LOCKED. REMOTE PUSH BUTTON RELEASES ELECTRIC STRIKE, ALLOWING ACCESS. ELECTRIC STRIKE REMAINS LOCKED WITH LOSS OF POWER. FREE EGRESS AT ALL TIMES.

Hardware Group No. 24

For use on Door #(s):
A-300.2

Provide each OPENING with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	STOREROOM LOCK	L9080BDC 17N	626	SCH
1	EA	DEADBOLT	B660BDC 12-631	626	SCH
2	EA	PERMANENT CORE	1C7*2	626	BES
1	EA	ELECTRIC STRIKE	**6211 FSE DS 12/16/24/28 VAC/VDC** ~~**(6111 FSE DS 12/24 VAC/VDC)**~~	630	VON
1	EA	OH STOP	410S	652	GLY
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	MOUNTING PLATE	4040XP-18PA	689	LCN
1	EA	BLADE STOP SPACER	4040XP-61	689	LCN
1	EA	CREDENTIAL READER	BY DIV 28	BLK	SCE
1	EA	REMOTE RELEASE	BY DIV 28		B/O
1	EA	DOOR CONTACT	BY DIV 28	BLK	SCE
1	EA	POWER SUPPLY (CENTRALIZED)	BY DIV 28	LGR	SCE

SCHOOL HOURS:
DEADBOLT UNLOCKED, FREE ENTRY FROM SCHOOL INTO OFFICE. CREDENTIAL READER ON OFFICE SIDE, OR PUSH BUTTON AT RECEPTION DESK (BY INTERCOM/SECURITY SYSTEM), WILL RELEASE ELEC STRIKE ALLOWING ACCESS INTO THE SCHOOL. DOOR TO REMAIN LOCKED UPON LOSS OF POWER.

AFTER HOURS:
DEADBOLT LOCKED, THUS LOCKED IN BOTH DIRECTIONS.

SECTION 237323.99 – CUSTOM AIR HANDLING UNITS

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. This Section includes custom air handlers of the following unit types:

1. Constant-air-volume, single-zone air-handling units.
2. Constant-air-volume, multizone air-handling units.
3. Variable-air-volume, single-zone air-handling units.

B. Related Sections include the following:

1. Division 23 Section “Basic Mechanical Materials and Methods”
2. Division 23 Section “Vibration Control”
3. Division 23 Section “HVAC Instrumentation and Controls”
4. Division 23 Section “Testing, Adjusting, and Balancing”

C. The term “Custom” means the unit shall take on the length, shape, aspect ratio, maximum weight, connection location and sizes, maintenance and access provisions, construction materials, cabinet ratings, and internal component performance, size and standard of quality as described on the plans, schedules and as specified herein. Unit shall not be limited to manufacturer’s standard construction materials, components, predetermined sizes or performance of those features or parameters that deviate from these specifications.

D. Units shall be provided with stand-alone factory programmed DDC controls mounted and wired, and a BACnet MS/TP interface to the building automation system.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design vibration isolation, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

1.4 SUBMITTALS

A. Product Data: For each type of custom air handling units indicated. Include the following:

1. Certified fan-performance curves with system operating conditions indicated.
2. Certified fan-sound power ratings.

3. Certified coil-performance ratings with system operating conditions indicated.
4. Motor ratings, electrical characteristics, and motor and fan accessories.
5. Factory bearing test(s).
6. Material gages and finishes.
7. Filters with performance characteristics.
8. Dampers, including housings, linkages, and operators (actuators).
9. Wiring Diagrams: Power, signal, and control wiring.
10. Unit dimensions and weight.
11. Cabinet material, metal thickness, finishes, insulation, and accessories.
12. Fans:

    a. Certified fan-performance curves with system operating conditions indicated.
    b. Certified fan-sound power ratings.
    c. Fan construction and accessories.
    d. Motor ratings, electrical characteristics, and motor accessories.

13. Certified coil-performance ratings with system operating conditions indicated.

B. Shop Drawings: For custom air handling units. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

C. Operation and Maintenance Data: For custom air handling units equipment to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain custom air handling units through one source from a single manufacturer.

B. Product Options: Drawings indicate size, profiles, and dimensional requirements of custom air handling units are based on the specific system indicated. Refer to Division 1 Section œœProduct Requirements.

C. 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.

D. NFPA Compliance: custom dedicated outdoor air-handling units with energy recovery wheels components shall be designed, fabricated, and installed in compliance with NFPA 90A, œœInstallation of Air Conditioning and Ventilating Systems.

E. ARI Certification: Custom air-handling units and their components shall be factory tested according to ARI 430, œœCentral-Station Air-Handling Units,• • and shall be listed and labeled by ARI.

F. UL Compliance. Electrical components used shall be listed and labeled by UL.

G. NEMA Compliance. All motors shall comply with applicable NEMA standards.

H. AMCA Compliance. Fans shall be certified to bear the AMCA seal for air and acoustic performance per Standards 210 and 310. Dampers shall be tested and rated according to Standard 500D.

I. ETL Compliance. Complete unit shall be listed and labeled by ETL per standards ANSI/UL 1995 and CAN/CSA C22.2 #236-05.

J. Comply with NFPA 70.

K. The unit manufacturer shall provide a factory pressure test and deflection test for each custom air handling units. The leakage rate of the casing shall not exceed 1.0% of the unit air flow at +/- 11• • static pressure. Deflection shall be less than L/200 at +/- 10• • static pressure.

1. The test shall be conducted in accordance with SMACNA duct construction manual. A calibrated orifice shall be used to measure leakage airflow.
2. An officer of the manufacturing company shall certify test results and forward copies of the certified test results to the engineer.
3. Positive pressure plenums shall be tested positively and negative pressure plenums shall be tested negatively.
4. Units must be tested as a completed product. Testing individual sections are NOT acceptable.

1.6 COORDINATION

A. Coordinate size and location of existing roof curb for reuse. If curb cannot be reused, provide new curb per section 2.12.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of the custom dedicated outdoor air-handling units with energy recovery wheels that fail in materials or workmanship within specified warranty period.

1. Warranty Period for custom air handling units: one year from substantial completion. (Parts Only Warranty)

1.8 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: 2 total set(s) of each type of filter specified.
2. Obtain receipt from Owner that above items have been received.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Ventrol
2. Engineered Air.
3. Marcraft.
4. Trane Custom.
5. INNOVENT.
6. Temptrol.

B. Manufacturer’s local representative shall employ or contract with local factory trained and certified service technicians with capability to support the equipment for factory authorized start-up, warranty and service, including manufacturer’s start-up forms and requirements, control interface, wiring and wiring schematics, packaged refrigeration systems, gas heat, and energy recovery devices.

C. Project is based on the basis of design Innovent equipment. Any additional re-engineering or installation costs associated with using alternate manufacturer’s equipment shall be borne by the installing contractor.

2.2 MANUFACTURED UNITS

A. Custom air handling units shall be factory assembled and consist of fans, motor and drive assembly, coils, dampers, plenums, filters, condensate pans, UV light system, humidifier section , mixing dampers, damper actuators, control devices, and accessories.

2.3 Unit Casings

A. Caninet General.

1. Construct unit with materials and features as specified herein. Provide structural base and tube frame to house inset wall, ceiling and floor panels. Unit construction shall meet Cabinet Performance specified in this section. Structural tube frame and panel construction shall be provided with no individual panel exceeding 36” width. All panels on the unit shall be fully removable without the use of cutting tools. All internal components shall be removable without compromising the structural integrity of the unit. Unit shall be suitable for outdoor installation as detailed on the plan drawings.

B. Cabinet Performance. Unit construction shall meet the following minimum performance criteria.

1. Base Deflection. Design structural base to limit deflection to ¼” in length and width when rigging the unit according to manufacturer recommendations. Provide engineering calculations demonstrating compliance with this requirement.
2. Cabinet Deflection. Construct cabinet to limit deflection of the walls and roof to L/300 at 10" w.c. static pressure, or 1.5 times the maximum static pressure within the unit at design conditions, whichever is lower. Deflection ratings for panels only shall not be accepted.
3. Floor Deflection: Maximum floor deflection shall be L/300 (L=span in inches) when subjected to an 800 lb/sq ft. point load. Provide test data demonstrating compliance with this requirement.
4. Casing Air Leakage. Maximum casing leakage shall meet SMACNA duct leakage class (DLC) rating of 5.0. Provide calculations demonstrating compliance with this requirement.
5. Casing Insertion Loss (Acoustic rating). The panel insertion loss, per octave band, shall not be less than the following:

6. Frequency (Hz):	100	125	250	500	1000	2000	4000	8000
7. Insertion Loss (dB):	24	16	30	32	33	34	63	60

8. Thermal Performance. All interior walls, floor, and ceiling shall be double wall and insulated with polyurethane injected foam insulation having a minimum R- value of 6.3 - 7.1/inch. Fiberglass or non-injected foam insulation is not acceptable and will be rejected.

C. Base.

1. Base shall be constructed of welded 10 ga. structural steel G channel perimeter and C channel cross members with integral lifting lugs. Units without a welded structural steel base that utilize lifting provisions near the top of the cabinet shall be unacceptable. Bolted bases shall not be acceptable. Coat base exterior with 2 part epoxy primer and urethane modified enamel topcoat. Welded lifting lugs shall be provided. Weep holes shall be provided in base channels. Base height shall be a minimum of 8" to facilitate proper trapping of drains.

D. Frame.

1. Frame shall be constructed of structural tube members designed to support flush-mounted double-wall panels. Vertical frame members shall be easily removable without the use of specialty tools or torches for replacement of large internal components. Welded frame shall not be accepted unless all internal components can be easily removed without cutting any welds. A closed-cell polyvinyl foam gasket with a thickness of 3/16” or greater shall be applied between all frame members and panels, providing a thermal break between the panels and the structural frame. Units without a structural tube frame shall be unacceptable.
2. Frame Material: Extruded 6063 Aluminum Tube

E. Floor.

1. Floor shall be 2” thick double-wall, foam injected panel construction for optimal support strength. Floor shall be a fastener free design, bonded to the unit base with a structural adhesive. All seams shall be finished with an adhesive sealant providing a watertight floor system. Use of tack welding, caulk or screws penetrating the entire floor panel anywhere in the floor shall not be accepted. The floor shall have a smooth and flat walk-on surface. A minimum 1" lip shall be provided around all floor penetrations. Walk-on grating shall be provided over all accessible floor mounted duct connections. Paneled floor shall be constructed of a minimum of 18 gauge galvanized G90 steel walk on surface, and 22 gauge galvanized steel underside surface.

F. Wall and Ceiling Panels.

1. Unit shall have non-load bearing, fully removable, heavy gauge double-wall panels which fully encapsulate the injected foam insulation. No individual panel shall exceed 36” width. Panel edges utilizing PVC edge wrappers to cover the insulation shall not be accepted. Panels shall be manufactured with an integral thermal break.
2. Exterior Materials: Exterior skin shall be pre-painted steel.
3. Exterior Finishes/Coatings A textured polyester paint (gray color) shall be provided. Coating shall be salt spray tested per ASTM B117 for a minimum of 2,500 hours and have no blistering or red rust on the face when the testing is completed.
4. Interior Materials: Interior skin shall be galvanized G90 steel.

G. Thermal Break Construction.

1. The casing (panels and frame) excluding doors, shall meet AHRI 1350 CB-1 requirements.

H. Insulation.

1. All exterior walls shall be double wall and insulated with polyurethane injected foam insulation having a minimum R-(25.6) thermal resistance. No insulation shall be exposed to the airstream. Provide documentation from the insulation manufacturer demonstrating compliance with this R-value. Non-injected foam board insulation or air handler manufacturer produced insulating material shall not be accepted. Fiberglass and mineral wool insulation shall not accepted.

I. Access Doors.

1. Provide double wall doors with the same insulation and inner/outer wall material as the wall panels. Doors shall have an integral aluminum frame and shall be mounted into the structural frame of the unit. Door openings cut into casing panels shall not be accepted. Doors shall be full height (up to 72”) with industrial continuous stainless steel hinges. Bi-directional compression latches with integral roller cam and hex-screw locking assembly shall be provided. An EPDM type door gasket shall be provided in accordance with ASTM D 2000. Supply and exhaust airstreams shall not be covered by a single door. Access panels in lieu of access doors shall not be accepted. Rain gutters shall be provided over all access doors that are not the full height of the unit casing. All doors that open with pressure shall be provided with a pressure relief safety latch. Access doors shall be provided for sections requiring routine maintenance.

J. Door Options Included:

1. All access doors taller than 40” shall open against pressure.

K. Weather hoods.

1. Provide weather hoods with expanded aluminum bird screens over all exposed inlets and outlets. Hoods may ship loose for installation in the field.

L. Roof.

1. Provide roof with standing seam construction which allows removal of individual sections for inspection purposes without removal of the entire roof. A double wall foam injected panel shall be provided below the roof liner creating 3 layers of metal between the conditioned air tunnel and ambient air. Pitch roof with sufficient slope to ensure water drainage. Units over 137” wide require double sloped roof designs. Roof overhang to be provided around complete perimeter of the unit. No penetrations shall be made to the roof.
2.

2.4 DIRECT DRIVE FAN SECTION

A. Fan-Section Construction: fans consisting of housing, wheel, fan shaft, bearings, motor, drive assembly, and support structure and equipped with formed-steel channel base for integral mounting of fan, motor, and casing panels. Mount fan scroll, wheel, shaft, bearings, and motor on structural-steel frame, with frame mounted on base with vibration isolation.

1. Mount fan and motor on an internal, fully welded, rigid structural steel base. Base shall be free floating at four corners on housed spring vibration isolators, minimum 2-inch static deflection, with seismic snubbers. Vibration isolators shall be Mason Industries Model SLF or equal.

B. Centrifugal Fan Housings: Formed- and reinforced-steel panels to make curved scroll housings with shaped cutoff, spun-metal inlet bell, and access doors or panels to allow entry to internal parts and components.

1. Panel Bracing: Steel angle- or channel-iron member supports for mounting and supporting fan scroll, wheel, motor, and accessories.
2. Performance Class: AMCA 99-2408, Class I, II, and III, as scheduled, selected to provide the airflow and pressure specified.
3. Horizontal Flanged Split Housing: Bolted construction.
4. Plug Fans: With steel cabinet. Fabricate without fan scroll and volute housing.

C. Fan Assemblies: Statically and dynamically balanced for inverter duty operation over the entire range of fan operation (30% to 100% RPM).

D. Housed Airfoil-Fan Wheels: Steel construction with smooth-curved inlet flange, heavy backplate, and hollow die-formed airfoil-shaped blades continuously welded at tip flange and backplate; cast-iron or cast-steel hub riveted to backplate and fastened to shaft with set screws.

E. Shafts: Statically and dynamically balanced and designed for continuous operation at maximum rated fan speed and motor horsepower, with final alignment and belt adjustment made after installation.

1. Turned, ground, and polished hot-rolled steel with keyway. Ship with a protective coating of lubricating oil.
2. Designed to operate at no more than 70 percent of first critical speed at top of fan's speed range.
3. Key fan wheels to shaft.

F. Vibration Control: Install fans on open-spring vibration isolators having a minimum of 2-inch static deflection and side snubbers.

1. Connect fan to unit housing with flexible bulkhead canvas connection.

G. Fan-Section Source Quality Control:

1. Sound Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Fans shall bear AMCA-certified sound ratings seal.
2. Factory test fan performance for flow rate, pressure, power, air density, rotation speed, and efficiency. Establish ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."
3. The fan balancing process, including vibration limits and documentation, shall be performed in accordance with ANSI/AMCA Standard 204. Fan and motor performance requirements shall be as shown on the schedule and drawings. Maximum rated speed of the fans shall not exceed 75% of the first critical speed.

H. Air Flow Measuring At Fan Inlet

1. Provide on each fan air flow measuring probes / flow ring capable of continuously monitoring the air handling capacity of the respective scrolled (plenum) fans.
2. Each airflow probe shall contain multiple, averaged velocity pressure taps located symmetrically around the throat of the fan inlet and a single static pressure tap located on the fan housing. The entire airflow monitoring probe must be located outside the inlet throat as to not obstruct airflow.
3. The probes shall be capable of producing steady, non-pulsating signal of the velocity pressure, independent of the upstream static pressure without adversely affecting the performance of the fan. The sensing probes shall be accurate ±3% of actual fan airflow. Pressure transducer provided by AHU manufacturer using a 24 volt AC power source provided by the Owner.
4. The airflow display shall display digitally, in real time, the fans current airflow. The display shall be capable of showing the airflow of two independent fans simultaneously.
5. Approved manufacturers: Haakon or Ebtron Gold.

2.5 MOTORS

A. Fan motors shall be mounted and isolated on the same integral base as the fan.

B. Fan motors shall be heavy duty, TEFC, premium efficiency, operable at 460 volts, 60 Hz, 3-phase, 1800 rpm. Motors shall meet USA epact of 1992. Motors to be inverter duty rated.

C. Shaft grounding kits shall be provided and installed.

2.6 COILS

A. Fins shall have collars drawn, belled and firmly bonded to the tubes by means of mechanical expansion of the tubes. No soldering or tinning shall be used in the bonding process. Coils shall be mounted in the unit casing to be accessible for service. Capacities, pressure drops and selection procedure shall be certified in accordance with ARI Standard 410.

B. Coils shall be fully enclosed within the casing and cooling coils shall be on mounted 304 stainless steel angle racks manufactured by allow coils to slide out individually. Heating coils shall be mounted on galvanized angle racks manufactured to allow coils to slide out individually.

C. Removable coil access panels shall be provided for removal of coils through the casing wall. “Coils shall be individually removable away from the access side. Coils must be individually racked, removable through the side access panels.

D. The manufacturer shall provide stainless steel drain pans for all cooling coils. Drain pans shall be continuously welded. The coil section must have intermediate drain pans and shall be interconnected with 1 inch stainless steel drain lines. Drain pans shall be IAQ sloped and fully drainable.

E. All pipe connections shall be on the same unit end, extended through the casing 4" for ease of connection.

F. Water coils handling recently mixed air, or direct outside air, shall be fully drainable by removing a single threaded plug for each coil row.

G. The primary surface shall be round seamless 0.62 in .035 O.D. copper tube on 1 inch centers, staggered in the direction of airflow. All joints shall be brazed.

H. The secondary surface shall consist of rippled aluminum plate fins for higher capacity and structural strength. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Bare copper tube shall not be visible between fins and the fins shall have no openings or holes which might accumulate lint and dirt. Tubes shall be mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates.

I. The coil connection locations shall permit universal mounting of the coil for right or left hand airflow and have equal pressure drop through all circuits. Coils shall be circuited for counterflow heat transfer to provide the maximum mean effective temperature difference for maximum heat transfer rates.

J. Headers on water coils shall be seamless copper tubing. The headers shall have intruded tube holes to provide a large brazing surface for maximum strength and inherent flexibility.

K. The complete 5 coil core shall be tested with 315 lbs air pressure under warm water and be suitable for operation at 250 psi working pressures. Individual tube and core tests before installation of headers are not considered satisfactory. Hydrostatic tests alone will not be acceptable. Water cooling coils shall be circuited for drain ability.

2.7 DAMPERS (EXHAUST, OUTSIDE, AND RETURN)

A. Standard of Quality. Dampers shall be manufactured by Greenheck, Ruskin, or T. A. Morrison, with specific models called out below.

B. Dampers shall meet or exceed the following construction and ratings.

1. Outside Air Damper; Recirculation Damper

a. Steel Frame and Blade Dampers, Airfoil Blade

1) Construction

a) Frame Material: 16 ga. galvanized steel, 5" x 1" hat channel
b) Blade Material: 2 skins of 20 ga. galvanized steel
c) Blade Type: Airfoil
d) Linkage: Plated steel concealed in the jamb (out of airstream). Plastic and/or gear driven linkages shall not be allowed
e) Axle Material: Minimum 1/2" plated steel
f) Axle Bearings: Acetal (synthetic) sleeve
g) Blade Seals: TPE
h) Jamb seals: Stainless steel

2) Ratings

a) AMCA Class 1A rated at 1” w.c. and Class 1 up to 4-10” w.c. with AMCA certified performance for pressure drop and leakage per AMCA 500-1D, Test Figures 5.2, 5.3, and 5.5. Dampers shall be IECC compliant..
b) Velocity Limit: Suitable for use to 6000 feet per minute
c) Leakage: 3 cfm/sq. ft (AMCA Class 1A)
d) Temperature Range: -40 deg F to 250 deg F
e) Pressure Limit: Suitable for use to 10” w.c.

C. The following dampers shall be provided at a minimum (additional dampers may be required, please consult the sequence of operation to determine what is needed):

1. Outside Air Control Damper, modulating actuator required
2. Recirculation Air Control Damper, modulating actuator required

D. A two deck multi-zone damper shall be provided with a 0.08” thick aluminum frame, airfoil aluminum blades with a leakage rate of no more than 4 CFM/ft2 @ 1 in. wg as tested in accordance with AMCA standard 500-D, EPDM blade seals with thermoplastic frame seals with neoprene foam frame seals and modulating actuators provided and installed by the manufacturer.

2.8 INTEGRAL OUTDOOR AIR FLOW MONITORING STATION / DAMPER

A. An integral air monitor and damper assembly shall maintain a minimum outside air volume. The integral air monitor/damper shall incorporate air-measuring ports built into the damper blades and shall control the amount of outside air as dictated in ASHRAE Standard 62-89. The construction of the air monitor/damper shall be 0.125-inch aluminum U-channel frame, 6-inch wide. The sensing blades' shall be 5 inches wide, heavy gauge airfoil type with an anodized finish. Jamb seals shall be stainless steel compression type and linkage shall be concealed out of the air stream within thedamper frame toreduce pressure drop, noise, and maintenance.

B. The IAQ damper assembly shall include 24 VAC electric modulating motor and DDC controller. The integral air monitor/damper shall be individually calibrated in an AMCA Registered laboratory and a corresponding airflow chart shall accompany the air monitor/damper.

C. The integral air monitor/damper shall be provided like a GReenheck-IAQ-42, Ruskin, or TAMCO Air/IQ.

2.9 ELECTRONIC DAMPER ACTUATORS

A. Electronic damper actuators shall be direct shaft mount.

B. Modulating and two-position actuators shall be provided as required by the sequence of operations. Damper sections shall be sized Based on actuator manufacturer's recommendations for face velocity, differential pressure and damper type. The actuator mounting arrangement and spring return feature shall permit normally open or normally closed positions of the dampers, as required. All actuators (except terminal units) shall be furnished with mechanical spring return unless otherwise specified in the sequences of operations. All actuators shall have external adjustable stops to limit the travel in either direction, and a gear release to allow manual positioning.

C. Modulating actuators shall accept 24 VAC or VDC power supply, consume no more than 15 VA, and be UL listed. The control signal shall be 2-10 VDC or 4-20 mA, and the actuator shall provide a clamp position feedback signal of 2-10 VDC. The feedback signal shall be independent of the input signal and may be used to parallel other actuators and provide true position indication. The feedback signal of one damper actuator for each separately controlled damper shall be wired back to a terminal strip in the control panel for trouble-shooting purposes.

D. Two-position or open/closed actuators shall accept 24 or 120 VAC power supply and be UL listed. Isolation, smoke, exhaust fan, and other dampers, as specified in the sequence of operations, shall be furnished with adjustable end switches to indicate open/closed position or be hard wired to start/stop associated fan. Two-position actuators, as specified in sequences of operations as "quick acting," shall move full stroke within 20 seconds. All smoke damper actuators shall be quick acting.

E. Acceptable manufacturers equal to: Belimo.

2.10 DDC SYSTEM

A. Manufacturer shall provide a programmable digital control system for each custom unit. A user terminal with LCD display shall provide capability of monitoring operation and changing setpoints through an integral keypad. The user terminal shall be capable of being either unit mounted (UUT) or remote mounted (RUT) using straight through six wire flat cable. The manufacturer shall program the sequence of operation as specified in this section. The program shall include the following:

1. Unit start-up and shut-down requirements including fan/airflow proving indication and damper actuator end switch indication.
2. Temperature control for all heating and cooling devices.
3. Humidity control for all dehumidification devices and processes.
4. Economizers (dry-bulb, enthalpy, dewpoint, energy recovery) where applicable.
5. Fan controls for each mode of operation.
6. Requirements for modes of operation other than Normal Occupied mode.
7. Integration of all optional devices (firestats, smoke detectors, pressure transducers, airflow stations, etc) specified in this section.
8. Alarms:

    a. Informational auto-reset alarms shall be provided and stored for all sensors, end devices, and components, and shall be accessible through the controller user interface.
    b. Manual reset alarms shall be provided as specified for some optional devices (e.g. firestats, freezestats, smoke detectors, fan duct static pressure limits) and where required to protect the space served or the equipment.
    c. A list of standard alarms available to the BAS shall be included in the points list as specified in this section.

B. The controller shall communicate with the Building Automation System (BAS) through a factory provided BACnet MS/TP interface card. A points list necessary to control the equipment, perform the sequence of operation, and informational points required by the BAS shall be provided as specified in this section.

C. The controller shall have the capability through a web-based User Interface to remotely monitor all inputs/outputs, control the user terminal, view status of all alarms including both alarm and cleared time stamps, remotely upload a new program, and view historical and live log data for the past 24 hours. The controller shall save the log data for a rolling 7 days in a csv file that can be downloaded, with the additional capability of storing 31 days of logged data to an external thumb drive.

D. Alarm Indication. DDC controller shall have one digital output for remote indication of an alarm condition. (i.e. Blower current switch, differential pressure switch, damper end switch, supply discharge low limit, freeze stat, fire stat, smoke, dirty filters…). Alarm Indication shall be configurable to indicate only shut down alarms if desired. The type of alarm shall be distinguishable through the BMS.

E. Airflow Stations. Provide airflow measurement stations as follows:

1. Damper Airflow Measuring Station. Greenheck AMS. Airflow measurement stations shall be provided integral to the following control dampers:

a. Outside Air Damper

1) Flow Straightener: Polycarbonate honeycomb
2) Accuracy: 5% of airflow
3) Velocity Range: 300 fpm to 3000 feet per minute
4) Sleeve: 12' long, constructed of galvanized steel
5) A pressure transducer and controller shall be provided by the unit manufacturer to measure and maintain the airflow setpoint, receiving a 0-10 VDC signal from the Unit Controller or BMS and returning the proportional CFM indication.
6) Provide Greenheck model AMD-33 or Ruskin model IAQ50X or equivalent.

F. All HW and CW valves and actuators shall be provided and installed by others.

G. Sequence of Operation. Manufacturer shall provide the sensors required for the Sequence of Operation, including additional points listed in the BMS Points listed when included in this section. The sequence of operation shall incorporate devices such as smoke detectors, filter switches or transducers, and kill switches specified in the Electrical section of this equipment specification.

H. BMS Points List.

2.11 FILTER SECTION

A. Provide filter racks for 2 inch (Merv 8) filters and for 12 inch MERV 13 final filters.

B. Filters shall be retained in front loading (dirty side) holding frames.

C. The holding frames shall be formed with continuous recess for retention of filter frames with caulking compound applied between the frames before riveting them into assembled banks.

D. Each frame shall be fitted with four integral spring type latches, one at each corner, to firmly seat the filter cartridge against a factory installed sponge rubber gasket.

E. The holding frame design shall provide a recess for 2 inch deep pre-filters and 12 inch final filters.

F. Pre-filters are to be mounted on the entering air face of the filter bank.

G. Filters shall incorporate a "pleat" type design which creates a wide space between adjacent pleats on the air-leaving side.

H. The media shall be bonded to the inside of the frame, forming a totally unitized construction and a positive seal against leakage of unfiltered air.

I. A magnehelic, differential pressure gauge shall be factory installed and flush mounted to measure the pressure drop across each filter bank.

2.12 Sound Power

A. Radiated and inlet/discharge sound power levels shall not exceed values scheduled on drawings as tested by ARI standards.

2.13 • • OUTDOOR CURB

A. Existing Curb is to be reused. New Curb is only intended if necessary.

B. Air Handler curbs shall be manufactured from 12 gauge galvanized steel and sections shall be designed to be bolted together.

C. Curb shall be 24" tall

D. A 2"x4" Pressure treated nailing strip shall be provided around the entire perimeter.

E. Interior of the curb shall be insulated with 2" of 1.5 lb neoprene coated fiberglass insulation.

F. Manufacturer shall supply

2.14 FINISH

A. Unit shall be aluminum finish or finished painted with two components, etch bond primer and finish painted with alkyd enamel, as selected by Owner. All uncoated steel shall be painted with grey enamel. All metal surfaces shall be prepainted with vinyl wash primer to ensure paint bonds to metal.

2.15 ELECTRICAL

A. All wiring shall be installed in EMT conduit with standard fittings.

B. Each supply fan and exhaust fan motor shall be wired to an external junction box. Each fan motor shall have its own electrical connection.

C. A single 120V/1P wiring connection will power the lights and receptacles. Provide junction boxes and wiring whips at each shipping split.

D. A separate electrical connection will be provided for the UV lights. Please refer to the UV light section for electrical requirements.

E. Lights – Compact Fluorescent lights or LED lights shall be provided throughout AHUs as indicate on the schedule and drawings. Lights shall be provided with a protective metal cage and glass seals. All lights shall be wired to a single junction box with a on-off switch and indicator light.

F. Convenience Outlets - A 15 amp, 115V GFCI convenience outlet shall be provided by the AHU Manufacturer. The outlet shall be wired by the AHU Manufacturer to the same circuit as the lights. Weatherproof construction.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine casing insulation materials and filter media before air-to-air energy recovery equipment installation. Reject insulation materials and filter media that are wet, moisture damaged, or mold damaged.

C. Examine roughing-in for electrical services to verify actual locations of connections before installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install roof-mounted units on curbs as specified.

B. Install units with clearances for service and maintenance.

C. Install new filters at completion of equipment installation and before testing, adjusting, and balancing.

D. Pipe drains from units to roof membrane, except humidifier header section drain which is piped thru roof to below. Use ASTM B 88, Type L, drawn-temper copper water tubing with soldered joints, same size as condensate drain connection.

3.3 CONNECTIONS

A. Comply with requirements for piping specified in Division 23 Section "Hydronic Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to unit to allow service and maintenance.

C. Connect piping to units mounted on vibration isolators with flexible connectors.

D. Connect cooling condensate drain pans with air seal trap at connection to drain pan and install cleanouts at changes in pipe direction.

E. Water Piping: Comply with applicable requirements in Division 23 Section "Hydronic Piping." Install shutoff valve and union or flange at each coil supply connection. Install balancing valve and union or flange at each coil return connection.

F. Comply with requirements for ductwork specified in Division 23 Section "Metal Ducts."

G. Electrical Connections: Coordinate and install interconnection of wiring across shipping splits. Comply with applicable requirements in Division 26 Sections.

1. Install electrical devices furnished with units but not factory mounted.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Adjust seals and purge.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
4. Set initial temperature and humidity set points.
5. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

C. Prepare test and inspection reports.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain Custom Air Handling Units.

END OF SECTION

MSD Washington Township
J. Everett Light Career Center Renovation

Drawing Number:	Title:	Phase	New / Revised Work	Current Revision:
TITLE-07	Title Page - JELCC Phase 4 (1 of 2)	4	New	Design Review DR.0
GEN-01	Installation Standards - Legend	All	New	Design Review DR.0
GEN-02	Installation Standards - Electrical	All	New	Design Review DR.0
GEN-03	Installation Standards - Network	All	New	Design Review DR.0
GEN-04	Installation Standards - Mechanical	All	New	Design Review DR.0
RISER-21	BAS Ethernet & RS-485 Network Riser, Phase 4	4	New	Design Review DR.0
JEL-01	ECUH-A1 Field Devices	4	New	Design Review DR.0
JEL-02	ECUH-A1 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-03	ECHU-A1 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-04	ECHU-A1 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-05	ECHU-A1 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-06	ECUH-B1 Field Devices	4	New	Design Review DR.0
JEL-07	ECUH-B1 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-08	ECHU-B1 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-09	ECHU-B1 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-10	ECHU-B1 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-11	ECUH-B2 Field Devices	4	New	Design Review DR.0
JEL-12	ECUH-B2 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-13	ECHU-B2 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-14	ECHU-B2 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-15	ECHU-B2 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-16	ECUH-B3 Field Devices	4	New	Design Review DR.0
JEL-17	ECUH-B3 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-18	ECHU-B3 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-19	ECHU-B3 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-20	ECHU-B3 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-21	ECUH-C1 Field Devices	4	New	Design Review DR.0
JEL-22	ECUH-C1 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-23	ECHU-C1 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-24	ECHU-C1 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-25	ECHU-C1 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-26	ECUH-C2 Field Devices	4	New	Design Review DR.0
JEL-27	ECUH-C2 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-28	ECHU-C2 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-29	ECHU-C2 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-30	ECHU-C2 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-31	ECUH-C4 Field Devices	4	New	Design Review DR.0
JEL-32	ECUH-C4 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-33	ECHU-C4 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-34	ECHU-C4 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-35	ECHU-C4 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-36	ECUH-D1 Field Devices	4	New	Design Review DR.0
JEL-37	ECUH-D1 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-38	ECHU-D1 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-39	ECHU-D1 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-40	ECHU-D1 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-41	ECUH-D2 Field Devices	4	New	Design Review DR.0
JEL-42	ECUH-D2 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-43	ECHU-D2 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-44	ECHU-D2 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-45	ECHU-D2 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-46	ECUH-E2 Field Devices	4	New	Design Review DR.0
JEL-47	ECUH-E2 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-48	ECHU-E2 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-49	ECHU-E2 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-50	ECHU-E2 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-51	UH CD-4, CHW & HW Loop DP Field Devices	4	New	Design Review DR.0
JEL-52	UH CD-4 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-53	UH CD-4 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-54	UH CD-4 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-55	UH CD-4 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-56	UH CD-6 Field Devices	4	New	Design Review DR.0
JEL-57	UH CD-6 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-58	UH CD-6 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-59	UH CD-6 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-60	UH CD-6 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-61	UH CD-9 Field Devices	4	New	Design Review DR.0
JEL-62	UH CD-9 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-63	UH CD-9 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-64	UH CD-9 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-65	UH CD-9 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-66	UH CD-11 Field Devices	4	New	Design Review DR.0
JEL-67	UH CD-11 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-68	UH CD-11 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-69	UH CD-11 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-70	UH CD-11 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-71	UH CE-1 Field Devices	4	New	Design Review DR.0
JEL-72	UH CE-1 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-73	UH CE-1 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-74	UH CE-1 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-75	UH CE-1 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-76	UH CE-3 Field Devices	4	New	Design Review DR.0
JEL-77	UH CE-3 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-78	UH CE-3 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-79	UH CE-3 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-80	UH CE-3 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-81	UH CE-4 Field Devices	4	New	Design Review DR.0
JEL-82	UH CE-4 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-83	UH CE-4 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-84	UH CE-4 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-85	UH CE-4 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-86	FCU-CA1 Field Devices	4	New	Design Review DR.0
JEL-87	FCU-CA1 Point Tables & Sequences of Operation	4	New	Design Review DR.0
JEL-88	FCU-CA1 Panel - I/O Wiring	4	New	Design Review DR.0
JEL-89	FCU-CA1 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-90	FCU-CA1 Panel - Dimensions & BOM	4	New	Design Review DR.0
JEL-91	VAV Field Devices & Controls	4	New	Design Review DR.0
JEL-92	VAV Schedule & Sequences of Operation	4	New	Design Review DR.0
JEL-93	VAV Power Distribution Panel Wiring	4	New	Design Review DR.0
JEL-94	CO / NO2 Monitoring Field Devices & Controls	4	New	Design Review DR.0
JEL-95	Power Meter Field Devices	4	New	Design Review DR.0
JEL-96	BAS Alarm Annunciator Panel Layout	4	New	Design Review DR.0
JEL-97	Annunciator Panel Sequence of Operation	4	New	Design Review DR.0
JEL-98	Annunciator Panel System 56 Panel - I/O Wiring (1 of 2)	4	New	Design Review DR.0
JEL-99	Annunciator Panel System 56 Panel - I/O Wiring (2 of 2)	4	New	Design Review DR.0
JEL-100	Annunciator Panel System 56 Panel - Power & Network Wiring	4	New	Design Review DR.0
JEL-101	Annunciator Panel System 56 Panel - Dimensions & BOM	4	New	Design Review DR.0
SCH-44	Valve Schedule - Phase 4	4	New	Design Review DR.0
SCH-45	Exhaust Fan Schedule - Phase 4	4	New	Design Review DR.0
SCH-46	Cabinet Unit Heater & Propeller Unit Heater Schedules - Phase 4	4	New	Design Review DR.0
SCH-47	Consolidated Bill of Material	4	New	Design Review DR.0
SCH-48	Label List	4	New	Design Review DR.0
INST-01	Installation Standards - Inputs (1 of 3)	4	New	Design Review DR.0
INST-02	Installation Standards - Inputs (2 of 3)	4	New	Design Review DR.0
INST-03	Installation Standards - Inputs (3 of 3)	4	New	Design Review DR.0
INST-04	Installation Standards - Outputs (1 of 3)	4	New	Design Review DR.0
INST-05	Installation Standards - Outputs (2 of 3)	4	New	Design Review DR.0
INST-06	Installation Standards - Outputs (3 of 3)	4	New	Design Review DR.0
INST-07	Installation Standards - Typical Third-Party Connections	4	New	Design Review DR.0

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:____ DRAWN BY: BSS

CONTRACT NO:

SHEET
TITLE-03
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

TAG	TAG DESCRIPTION
AC	DX COOLING-ONLY UNIT
ACF	ACTIVATED CARBON FILTER SYSTEM
ACK	ACKNOWLEDGE
ACP	AIR COMPRESSOR
ACU	AIR COOLED CONDENSING UNIT
ACU	AIR CONDITIONING SYSTEM
AF	AIR FILTER
AFS	AIR FLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
ALM	ALARM
AO	ANALOG OUTPUT
AVG	AVERAGE(ING)
BAS	BUILDING AUTOMATION SYSTEM
BC	BOILER CONTROLLER
BI	BINARY (DIGITAL) INPUT
BLR	BOILER
BO	BINARY (DIGITAL) OUTPUT
BYP	BYPASS
BZR	BUZZER
CBL	CABLE
CB	CIRCUIT BREAKER
CC	COOLING COIL
CCDAT	COOLING COIL DISCHARGE AIR TEMPERATURE
CF	CARTRIDGE FILTER SYSTEM
CH	CHILLER
CHW	CHILL WATER
CHWR	CHILL WATER RETURN TEMPERATURE
CHWS	CHILL WATER SUPPLY TEMPERATURE
CI	CHLORINE
CND	CONDENSING UNIT
CO	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
C1A	CONTROLLER - DAC-1600 APPLICATION
C2E	CONTROLLER - DSC-1212E SYSTEM
C3A	CONTROLLER - DAC-633 APPLICATION
C3S	CONTROLLER - DSC-633 SYSTEM
C4A	CONTROLLER - DAC-1146 APPLICATION
C4F	CONTROLLER - DFM-440 FIELD MODULE
C4S	CONTROLLER - DSC-1146 SYSTEM
C4X	CONTROLLER - eBX-04 EXPANDER BACKPLANE
C6A	CONTROLLER - DAC-606 APPLICATION
C6E	CONTROLLER - DSC-1616E SYSTEM
C7E	CONTROLLER - eTCH-7E TOUCH SCREEN
C8U	CONTROLLER - eBM-800 UI MODULE
C8X	CONTROLLER - eBX-08 EXPANDER BACKPLANE
CCU	CONTROLLER - COPPERCUBE ARCHIVER
CDF	CONTROLLER - DFC-304R3-240 FCU
CDV	CONTROLLER - DVC-V322A-B VAV
CDX	CONTROLLER - DMUX-8-J MULTIPLEXER
CDZ	CONTROLLER - DZNR-768 REPEATER
CEB	CONTROLLER - eBMGR-2
CEC	CONTROLLER - EBCON-2 SYSTEM
CET	CONTROLLER - eBMGR-TCH-2
CFP	CONTROLLER - DMF-400P PWM FIELD MODULE
CFU	CONTROLLER - DFM-400 FIELD MODULE
CJA	CONTROLLER - JACE 8000 NETWORK ENGINE
CMA	CONTROLLER - eBM-440-M AO MODULE
CMD	CONTROLLER - eBM-D400R4 DO MODULE
CMH	CONTROLLER - eBM-D400R4-H DO MODULE

TAG	TAG DESCRIPTION
CMI	CONTROLLER - eBM-440-I MODULE
CZF	CONTROLLER - eZFCP-424r4-24 FCU
CZV	CONTROLLER - enteliZONE VAV
CS	CURRENT SENSOR
CT	CURRENT TRANSDUCER
CTR	COOLING TOWER
CTS	CHEMICAL TREATMENT SYSTEM
CTW	CITY WATER (RAW)
CW	CONDENSER WATER
CWF	CONDENSER WATER FILTER
CWR	CONDENSER WATER RETURN TEMPERATURE
CWS	CONDENSER WATER SUPPLY TEMPERATURE
CWV	CHILL WATER VALVE
DAH	DISCHARGE AIR HUMIDITY
DAT	DISCHARGE AIR TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DEM	DEMAND
DET	DETECTION
DI	DIGITAL (BINARY) INPUT
DO	DIGITAL (BINARY) OUTPUT
DP	DEW POINT TRANSMITTER
DPA	DIFFERENTIAL PRESSURE TRANSDUCER - AIRFLOW
DPB	DIFFERENTIAL PRESSRUE BLDG TRANSDUCER
DPD	DIFFERENTIAL PRESSURE DUCT TRANSDUCER
DPF	DIFFERENTIAL PRESSURE FILTER
DPR	DAMPER
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE TRANSDUCER
DPW	DIFFERENTIAL PRESSURE WATER TRANSDUCER
DR	DIN RAIL
DRA	DIN RAIL ADAPTER
DWH	DOMESTIC WATER HEATER
DWM	DOMESTIC WATER METER
DWP	DOMESTIC WATER PRESSURE
DWR	DISHWASHER
EAD	EXHAUST AIR DAMPER
EBO	EQUIPMENT BY OTHERS
ELE	ELEVATOR
ENA	ENABLE
ENC	ENCLOSURE
EOA	EMERGENCY OUTSIDE AIR
EOL	END OF LINE RESISTOR
EPM	ELECTRICAL POWER MONITORING
ES	END SWITCH
ESC	ELECTRONIC SPEED CONTROL
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
ETS	ETHERNET SWITCH
EWH	ELECTRIC WATER HEATER
FA	FIRE ALARM SYSTEM POINT
FAA	FIRE ALARM ANNUNCIATION
FACP	FIRE ALARM CONTROL PANEL
FAS	FIRE ALARM SYSTEM
FB	FUSE BLOCK
FBK	FEEDBACK
FBD	FACE AND BYPASS DAMPER
FBP	FACE AND BYPASS
FC	FIBER CONVERTER, (TO ETHERNET)
FCU	FAN COIL UNIT
FDT	FUEL DAY TANK
FE	FRONT END

TAG	TAG DESCRIPTION
FLT	FILTER DIFFERENTIAL PRESSURE
FM	FLOW METER
FP	FIRE PUMP
FR	FIELD RELAY
FS	FLOW SWITCH
FSC	FCU FAN SPEED CONTROL SWITCH
FT	FAULT
FWC	FIRE WATER CHEMICAL TREATMENT SYSTEM
FWC	FIRE WTR CORR CHEM TREAT INJECT SYSTEM
G	GAUGE
GD	GAS DETECTOR
GEN	GENERATOR
GFS	GAS FLOW SWITCH
GM	GAS METER
H2S	HYDROGEN SENSOR
HC	HEATING COIL
HL	HIGH LIMIT, DUCT PRESSURE
HR	HEAT RECOVERY
HRC	HEAT RECOVERY COIL
HRU	HEAT RECOVERY UNIT
HS	HUMIDISTAT
HTD	HUMIDITY / TEMPERATURE SENSOR - DUCT
HTR	HUMIDITY / TEMPERATURE SENSOR - ROOM
HTS	HEAT SENSOR
HU	HUMIDIFIER
HUM	HUMIDITY SENSOR
HW	HOT WATER
HWR	HOT WATER RETURN TEMPERATURE
HWS	HOT WATER SUPPLY TEMPERATURE
HWV	HOT WATER VALVE
IL	INTERLOCK
ION	IONIZATION UNIT
ISO	ISOLATION
JA	JACE (CONTROLLER, ACCESSORIES, EXP. PACKS)
KWM	KILOWATT METER
LAN	LOCAL ACCESS NETWORK
LBL	LABEL
LC	LIGHTING CONTACTOR
LD	LEAK DETECTOR
LFH	LAB FUME HOOD
LL	LOW LIMIT TEMPERATURE SWITCH
LLS	LIQUID LEVEL SWITCH
LLT	LIQUID LEVEL TRANSMITTER
LN*	LINKNET NETWORK POINT
LRB	LIGHTING RELAY BRACKET
LS(S)	LOAD SHEDDING (SIGNAL)
LT	LIGHT
LVL	LEVEL
LWC	LOW WATER CUT-OFF
M	ACTUATOR
MAD	MIXED AIR DAMPER
MAG	MAGNEHELIC PRESSURE GAUGE
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MB	MOUNTING BRACKET
MF	MULTIMEDIA FILTER SYSTEM
MIN	MINIMUM
MS	MOTOR STARTER
MTR	METER
N*	NETWORK (SOFTWARE) POINT NUMBER
OA	OUTSIDE AIR

TAG	TAG DESCRIPTION
OAD	OUTSIDE AIR DAMPER
OAH	OUTSIDE AIR HUMIDITY
OAT	OUTSIDE AIR TEMPERATURE
OATH	OUTSIDE AIR TEMPERATURE / HUMIDITY
OBS	OBSOLETE
OCC	OCCUPANCY
OS	OCCUPANCY SENSOR
PAN	PANDUIT / WIRE MOLD
PB(C)	PANEL BUILD (COMPONENT)
PF	PANEL FUSE
Ph	POTENTIAL HYDROGEN
PHV	PRE-HEAT VALVE
PLG	PANEL LIGHT - GREEN
PLR	PANEL LIGHT - RED
PLY	PANEL LIGHT - YELLOW
PM	POWER MONITOR
PMP	PUMP
PNL	PANEL
PLM	PHASE LOSS MONITOR
PP	PRESSURE PICKUP, SPACE - LOW PROFILE
PpH	POTABLE WATER POTENTIAL HYDROGEN (Ph) LEVEL
PR	RELAY, PANEL, TRACK MOUNT
PS	POWER SUPPLY
PRES	PRESSURE
PRN	PRINTER
PSR	PHOTOCELL RELAY
PT	PNEUMATIC TUBING - POLY
PTS	PNEUMATIC PRESSURE PICKUP - STATIC PRESSURE
PTT	PNEUMATIC PRESSURE PICKUP - TOTAL PRESSURE
PTV	PNEUMATIC PRESSURE PICKUPS - STATIC & TOTAL
PWC	POTABLE WATER CHLORINATION SYSTEM
PWM	PULSE WIDTH MODULATION
PWT	POTABLE WATER TANK
R	PANEL RELAY
RA	RETURN AIR
RAD	RETURN AIR DAMPER
RAH	RETURN AIR HUMIDITY
RAT	RETURN AIR TEMPERATURE
RB	RELAY, PANEL, ICE CUBE, SOCKET BASE
RBP	CITY RAW WATER BOOSTER PUMP
RD	RADON DETECTOR
REL(D)	RELIEF (DAMPER)
RM	REFRIGERANT MONITOR
RPC	RAW WATER BOOSTER PUMP CONTROLLER
RTS	ROTARY TIMER SWITCH
RTU	ROOFTOP UNIT
RWB	RAW WATER BAG FILTER SYSTEM
RWP	RAW WATER TREATMENT SYSTEM PUMP PKG
RWPC	RAW WATER PUMP CONTROL SYSTEM
RWR	RAW WATER RECIRCULATION & CHLORINATION SYS
RWT	RAW WATER TANK
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SCR	SILICONE-CONTROLLED RECTIFIER (REHEAT TYP.)
SD	SMOKE DETECTOR
SEF	SMOKE EXHAUST FAN
SEP	SEWAGE EJECTION PUMP
SF	SUPPLY FAN
SGD	SURGE DAMPER - AIR
SI + []	SAFETY INTERLOCK + Source (i.e. Term L6 & L7)
SMP	SUMP PUMP

TAG	TAG DESCRIPTION
SP	SWITCH PLATE
SPD	SPEED SIGNAL (VFD INPUT SPEED FROM BAS)
SPS	SPRAY WATER SYSTEM
SR	SAFETY RELAY
SS	START / STOP
SSG	SPACE SENSOR GUARD
SSP	SECURITY SYSTEM PANEL
ST	SPACE TEMPERATURE
STAT	STATUS
STPT	SETPOINT
SW	SWITCH - ELECTRIC
TB	TERMINAL BLOCK
TBP	TRIPLEX DOMESTIC WATER BOOSTER PUMP PKG
TH	THERMOSTAT, ROOM TEMPERATURE
TL	TOWER LIGHT (ALARM INDICATION)
TS	TEMPERATURE SENSOR
TW	THERMOWELL, TEMPERATURE
TX	TRANSFORMER
V	VALVE / ACTUATOR COMBINATION
VAV	VARIABLE AIR VOLUME BOX
VFD	VARIABLE FREQUENCY DRIVE
VFDR	VARIABLE FREQUENCY DRIVE, RETURN FAN
VFDS	VARIABLE FREQUENCY DRIVE, SUPPLY FAN
WA	WATER ALARM
WD	WATER DETECTOR
WLP	WATER LEVEL TRANSDUCER, PRESSURE TYPE
WLU	WATER LEVEL TRANSDUCER, ULTRASONIC
WM	WATER METER
WP	WATER PRESSURE
WSHP	WATER SOURCE HEAT PUMP
WTR	WATER
WWT	WASTE WATER TREATMENT
XFMR	TRANSFORMER

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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

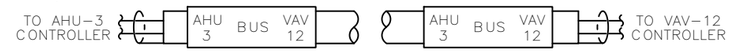
SHEET
GEN–01
JOB NUMBER:
J–2312002

INSTALLATION STANDARDS – LEGEND

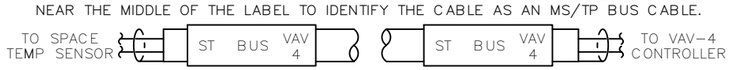
Spec. Section: 230900.99

MS/TP BUS CABLE LABELING

1. THE LABELING SHOWN BELOW SHALL BE PROVIDED ON ALL MS/TP BUS CABLES RUNNING FROM ONE CONTROL PANEL TO ANOTHER, OR FROM A CONTROLLER TO A SPACE TEMPERATURE SENSOR. MS/TP BUS CABLES CONNECTING CONTROLLERS WITHIN A SINGLE CONTROL PANEL SHALL NOT BE LABELED.
   - ON CABLES RUNNING BETWEEN CONTROL PANELS: EACH LABEL SHALL INDICATE THE NAMES OF THE CONTROLLERS CONNECTED AT EACH END OF THE CABLE. THE NAME PRINTED ON THE LEFT SIDE OF THE LABEL SHALL BE THE NAME OF THE CONTROLLER CONNECTED TO THE LEFT END OF THE CABLE & VICE-VERSA (SEE EXAMPLE BELOW). THE WORD "BUS" SHALL BE PRINTED NEAR THE MIDDLE OF THE LABEL TO IDENTIFY THE CABLE AS AN MS/TP BUS CABLE.



   - ON CABLES RUNNING TO SPACE TEMPERATURE SENSORS: EACH LABEL SHALL INDICATE THE NAME OF THE CONTROLLER ON THE RIGHT SIDE AND THE LETTERS "ST" ON THE LEFT SIDE. THE CABLE SHALL BE INSTALLED AS SHOWN BELOW. THE WORD "BUS" SHALL BE PRINTED NEAR THE MIDDLE OF THE LABEL TO IDENTIFY THE CABLE AS AN MS/TP BUS CABLE.



2. EACH LABEL SHALL BE MADE OF TRANSPARENT VINYL FILM BACKED WITH AN ACRYLIC, PRESSURE-SENSITIVE ADHESIVE. THE LABEL MATERIAL SHALL BE OIL & SOLVENT RESISTANT WITH GOOD CONFORMABILITY & FLEXIBILITY. THE MEANS OF PRINTING ON THE LABEL SHALL RESULT IN A CLEARLY LEGIBLE, PERMANENT MARKING. LABELS SHALL REMAIN INTACT & CLEARLY LEGIBLE WHEN SUBJECTED TO ULTRAVIOLET LIGHT, EXTREME HUMIDITY & SURFACE TEMPERATURES FROM -40° F TO 150° F (-40° C TO 66° C).
3. EACH CABLE SHALL BE IDENTIFIED WITH (2) LABELS. A LABEL SHALL BE LOCATED WITHIN 18" OF EACH END OF THE CABLE & SHALL BE VISIBLE WITHIN THE CONTROL ENCLOSURE. THE SAME NOTATION THAT APPEARS ON THE LABEL SHALL BE MARKED ON THE COVER OF EACH JUNCTION BOX THAT THE CABLE PASSES THROUGH.

WIRING TERMINATION LEGEND - PANEL

- [#] = VDC TERMINATION AT CONTROL PANEL
- [L##] = VAC TERMINATION AT CONTROL PANEL
- 1##, 2##, 3## = 120-460VAC INTRA-PANEL TERMINATION
- 4##, 5## = 24VAC INTRA-PANEL TERMINATION
- 6##, 7## = 24VDC INTRA-PANEL TERMINATION

WIRING TERMINATION LEGEND - BACNet ID

XX ## (NOTE: LEADING ZEROS NOT USED)

INSTANCE NUMBER: FROM PANEL I/O = PHYSICAL CONNECTION NUMBER
N* INSTANCE NUMBER INDICATES A NETWORK (SOFTWARE) POINT

I/O TYPE: AI=ANALOG INPUT, BI=BINARY INPUT, MI=MULTISTATE INPUT
AO=ANALOG OUTPUT, BO=BINARY OUTPUT

DEVICE BASIC ADDRESS FROM SWITCH
DEVICE BACNET ADDRESS = DEVICE SWITCH ADDRESS * DEVICE TYPE FACTOR

DEVICE TYPE: = AREA (FACTOR = 10000)
= SYSTEM (FACTOR = 100)
= SUBLAN (FACTOR = 1)
= LINKNET DEVICE (BACNET ADDRESS USES HOSTPANEL_ID)

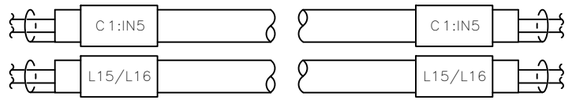
EXAMPLES:
AREA DEVICE # 3, BINARY INPUT NUMBER 4: [BACNET ADDRESS = 30000.BI4]
LINKNET DEVICE # 2, BINARY INPUT NUMBER 3: [BACNET ADDRESS = HOSTPANEL_ID.BI203]

INPUT / OUTPUT WIRING STANDARDS

1. ALL I/O CABLE SHALL MEET THE FOLLOWING SPECIFICATIONS:
   - STRANDED 18 GAUGE, TWISTED/SHIELDED-PAIR COPPER WIRE WITH 300 VOLT INSULATION
2. PLENUM-RATED CABLE SHALL BE USED WHERE REQUIRED BY LOCAL OR NATIONAL CODES.
3. I/O WIRING SHALL NOT BE RUN IN THE SAME CONDUIT AS A.C. POWER WIRING THAT CARRIES MORE THAN 24 VOLTS.
4. WITHIN ANY CONTROL PANEL:
   - I/O WIRING SHALL NOT CROSS OVER A.C. POWER WIRING THAT CARRIES MORE THAN 24 VOLTS.
   - I/O WIRING SHALL NOT BE RUN IN THE SAME CABLE GROUP AS A.C. POWER WIRING THAT CARRIES MORE THAN 24 VOLTS.
5. ONLY SHIELDED 24 VAC POWER WIRING SHALL BE ALLOWED TO CROSS OVER, RUN IN THE SAME CONDUIT, OR RUN IN THE SAME CABLE GROUP AS I/O WIRING.
6. WHERE UNAVOIDABLE, I/O WIRING MAY BE LOCATED NO CLOSER THAN 6" AND SHOULD BE LOCATED AS FAR APART AS POSSIBLE FROM POWER WIRING CARRYING MORE THAN 24 VOLTS. AVOID RUNNING PARALLEL TO POWER WIRING ANY FURTHER THAN NECESSARY, CROSS POWER WIRING AT 90 DEGREE ANGLES ONLY IF REQUIRED.
7. SHIELDS ON INPUT AND OUTPUT WIRING TO BE GROUNDED AT PANEL (OR CONTROLLER) LOCATION ONLY. THEY SHOULD BE TIED TO A TRUE EARTH GROUND.
8. STRIP ONLY ENOUGH CABLE BACK TO ALLOW TERMINATION OF SHIELD AND WIRE.

INPUT / OUTPUT CABLE LABELING

1. THE LABELING SHOWN BELOW SHALL BE PROVIDED ON ALL I/O WIRING TO & FROM CONTROLLERS AND FIELD DEVICES. I/O WIRING CONTAINED WITHIN A CONTROL PANEL SHALL NOT BE LABELED. EACH LABEL SHALL INDICATE THE I/O WIRING TERMINATION AS SHOWN ON THE TEMPERATURE CONTROL DRAWINGS (SEE EXAMPLES BELOW).



2. EACH LABEL SHALL BE MADE OF TRANSPARENT VINYL FILM BACKED WITH AN ACRYLIC, PRESSURE-SENSITIVE ADHESIVE. THE LABEL MATERIAL SHALL BE OIL & SOLVENT RESISTANT WITH GOOD CONFORMABILITY & FLEXIBILITY. THE MEANS OF PRINTING ON THE LABEL SHALL RESULT IN A CLEARLY LEGIBLE, PERMANENT MARKING. LABELS SHALL REMAIN INTACT & CLEARLY LEGIBLE WHEN SUBJECTED TO ULTRAVIOLET LIGHT, EXTREME HUMIDITY & SURFACE TEMPERATURES FROM -40° F TO 150° F (-40° C TO 66° C).
3. EACH CABLE SHALL BE IDENTIFIED WITH (2) LABELS. A LABEL SHALL BE LOCATED WITHIN 18" OF EACH END OF THE CABLE & SHALL BE VISIBLE AT THE CONTROL PANEL OR FIELD DEVICE. THE SAME NOTATION THAT APPEARS ON THE LABEL SHALL BE MARKED ON THE COVER OF EACH JUNCTION BOX THAT THE CABLE PASSES THROUGH.

GENERAL ELECTRICAL STANDARDS

1. ALL CURRENT SENSING DEVICES SHALL HAVE THE POWER WIRE LOOPED THROUGH THE SENSOR MULTIPLE TIMES, IF NECESSARY, TO PROVIDE AN AMPERAGE THAT IS WELL WITHIN THE RANGE OF THE SENSOR (REFER TO MANUFACTURER'S LITERATURE FOR AMPERAGE RANGE).
2. ALL FIELD WIRING TO TERMINAL STRIPS IN CONTROL PANELS SHALL BE TERMINATED AT THE OUTERMOST TERMINALS. INNER TERMINALS OF TERMINAL STRIPS ARE RESERVED FOR INTERNAL WIRING TERMINATIONS.
3. 120 VAC POWER WIRING SHALL ENTER ANY CONTROL PANEL AT THE UPPER RIGHT CORNER UNLESS OTHERWISE INDICATED.
4. 240 VAC POWER WIRING SHALL ENTER ANY CONTROL PANEL AT THE LOWER LEFT CORNER UNLESS OTHERWISE INDICATED.
5. THE GROUND WIRE CONNECTED TO ANY CONTROL PANEL MUST BE A CONTINUOUS CONDUCTOR BACK TO THE GROUND CONNECTION AT THE BREAKER PANEL. GROUNDING TO BUILDING STEEL IS NOT ACCEPTABLE.
6. ALL JUMPER & DIP SWITCH CONFIGURATIONS SHOWN ON THE TEMPERATURE CONTROL DRAWINGS SHALL BE SET BY THE INSTALLER. IF NO SPECIFIC CONFIGURATION IS SHOWN FOR A DEVICE, NO CHANGE SHALL BE MADE TO THE DEFAULT SETTINGS.
7. ALL FIELD WIRING THAT DIFFERS FROM THE WIRING SHOWN ON THE TEMPERATURE CONTROL DRAWINGS SHALL BE NOTED ON THE DRAWINGS (BY THE INSTALLER) WITH RED INK OR PENCIL. THE COMPLETE SET OF NOTED DRAWINGS SHALL BE PROVIDED TO THE PROJECT MANAGER UPON COMPLETION OF THE PROJECT OR SOONER UPON REQUEST.

ELECTRICAL NOTES

- ALL CONTROL DEVICES & WIRING SHALL BE INSTALLED IN ACCORDANCE WITH: MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND INSTALLATION STANDARDS PROVIDED ON THE "INSTALLATION STANDARDS" SHEET.
- THESE DRAWINGS PROVIDE SCHEMATIC REPRESENTATIONS OF EQUIPMENT & FIELD DEVICES BASED ON THE BID PROPOSAL. ACTUAL INSTALLATION OF ALL CONTROL DEVICES IS SUBJECT TO FIELD VERIFICATION. ANY CHANGES THAT MAY RESULT IN A DEVIATION FROM THE GENERAL INTENT OF THE CONTROL SYSTEM DESIGN SHALL BE APPROVED BY THE DESIGNER PRIOR TO INSTALLATION.
- FIELD VERIFICATION OF WIRING TERMINATIONS REQUIRED.

- GROUND CIRCUIT MUST BE A CONTINUOUS PATH BACK TO THE BREAKER PANEL.
- ELECTRICAL NOTE: CONTROLLER GROUND CONNECTION MUST BE A COMPLETE PATH BACK TO BREAKER PANEL.

- REMOVE SHUNT JUMPER IF SHIELD IS GROUNDED DIRECTLY AT ANY OTHER POINT OR SHUNT IS INSTALLED AT OTHER END OF NETWORK.
- ADP-45-MSTP-TB-Y AND ADP-45-MSTP-Y BOARDS MAY BE FLUSH MOUNTED ONTO METAL PANELBOARDS WITHOUT AN INSULATOR BETWEEN THE TWO.
- FIELD DEVICES SHOULD ONLY BE GROUNDED IN THE CONTROL PANEL. DO NOT GROUND I/O WIRING IN BOTH THE FIELD AND THE PANEL.
- THESE DRAWINGS PROVIDE SCHEMATIC REPRESENTATIONS OF EQUIPMENT & FIELD DEVICES BASED ON THE CHILDREN'S EDUCATION ADDITION PROPOSAL. ACTUAL INSTALLATION OF ALL CONTROL DEVICES IS SUBJECT TO FIELD VERIFICATION. ANY CHANGES THAT MAY RESULT IN A DEVIATION FROM THE GENERAL INTENT OF THE CONTROL SYSTEM DESIGN SHALL BE APPROVED BY THE DESIGNER PRIOR TO INSTALLATION.
- SEE FIELD DEVICE TERMINATION DETAIL SHEET(S) FOR POINT WIRING REQUIREMENTS.

FROM BAPI:

- BAPI recommends using twisted pair of at least 22AWG and sealant filled connectors for all wire connections. Larger gauge wire may be required for long runs. All wiring must comply with the National Electric Code (NEC) and local codes.
Do NOT run this device's wiring in the same conduit as AC power wiring of NEC class 1, NEC class 2, NEC class 3 or with wiring used to supply highly inductive loads such as motors, contactors and relays. BAPI's tests show that fluctuating and inaccurate signal levels are possible when AC power wiring is present in the same conduit as the signal lines. If you are experiencing any of these difficulties, please contact your BAPI representative.

Cable Requirements:

	Cable Type	Equal to	Max Cable Length	Wiring Precautions
RS-485 Network	22-24 AWG twisted pair, shielded, jacketed communication cable	Belden 9841, 82841	4000 ft (1220 m)	- Braided or Aluminum foil shield, Impedence 100-200 Ω, Capacitance 17 pF/ft or less. - Use for BACnet MS/TP, LINKNet, V2 Subnet, MODBUS-RTU
Ethernet	10/100 Base T, Cat5e, Cat6		no limit (w/ switches)	Follow IEEE 802.3 standards
Fiber Optic	Grade 3 (62.5/125μ) / Grade 4 (50/125µ), min 2 fiber, Multimode, SC connector	Belden FDxM006P0	1000 ft (550 m) for Gigabit Ethernet	Suggest 4 or more fibers for redundancy in case of damage
10k Ω / Dry Contact Input	2 conductor 18 AWG	Belden 8461NH	3900 ft (1200 m)	Ground only at controller input GND terminal
	2 conductor 22 AWG	Belden 88442	1500 ft (450 m)	Ground only at controller input GND terminal
5 V Input	2 conductor 22 AWG shielded	Belden 83552	100 ft (30 m)	Keep Cable Short Use dedicated shielded cable
	2 conductor 20 AWG shielded	Belden 83602	330 ft (100m) w 20 kΩ load resistor	
	3 conductor 20 AWG shielded	Belden 8772		

Cable Requirements:

	Cable Type	Equal to	Max Cable Length	Wiring Precautions
10 V Input	3 conductor 18 AWG unshielded	Belden 88870	330 ft (100 m)	
4-20 mA Input	2 conductor 18 AWG unshielded	Belden 8461NH	3300 ft (1000 m)	
	4 conductor 18 AWG unshielded	Belden 88489		
Digital Input	2 conductor 18 AWG	Belden 8461NH	3900 ft (1200 m)	
	2 conductor 22 AWG	Belden 88442	1500 ft (450 m)	
RTD Input	2 conductor 18 AWG	Belden 8461NH	No practical limit	Ground only at controller input GND terminal
	2 conductor 22 AWG	Belden 88442		
Analog 0-10 VDC Output	2 conductor 18 AWG unshielded	Belden 8461NH	330 ft (100 m)	
Analog 4-20 mA Output	2 conductor 18 AWG unshielded	Belden 8461NH	Depends upon impedence	ft = 1000 (500 - end dev imp) / 12.8 m = 1000 (500 - end dev imp) / 42
Binary Triac Output	2 conductor 18 AWG unshielded	Belden 8461NH	330 ft (100 m)	min turn-on current = 25 mA
Binary SS Relay Output	2 conductor 18 AWG unshielded	Belden 8461NH	330 ft (100 m)	No min turn-on current, Max External Voltages: 28 VAC, 28 VDC
Binary Relay Output	2 conductor 18 AWG unshielded	Belden 8461NH	330 ft (100 m)	Max External Voltages: 28 VAC, 28 VDC

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UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
GEN-02
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

BACNET MS/TP (RS-485) BUS STANDARDS

1. THE MS/TP BUS SHIELD MUST BE KEPT SEPARATE FROM OTHER SHIELDS & MUST NOT BE GROUNDED. THE MS/TP BUS SHIELD SHALL BE PROTECTED FROM CONTACTING ANY SURFACE OTHER THAN THE TERMINATION BLOCK.
2. SPLICES IN MS/TP BUS WIRING ARE NOT ACCEPTABLE. MS/TP BUS WIRING SHALL BE TERMINATED ONLY AT A CONTROLLER, REPEATER, OR TRM-768: RS-485 LAN TERMINATOR.
3. THE BLACK WIRE IN AN MS/TP BUS CABLE SHALL ALWAYS BE CONNECTED TO THE (-) BUS TERMINAL ON THE DEVICE AT EACH END OF THE CABLE.
4. ALL 2-CONDUCTOR MS/TP BUS CABLE SHALL MEET THE FOLLOWING SPECIFICATIONS:
   - 22-24 GAUGE, SINGLE TWISTED-PAIR, TINNED, SHIELDED COPPER WIRE WITH GREEN JACKET
   - NOMINAL IMPEDANCE = 100-120 OHMS BETWEEN CONDUCTORS
   - CAPACITANCE < OR = TO 17 pF/FT BETWEEN GROUNDED CONDUCTOR & NEXT CONDUCTOR
   - ACCEPTABLE CABLE = BELDEN 9841, 82841 OR WINDY CITY WIRE 42002-S. (PLENUM-RATED)

     APPROVAL OF EQUIVALENT CABLE IS REQUIRED PRIOR TO INSTALLATION
5. PLENUM-RATED CABLE SHALL BE USED WHERE REQUIRED BY LOCAL OR NATIONAL CODES.
6. MS/TP BUS WIRING SHALL NOT BE RUN IN THE SAME CONDUIT AS A.C. POWER WIRING THAT CARRIES MORE THAN 24 VOLTS.
7. WITHIN ANY CONTROL PANEL:
   - MS/TP BUS WIRING SHALL NOT CROSS OVER A.C. POWER WIRING THAT CARRIES MORE THAN 24 VOLTS.
   - MS/TP BUS WIRING SHALL NOT BE RUN IN THE SAME CABLE GROUP AS A.C. POWER WIRING THAT CARRIES MORE THAN 24 VOLTS.
8. ONLY SHIELDED 24 VAC POWER WIRING SHALL BE ALLOWED TO CROSS OVER, RUN IN THE SAME CONDUIT, OR RUN IN THE SAME CABLE GROUP AS MS/TP BUS WIRING.

BACNET MS/TP (RS-485) BUS NOTES

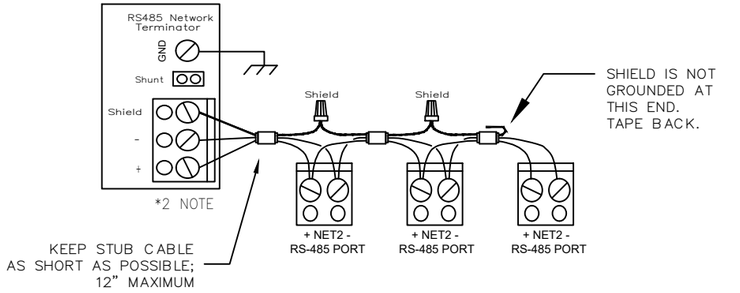
- EACH SEGMENT OF THE DZNT COMMUNICATION BUS CAN HAVE UP TO 50 DEVICES AND 2,000' TOTAL CAT5 CABLE LENGTH (COMBINED DISTANCE BETWEEN TERMINATION BOARDS AND FROM TERMINATION BOARD TO DZNT-TO-VAV (THE WALL MOUNTED DEVICE)) TO A MAXIMUM OF 99 DEVICES TOTAL.
- TOTAL NETWORK LENGTH IS DETERMINED BY SUM OF CABLE LENGTHS BETWEEN TERMINATION BOARDS, PLUS THE SUM OF THE DROP CABLES BETWEEN TERMINATION BOARD AND THERMOSTAT.
- IF ONLY 1 SEGMENT IS REQUIRED, AN ADP45-MSTP-TB-Y MAY BE USED INSTEAD OF AN ADP45-MSTP-Y.
- THERE IS NO HARD LIMIT TO THE NUMBER OF BRANCHES CREATED BY ADP45-MSTP-Y CONNECTORS, PROVIDED TOTAL OF ALL BRANCHES IS WITHIN THE LENGTH AND DEVICE LIMIT FOR THE SEGMENT. DAISY CHAIN STRUCTURE IS MAINTAINED DUE TO THE DESIGN OF THE CABLING SYSTEM.
- AFTER SPLITTING A NETWORK INTO TWO (2) BRANCHES, DO NOT RECOMBINE TO A SINGLE BRANCH AT THE OPPOSITE END OR NETWORK PROBLEMS WILL OCCUR.
- LOOPBACK TERMINATION, ADP45-MSTP-ENDLOOP, MUST BE USED AT THE END OF EACH NETWORK BRANCH OR SEGMENT. NETWORK WILL CONTINUE TO FUNCTION IF ON LOOPBACK OR DEVICE IS REMOVED FROM THE NETWORK BUT DEVICES WILL DROP OFF THE NETWORK BETWEEN ANY TWO (2) REMOVED DZNT-TO-VAV OR ADP45-MSTP-LOOP.
- 12" LENGTH OF NETWORK CABLE ATTACHED TO THE ADP45-MSTP-TB-Y IS MAXIMUM ALLOWED. TERMINATE GROUND LEAD TO GND ON THE CONTROLLER TO MAINTAIN NETWORK INTEGRITY.
- CABLING IS DESIGNED TO USE STANDARD STRAIGHT-THROUGH UNSHIELDED TWISTED PAIR (UTP) CAT3 OR HIGHER CABLES (CAT5, CAT5e, CAT6) TO CONNECT BOXES TO BOXES, AND INDIVIDUAL BOXES TO THEIR THERMOSTATS.
- CABLING IS DESIGNED TO MAINTAIN THE REQUIRED DAISY-CHAIN CONFIGURATION EVEN WITH THE USE OF NETWORK Y's.

- DO NOT EXCEED (64) NODES ON A NETWORK SEGMENT. THERE IS A MAXIMUM OF 99 NOTES ALLOWED ON A SINGLE MS/TP NETWORK. ANY MORE THAN (64) NODES ON A NETWORK REQUIRES THE USE OF A REPEATER!
- DO NOT EXCEED 4,000 FEET (1,220 m) TOTAL LENGTH ON ANY SINGLE TWISTED PAIR RS-485 NETWORK SEGMENT.
- DO NOT EXCEED 2,000 FEET (610 m) TOTAL LENGTH ON ANY SINGLE CAT5 RS-485 NETWORK SEGMENT.
- DO NOT EXCEED (3) NODES ON A SINGLE LINKNET SEGMENT.
- DO NOT EXCEED 100 FEET (30 m) TOTAL LENGTH ON ANY SINGLE LINKNET NETWORK.
- SHIELD FOR MS/TP BUS MUST BE KEPT SEPARATE FROM OTHER SHIELDS AND FROM GROUND TERMINATIONS.
- MS/TP BUS SHIELD MUST BE TIED THROUGH EACH NODE TO MAKE A CONTINUOUS SHIELD THAT RUNS THE ENTIRE LENGTH OF THE RS-485 SEGMENT. DO NOT CONNECT THE SHIELD TO GROUND AT THE NODE.
- PROTECT FROM CONTACT WITH ANY SURFACE OTHER THAN THE TRM-768 TERMINAL BOARD OR DNZR-768 REPEATER.
- COMMUNICATION WIRING MUST NOT BE SPLICED. ALL TERMINATIONS MUST OCCUR AT CONTROLLERS UNLESS SPECIFICALLY NOTED OTHERWISE.
- BLACK COMMUNICATION WIRE SHALL ALWAYS BE CONNECTED TO (-) TERMINAL AT ALL CONTROLLERS.
- REFER TO "INSTALLATION STANDARDS" SHEET FOR ACCEPTABLE CABLE SPECIFICATIONS AND WIRING PRACTICES.
- ALL DEVICES CONNECTED TO THE MS/TP NETWORK MUST BE PROPERLY GROUNDED.
- ALL DEVICES ON THE NETWORK MUST RUN AT THE SAME BAUD RATE.

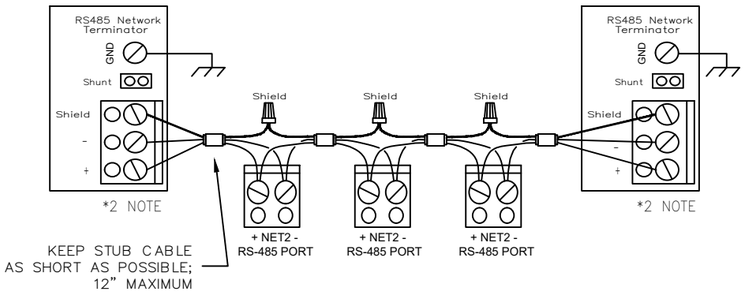
- THE LAYOUTS REPRESENTED ARE EXAMPLES OF HOW THE NETWORK MAY BE CONFIGURED. THERE IS NO REQUIREMENT TO FOLLOW THESE PROPOSED LAYOUTS, OTHER THAN MAINTAINING THE GROUPING UNDER EACH SYSTEM CONTROLLER.
- EACH APPLICATION CONTROLLER ON A GIVEN MS/TP BUS (UNDER EACH SYSTEM CONTROLLER) MUST HAVE UNIQUE ADDRESSING SET VIA THE DIP SWITCHES.

BACNET MS/TP (RS-485) BUS TERMINATIONS

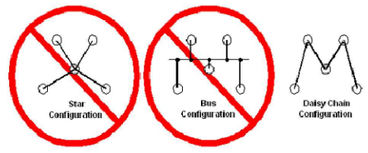
MS/TP TERMINATIONS USING ONE TRM-768 AND BUILT-IN TERMINATION



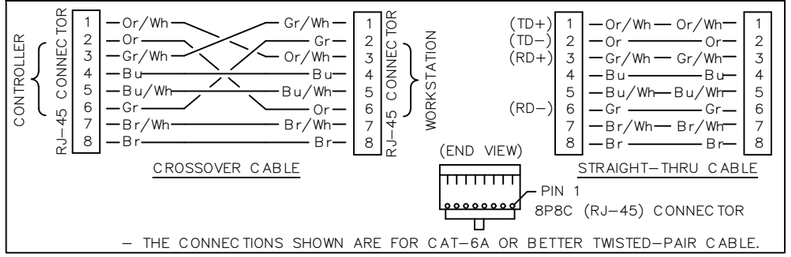
MS/TP TERMINATIONS USING TWO TRM-768s



ONLY A DAISY-CHAIN RS-485 MS/TP TOPOLOGY IS ALLOWED!



ETHERNET CABLE CONNECTIONS



- THE CONNECTIONS SHOWN ARE FOR CAT-6A OR BETTER TWISTED-PAIR CABLE.

ETHERNET CABLE STANDARDS

1. ALL ETHERNET CABLE SHALL MEET THE FOLLOWING SPECIFICATIONS:
   - 10/100/1000-BASE-T: 23 AWG, (4) TWISTED-PAIR, SOLID COPPER WIRE (CAT-6A EQUIV.)
     MAX. SEGMENT LENGTH = 330 FT (100 m)
     MAX. NETWORK LENGTH = 2,000 FT (610 m)
2. PLENUM-RATED CABLE SHALL BE USED WHERE REQUIRED BY LOCAL OR NATIONAL CODES.

INSTALLATION STANDARDS - NETWORK

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

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ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:____ DRAWN BY: BSS

CONTRACT NO:

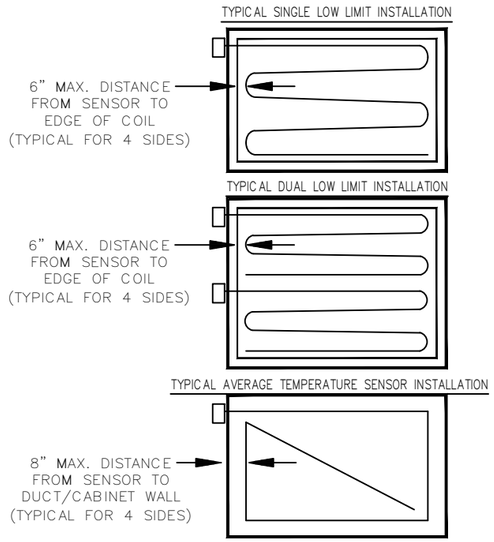
SHEET
GEN-03
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

GENERAL MECHANICAL STANDARDS

1. VALVE PORT DETAILS SHOWN ON THE TEMPERATURE CONTROL DRAWINGS DO NOT NECESSARILY INDICATE THE ACTUAL VALVE CONFIGURATION. REFER TO MANUFACTURER'S LITERATURE FOR ACTUAL VALVE PORT CONFIGURATION.
2. ALL LIQUID PRESSURE SENSORS SHALL BE INSTALLED ON VERTICAL PIPING OR BELOW THE CENTERLINE OF HORIZONTAL PIPING TO PREVENT AIR ENTRAPMENT AT THE SENSOR.

DUCT / COIL TEMPERATURE SENSOR INSTALLATION



- ALL SENSORS SHALL BE PROTECTED FROM DAMAGE AT THE POINT OF ENTRY INTO THE DUCT/CABINET. EACH SENSOR SHALL BE PROTECTED BY A RUBBER GROMMET, BUSHING, PLASTIC TUBING OR ELECTRICAL TAPE AT THE POINT OF ENTRY.
- ALL SENSORS SHALL BE SECURELY ANCHORED ALONG THE FULL LENGTH TO PREVENT DAMAGE CAUSED BY VIBRATION.

PNEUMATIC TERMINATION LEGEND

- ◇ # = PNEUMATIC SIGNAL TERMINATION AT CONTROL PANEL
- △ # = INTRA-PANEL PNEUMATIC SIGNAL TERMINATION
- (S ##) = SUPPLY AIR TERMINATION AT CONTROL PANEL (## = PSI)
- △ S ## = INTRA-PANEL SUPPLY AIR TERMINATION (## = PSI)

RED-LINE REQUIREMENTS

ALL SUBCONTRACTORS ARE REQUIRED TO SUBMIT DETAILED RED-LINE MODIFICATIONS TO THESE PRINTS FOR INCLUSION IN THE AS-BUILT SET. RED-LINES MUST INCLUDE BUT ARE NOT NECESSARILY LIMITED TO:

1. ACCURATE EQUIPMENT LOCATIONS INDICATED ON FLOOR PLANS, INCLUDING ROOF MOUNTED EQUIPMENT RELATIVE TO THE UPPERMOST FLOOR IF NO ROOF PLAN IS PROVIDED.
2. SENSOR LOCATIONS INDICATED ON FLOOR PLANS.
3. EXACT MS/TP AND ETHERNET BUS WIRING CONFIGURATION SHOWN ON FLOOR PLANS (WHEN PROVIDED) AS WELL AS IN TABLE FORMAT.
4. ALL WIRING AND EQUIPMENT CHANGES MADE ON ANY PORTION OF THE JOB.
5. FOR JOBS WITH NO FLOOR PLANS, ALL EQUIPMENT (INCLUDING SENSORS) WILL BE NOTED WITH ROOM NAME AND NUMBER.
6. ALL BACKUP BATTERY TABS ARE TO BE PULLED AT TIME OF CONTROLLER INSTALLATION.
7. ALL CONTROLLER SERIAL NUMBERS ARE TO BE RECORDED BY INSTALLING CONTRACTOR AT TIME OF INSTALLATION. THIS INFORMATION IS TO BE PASSED TO TEMPERATURE CONTROL SERVICES, LLC., AS THE JOB PROGRESSES.

MECHANICAL NOTES

- NOT ALL PANELS MAY CONTAIN THE TRM-768 END-OF-LINE TERMINATION BOARD. SEE CONTROLLER WIRING AND/OR SCHEDULE SHEETS FOR DETAILS.
- VAV CONTROLLERS MAY OPERATE IN A STAND-ALONE CONFIGURATION. HOWEVER, THIS PROJECT CALLS FOR BUS COMMUNICATION BETWEEN CONTROLLERS.
- FOR CLARITY, NOT ALL FACTORY PROVIDED ELECTRICAL WIRING AND COMPONENTS WHICH INTERFACE WITH THIRD-PARTY CONTROLLERS ARE SHOWN. FIELD VERIFICATION OF INSTALLED COMPONENTS AND WIRING CONNECTIONS REQUIRED!
- ZONE PRESSURE SENSOR LOCATED IN CONTROL PANEL.

*- DX UNITS WILL BE CONTROLLED BY FACTORY-PROVIDED ZONE SENSOR, WIRED TO FACTORY SUPPLIED CONTROLLERS. WIRING TO BE INSTALLED BY OTHERS.

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108 N MAIN, PO BOX 95
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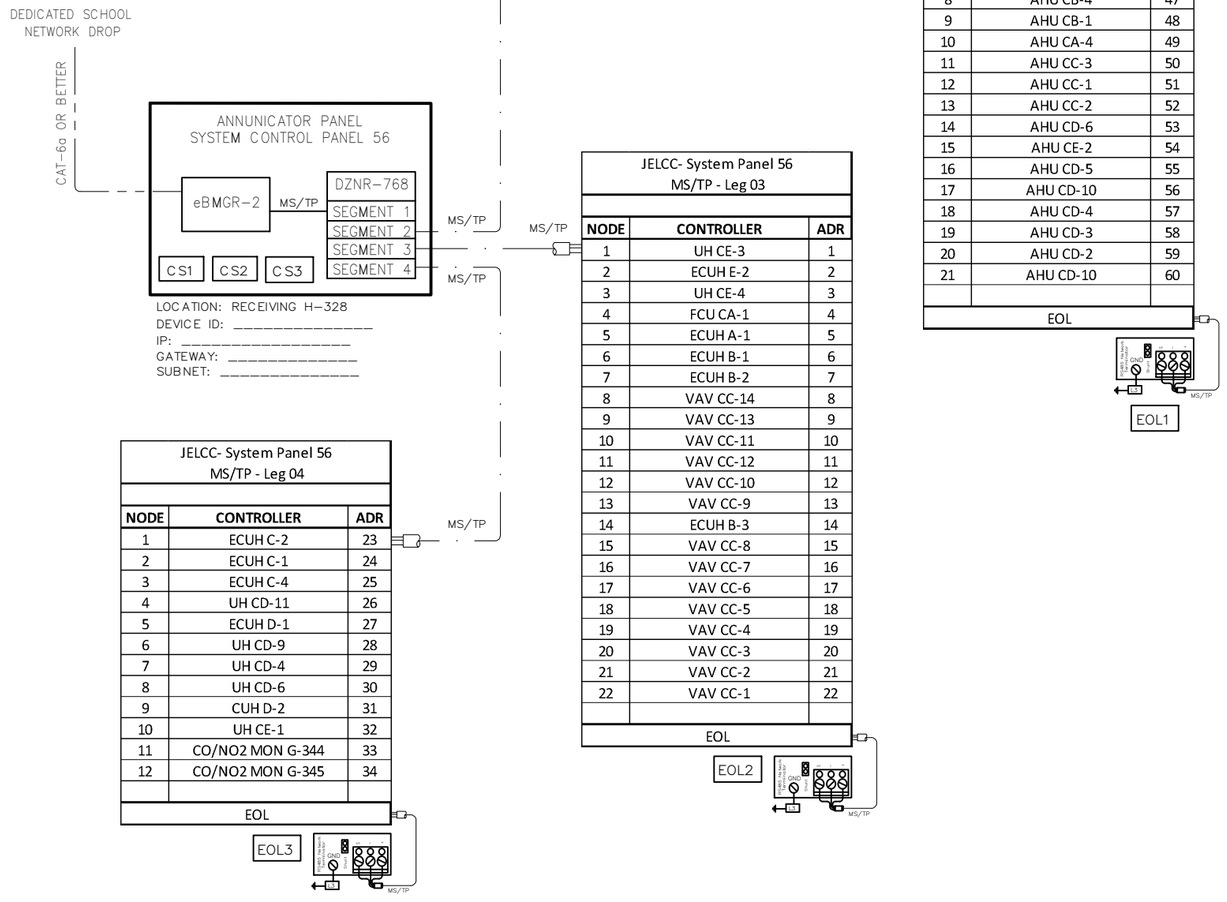
CONTRACT NO:

SHEET
GEN-04
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ETHERNET & RS–485 NETWORK RISER – PHASE 4

(SEE INSTALLATION STANDARDS – ELECTRICAL FOR CABLE REQUIREMENTS)



JELCC- System Panel 56
MS/TP - Leg 02

NODE	CONTROLLER	ADR
1	AHU CE-1	40
2	AHU CA-1	41
3	AHU CA-2	42
4	AHU CA-3	43
5	AHU CB-2	44
6	AHU CB-3	45
7	AHU CC-4	46
8	AHU CB-4	47
9	AHU CB-1	48
10	AHU CA-4	49
11	AHU CC-3	50
12	AHU CC-1	51
13	AHU CC-2	52
14	AHU CD-6	53
15	AHU CE-2	54
16	AHU CD-5	55
17	AHU CD-10	56
18	AHU CD-4	57
19	AHU CD-3	58
20	AHU CD-2	59
21	AHU CD-10	60
EOL		

JELCC- System Panel 56
MS/TP - Leg 03

NODE	CONTROLLER	ADR
1	UH CE-3	1
2	ECUH E-2	2
3	UH CE-4	3
4	FCU CA-1	4
5	ECUH A-1	5
6	ECUH B-1	6
7	ECUH B-2	7
8	VAV CC-14	8
9	VAV CC-13	9
10	VAV CC-11	10
11	VAV CC-12	11
12	VAV CC-10	12
13	VAV CC-9	13
14	ECUH B-3	14
15	VAV CC-8	15
16	VAV CC-7	16
17	VAV CC-6	17
18	VAV CC-5	18
19	VAV CC-4	19
20	VAV CC-3	20
21	VAV CC-2	21
22	VAV CC-1	22
EOL		

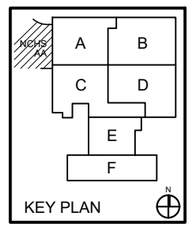
JELCC- System Panel 56
MS/TP - Leg 04

NODE	CONTROLLER	ADR
1	ECUH C-2	23
2	ECUH C-1	24
3	ECUH C-4	25
4	UH CD-11	26
5	ECUH D-1	27
6	UH CD-9	28
7	UH CD-4	29
8	UH CD-6	30
9	CUH D-2	31
10	UH CE-1	32
11	CO/NO2 MON G-344	33
12	CO/NO2 MON G-345	34
EOL		

BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1	eW2500	345711	eW2500 enteliWEB 2500 IO Point Software (Up to 2500 I/O)	2	Delta Controls	Office
CS2	eW2500-EV	345800	eW2500-EV enteliVIZ Add-on Software (Add for eW2500 version)	2	Delta Controls	Office
CS3	eW2500-VLT	346024	eW2500-VLT enteliVAULT Add-on Software (Add for eW2500 version	2	Delta Controls	Office
EOL1-3	TRM768	151924	TRM768 Network Terminator (MS/TP)	3	Delta Controls	Field

NOTES:
1. ALL SYSTEM CONTROL PANELS WILL HAVE A DEDICATED ETHERNET NETWORK DROP FROM THE SCHOOL'S NETWORK. INSTALL CAT 6a OR BETTER CABLE FROM PANEL TO DESIGNATED DROP.
2. REFER TO ELECTRICAL AND TECHNOLOGY DESIGN DRAWINGS FOR LOCATIONS OF ALL EXISTING OR NEW SYSTEM CONTROL ENCLOSURES. UPDATE RISERS WITH CONFIRMED INSTALLATION LOCATIONS FOR INCLUSION IN AS–BUILT PRINTS.
3. VAV POWER PANEL SHALL BE LOCATED IN ELECTRICAL ROOM C–132. SEE VAV POWER PANELS SHEET FOR FURTHER DETAILS.



ETHERNET & RS–485 NETWORK RISER (PHASE 4)

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

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DATE	REMARKS

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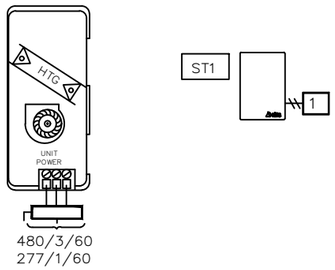
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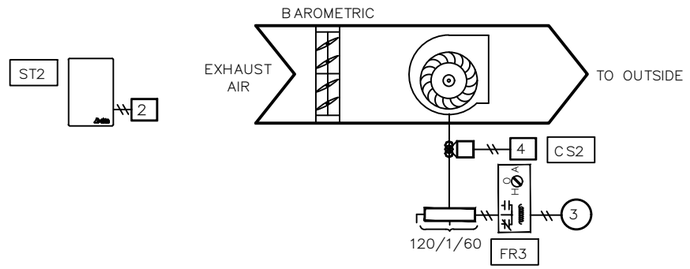
SHEET
RISER–21
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

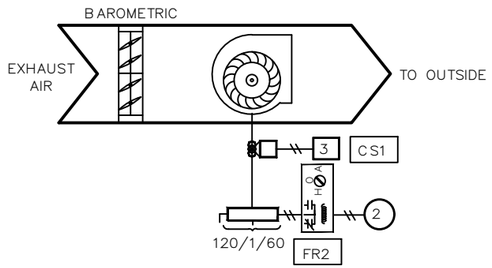
CABINET UNIT HEATER
ECUH A–1



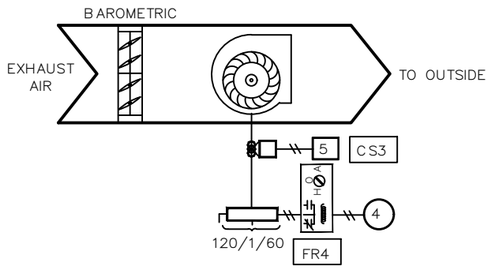
POWER VENTILATOR – TEMP CONTROLLED – FIELD DEVICES
EF A–12



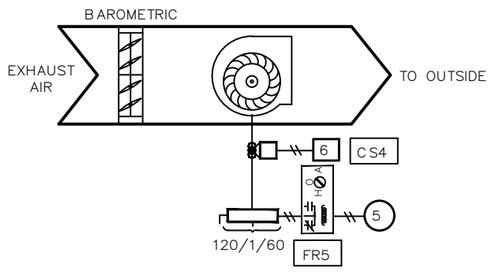
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–9



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–13



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF CA–1



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-4	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	4	Functional Devices	Field
FR2-5	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	4	Functional Devices	Field
ST1-2	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	2	BAPI	Field

NETWORK POINTS
N1 THROUGH N2

ECUH A–1 FIELD DEVICES

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CONTRACT NO:

SHEET
JEL–01
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15601.AI01	ST1	ECUH-A1 SPACE TEMP	2004
2	2	15601.AI02	ST2	EF A-12 SPACE TEMP	2004
3	3	15601.DI03	CS1	EF A-9 STATUS	1400
4	4	15601.DI04	CS2	EF A-12 STATUS	1400
5	5	15601.DI05	CS3	EF A-13 STATUS	1400
6	6	15601.DI06	CS4	EF CA-1 STATUS	1400
7	7	15601.DI07			
8	8	15601.DI08			
9	9	15601.DI09			
10	10	15601.DI10			
11	11	15601.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15601.DO01			
2	2	15601.DO02	FR2	EF A-9 START /STOP	3107
3	3	15601.DO03	FR3	EF A-12 START /STOP	3107
4	4	15601.DO04	FR4	EF A-13 START /STOP	3107
5	5	15601.DO05	FR5	EF CA-1 START /STOP	3107
6	6	15601.DO06			
7	7	15601.AO07			
8	8	15601.AO08			
9	9	15601.AO09			
10	10	15601.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15601.N1	OAT
N2	15601.N2	OAH
N3	15601.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

POWERED VENTILATOR - TEMPERATURE CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN SHALL BE STARTED ACCORDING TO WALL MOUNTED BAS THERMOSTAT (ZN-T) TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (ADJ). IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

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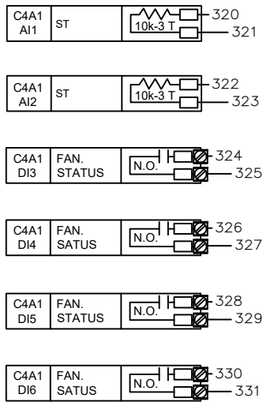
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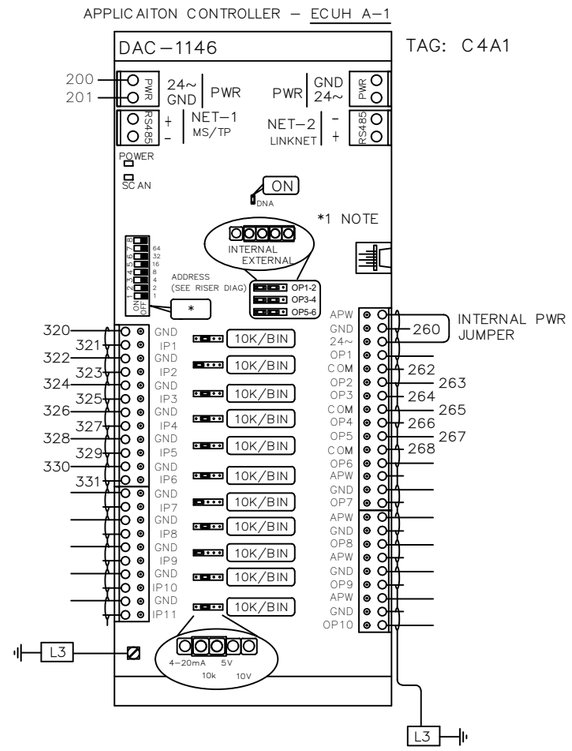
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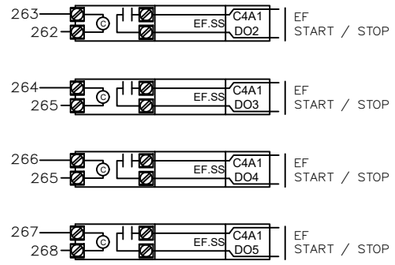
SHEET
JEL–02
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH A–1 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH A–1 PANEL – I/O WIRING

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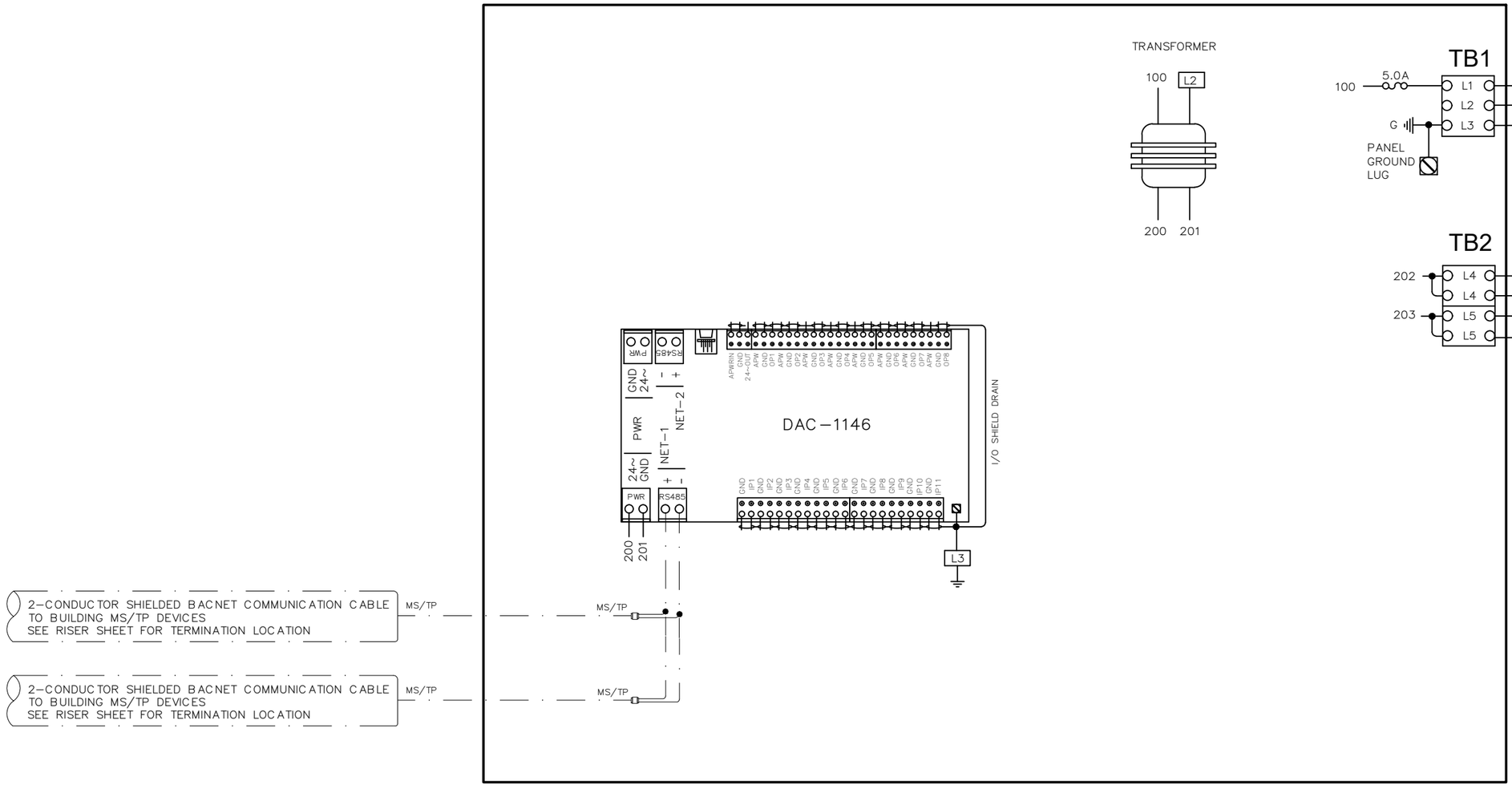
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DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–03
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH A–1 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

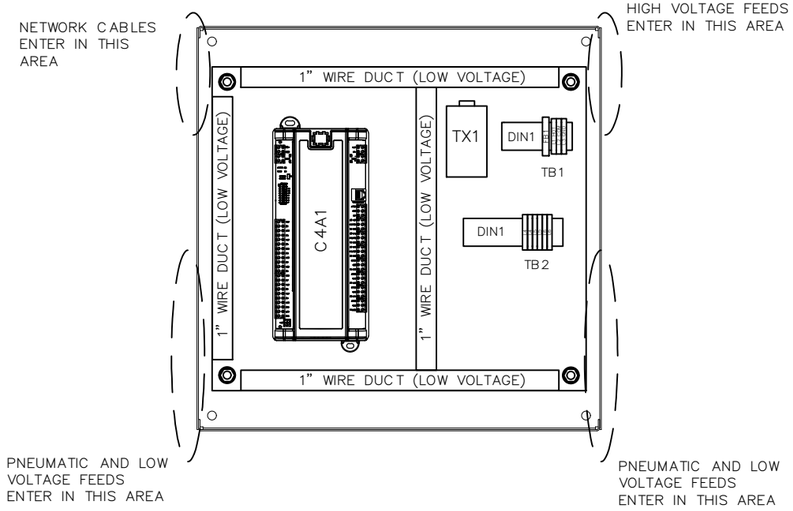
CONTRACT NO:

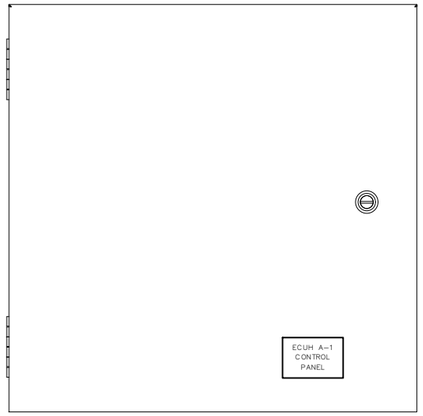
SHEET
JEL–04
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

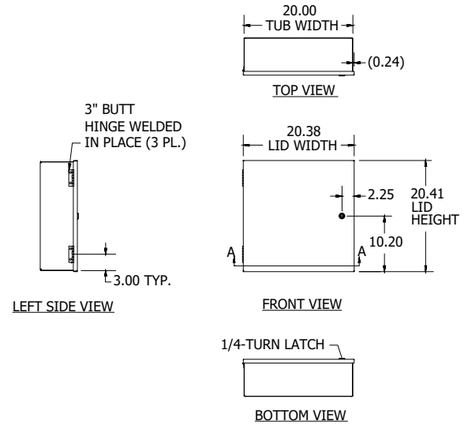
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

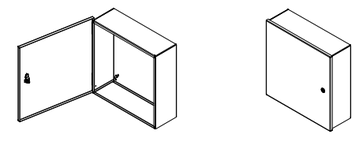
NO CONDUITS THROUGH THE TOP OF THE PANEL!



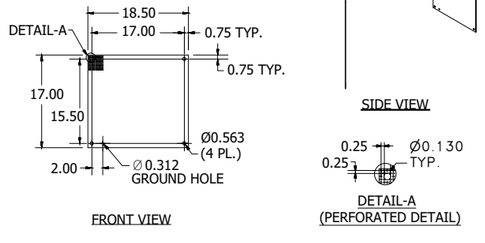


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
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UPDATES	
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2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

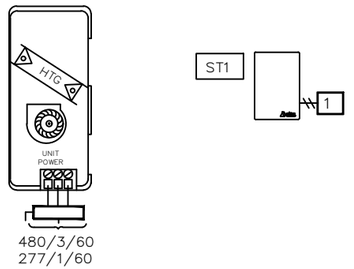
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

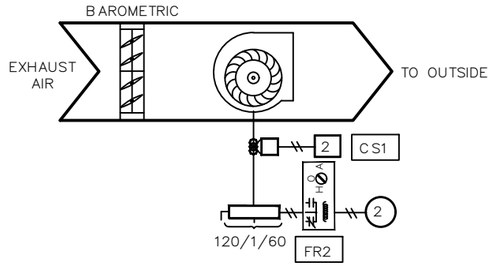
SHEET
JEL–05
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

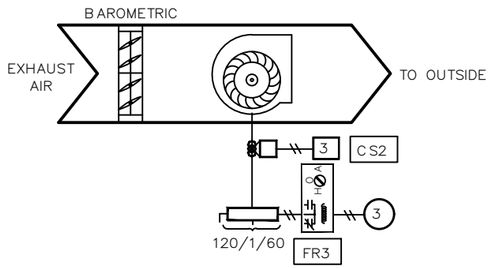
CABINET UNIT HEATER
ECUH B–1



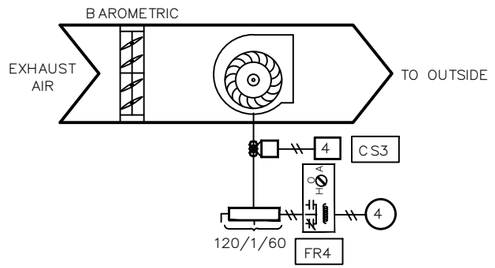
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–2



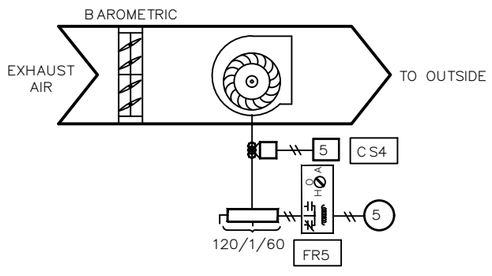
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–4



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–7



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–8



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-4	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	4	Functional Devices	Field
FR2-5	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	4	Functional Devices	Field
ST1	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field

NETWORK POINTS
N1 THROUGH N2

ECUH B–1 FIELD DEVICES

Delta Controls
Temperature Control Services
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–06
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15602.AI01	ST1	ECHU-B1 SPACE TEMP	2004
2	2	15602.DI02	CS1	EF A-2 STATUS	1400
3	3	15602.DI03	CS2	EF A-4 STATUS	1400
4	4	15602.DI04	CS3	EF A-7 STATUS	1400
5	5	15602.DI05	CS4	EF A-8 STATUS	1400
6	6	15602.DI06			
7	7	15602.DI07			
8	8	15602.DI08			
9	9	15602.DI09			
10	10	15602.DI10			
11	11	15602.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15602.DO01			
2	2	15602.DO02	FR2	EF A-2 START /STOP	3107
3	3	15602.DO03	FR3	EF A-4 START /STOP	3107
4	4	15602.DO04	FR4	EF A-7 START /STOP	3107
5	5	15602.DO05	FR5	EF A-8 START /STOP	3107
6	6	15602.DO06			
7	7	15602.AO07			
8	8	15602.AO08			
9	9	15602.AO09			
10	10	15602.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15602.N1	OAT
N2	15602.N2	OAH
N3	15602.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
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UPDATES

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2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

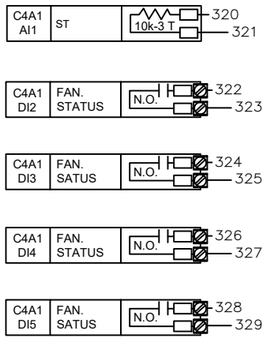
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

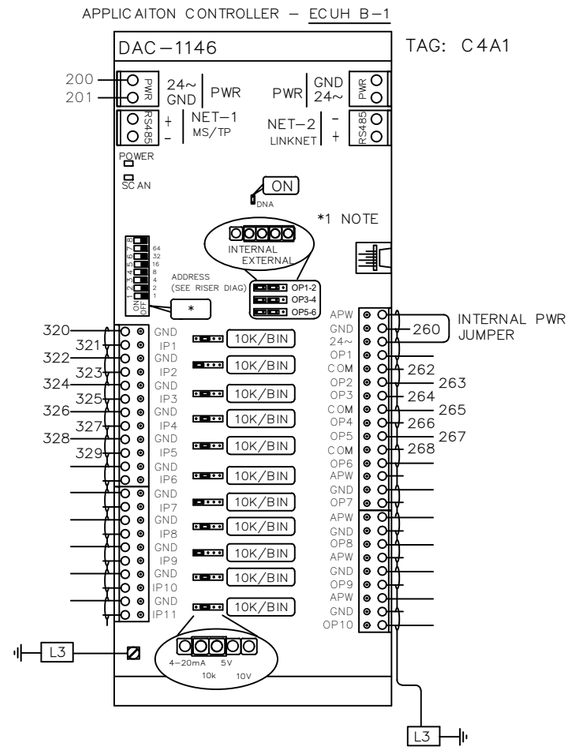
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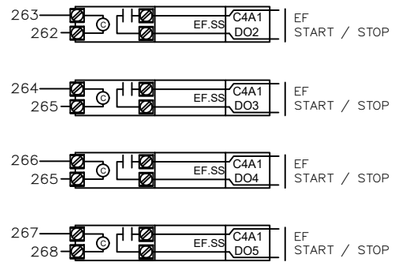
SHEET
JEL–07
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH B-1 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH B-1 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
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E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
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REVISIONS	
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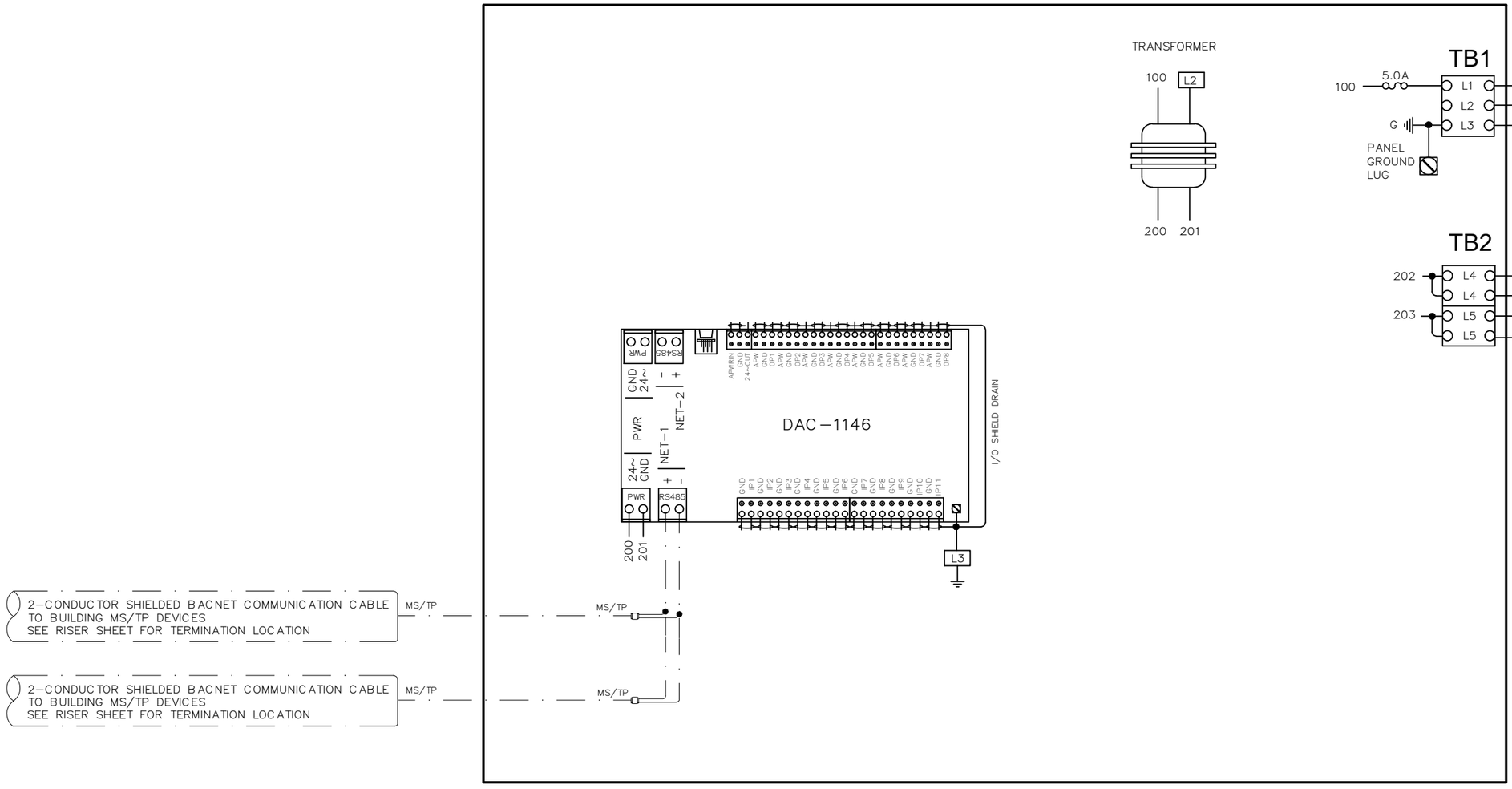
JOB TITLE: J. Everett Light Career Center
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ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-08
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH B–1 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
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UPDATES	
DATE	REMARKS
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LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

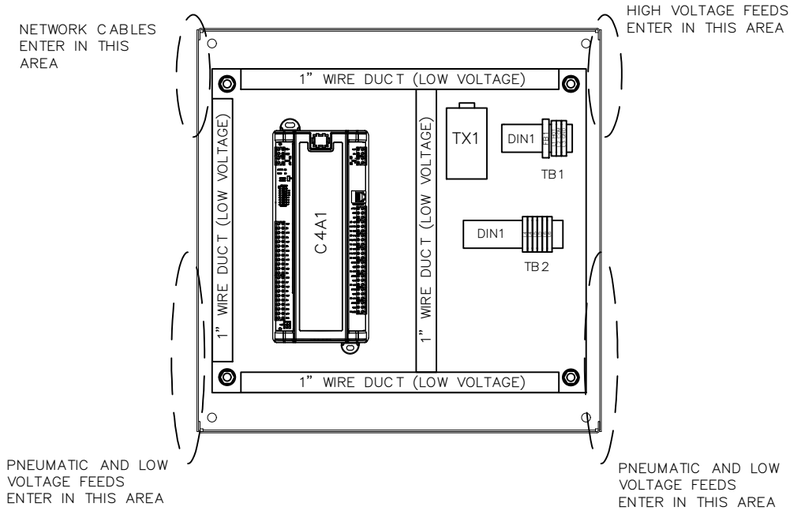
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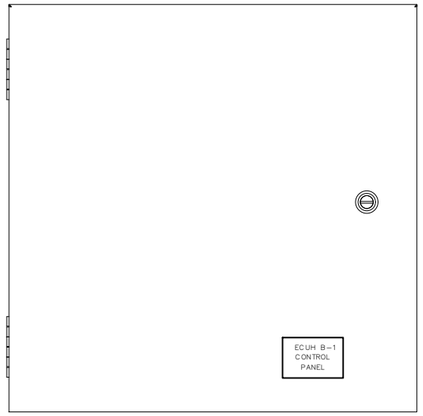
SHEET
JEL–09
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

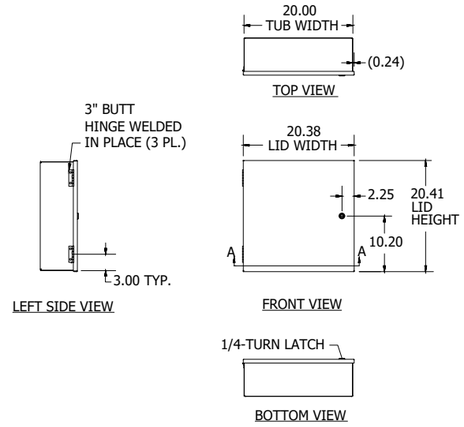
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

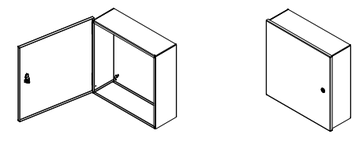
NO CONDUITS THROUGH THE TOP OF THE PANEL!



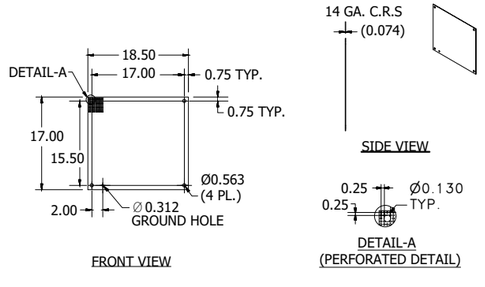


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
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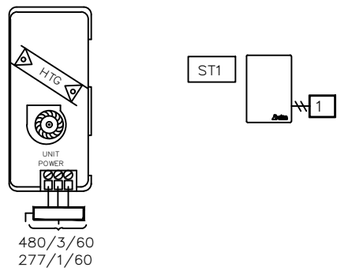
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
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DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

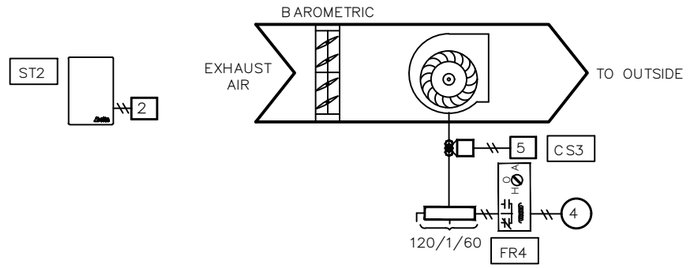
SHEET
JEL–10
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

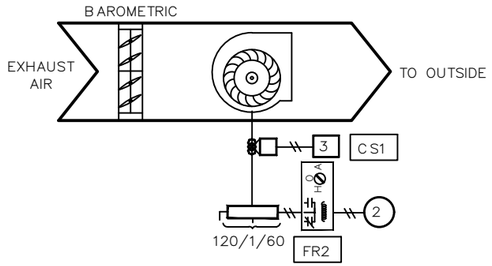
CABINET UNIT HEATER
ECUH B–2



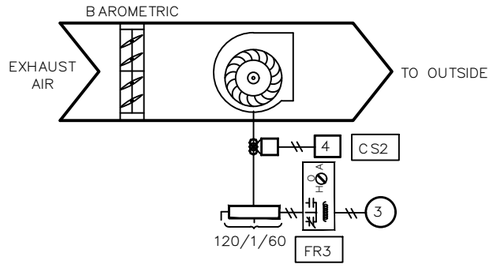
POWER VENTILATOR – TEMP CONTROLLED – FIELD DEVICES
EF B–4



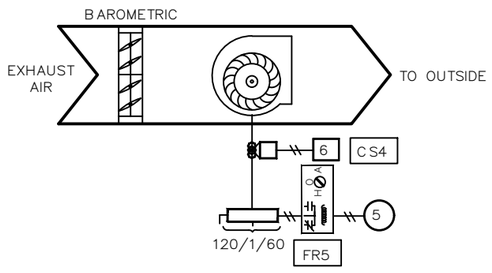
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF B–2



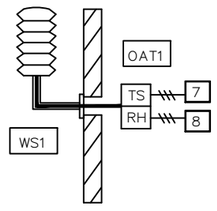
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF B–3



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF B–11



OA TEMP & HUMIDITY



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-4	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	4	Functional Devices	Field
FR2-5	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	4	Functional Devices	Field
OAT1	BA/10K-3-H210-O-BB2	402205	BA/10K-3-H210-O-BB2 Outside Air Temp/Humidity Sensor	1	BAPI	Field
ST1-2	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	2	BAPI	Field
WS1	BA/WSK	400224	BA/WSK Weather Shade	1	BAPI	Field

NETWORK POINTS
THROUGH

ECUH B–2 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–11
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

☐ INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15603.AI01	ST1	ECUH-B2 SPACE TEMP	2004
2	2	15603.AI02	ST2	EF B-4 SPACE TEMP	2004
3	3	15603.DI03	CS1	EF B-2 STATUS	1400
4	4	15603.DI04	CS2	EF B-3 STATUS	1400
5	5	15603.DI05	CS3	EF B-4 STATUS	1400
6	6	15603.DI06	CS4	EF B-11 STATUS	1400
7	7	15603.AI07	OAT1	OAT	2100
8	8	15603.AI08	OAT1	OAH	2100
9	9	15603.DI09			
10	10	15603.DI10			
11	11	15603.DI11			

◯ OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15603.DO01			
2	2	15603.DO02	FR2	EF B-2 START /STOP	3107
3	3	15603.DO03	FR3	EF B-3 START /STOP	3107
4	4	15603.DO04	FR4	EF B-4 START /STOP	3107
5	5	15603.DO05	FR5	EF B-11 START /STOP	3107
6	6	15603.DO06			
7	7	15603.AO07			
8	8	15603.AO08			
9	9	15603.AO09			
10	10	15603.AO10			

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

POWERED VENTILATOR - TEMPERATURE CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN SHALL BE STARTED ACCORDING TO WALL MOUNTED BAS THERMOSTAT (ZN-T) TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (ADJ). IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

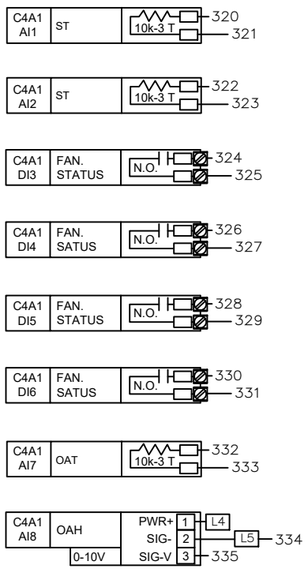
DATE	REMARKS

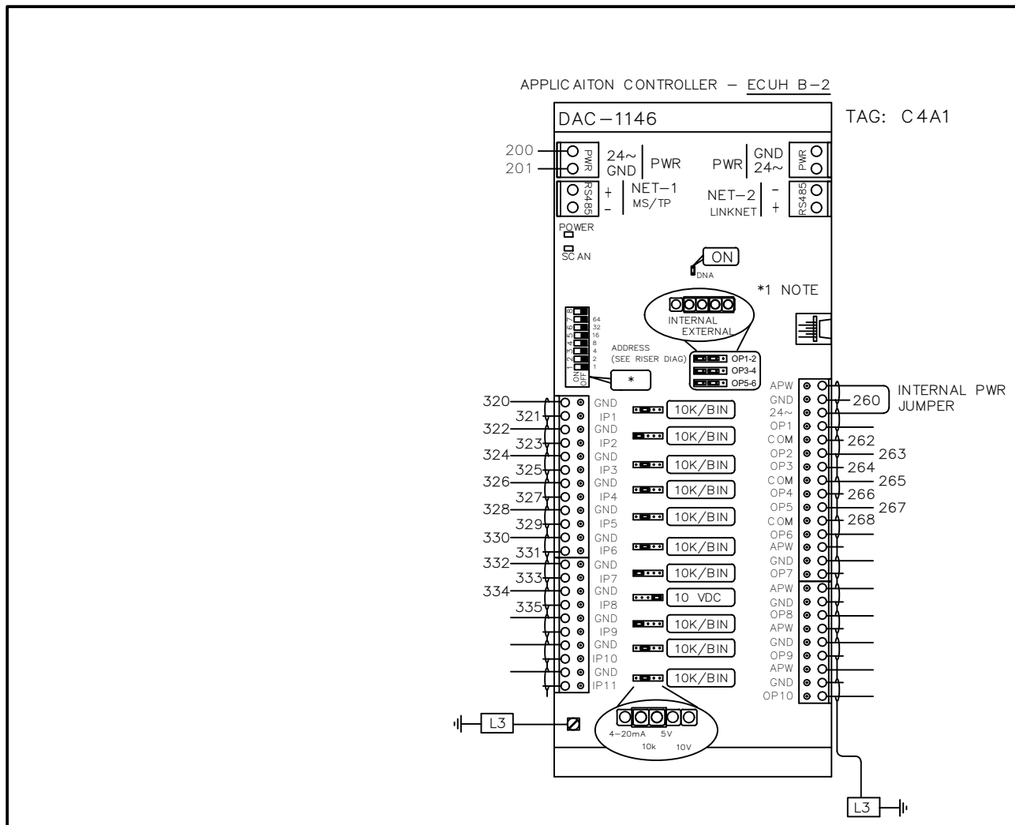
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:____ DRAWN BY: BSS

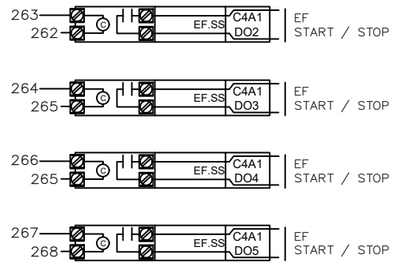
CONTRACT NO:

SHEET
JEL–12
JOB NUMBER:
J–2312002

Spec. Section: 230900.99







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH B-2 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

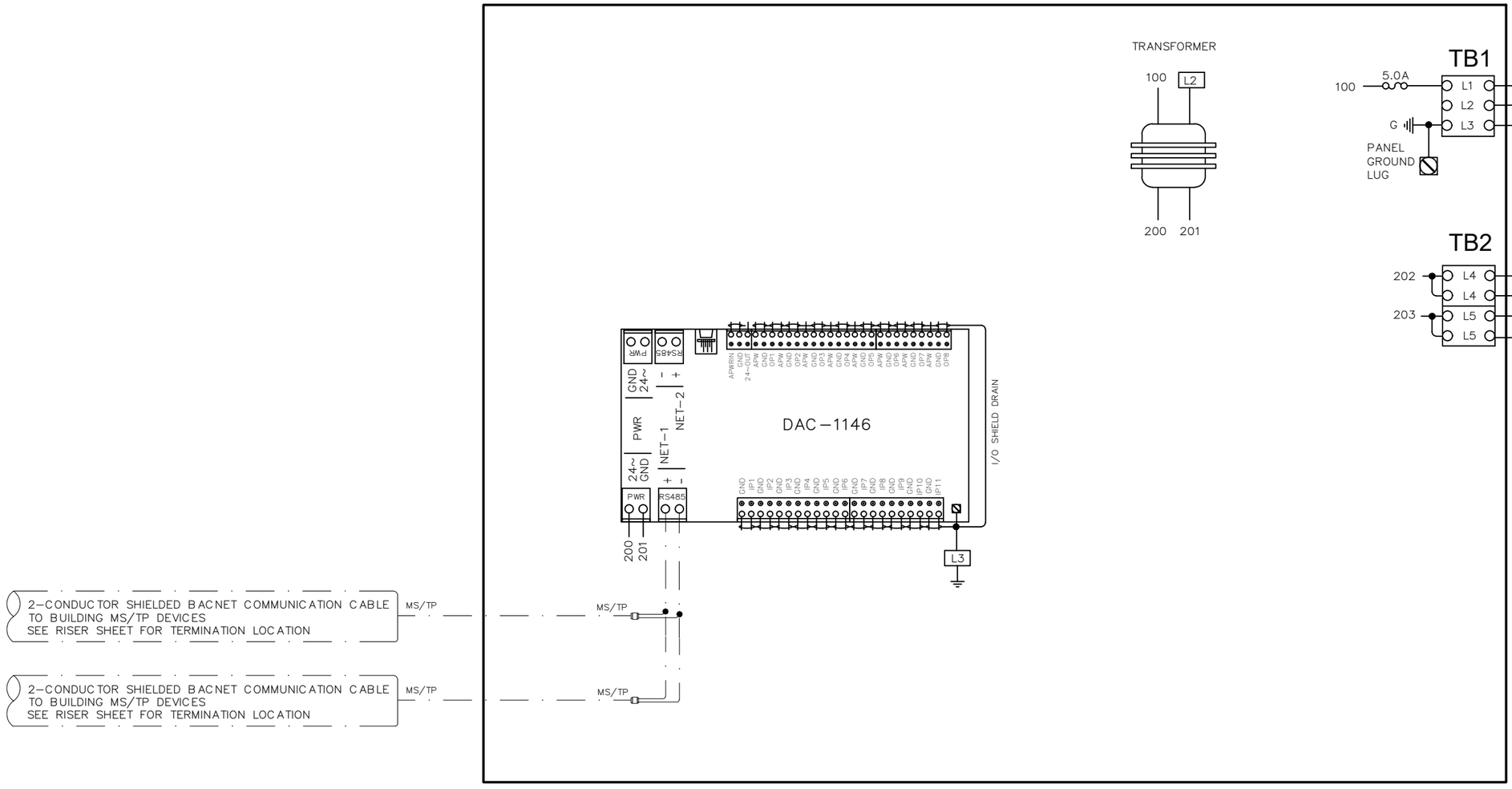
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-13
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH B–2 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

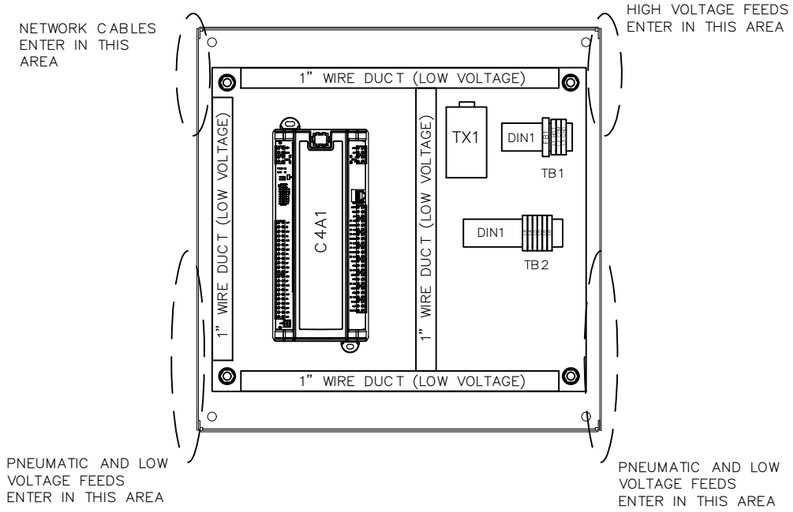
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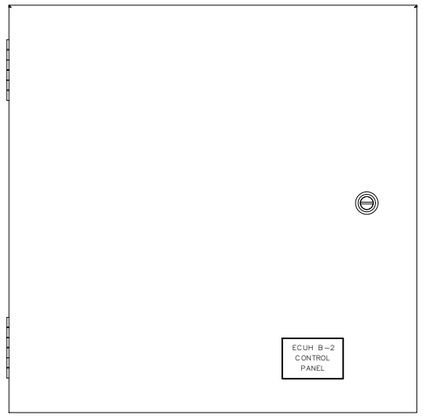
SHEET
JEL–14
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

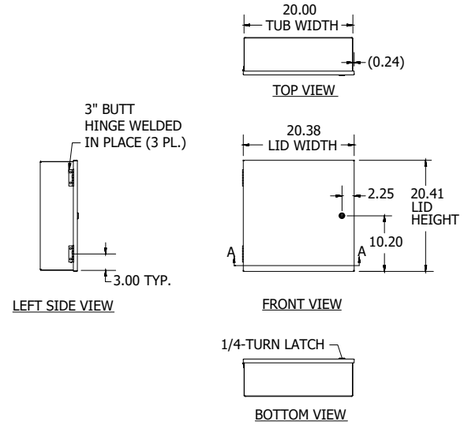
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

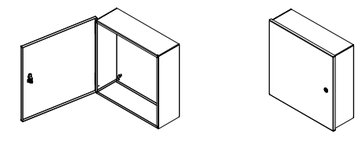
NO CONDUITS THROUGH THE TOP OF THE PANEL!



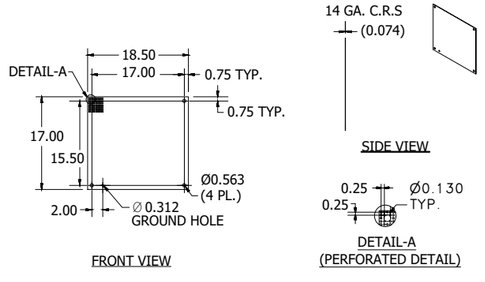


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
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DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

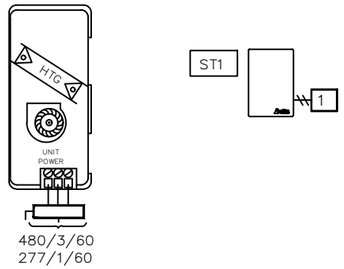
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

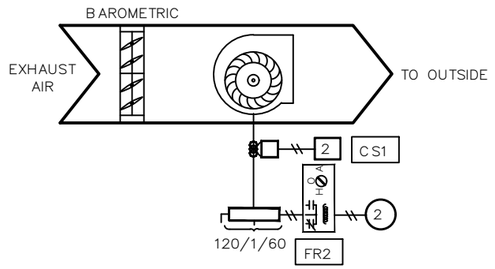
SHEET
JEL–15
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

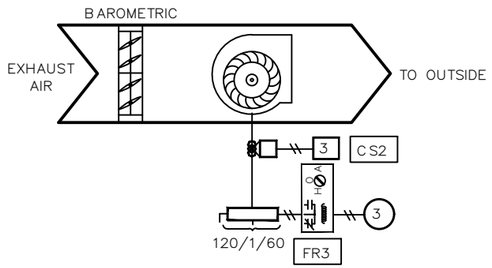
CABINET UNIT HEATER
ECUH B–3



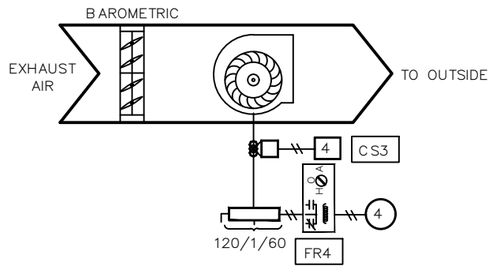
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–10



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF B–8



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF CC–4



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-3	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	3	Functional Devices	Field
FR2-4	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	3	Functional Devices	Field
ST1	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field

NETWORK POINTS

N1 THROUGH N2

ECUH B–3 FIELD DEVICES

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–16
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15604.AI01	ST1	ECUH-B3 SPACE TEMP	2004
2	2	15604.DI02	CS1	EF A-10 STATUS	1400
3	3	15604.DI03	CS2	EF B-8 STATUS	1400
4	4	15604.DI04	CS3	EF CC-4 STATUS	1400
5	5	15604.DI05			
6	6	15604.DI06			
7	7	15604.DI07			
8	8	15604.DI08			
9	9	15604.DI09			
10	10	15604.DI10			
11	11	15604.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15604.DO01			
2	2	15604.DO02	FR2	EF A-10 START /STOP	3107
3	3	15604.DO03	FR3	EF B-8 START /STOP	3107
4	4	15604.DO04	FR4	EF CC-4 START /STOP	3107
5	5	15604.DO05			
6	6	15604.DO06			
7	7	15604.AO07			
8	8	15604.AO08			
9	9	15604.AO09			
10	10	15604.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15604.N1	OAT
N2	15604.N2	OAH
N3	15604.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

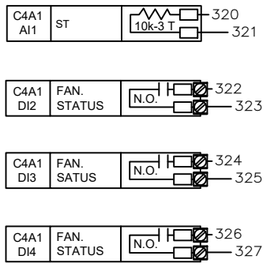
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

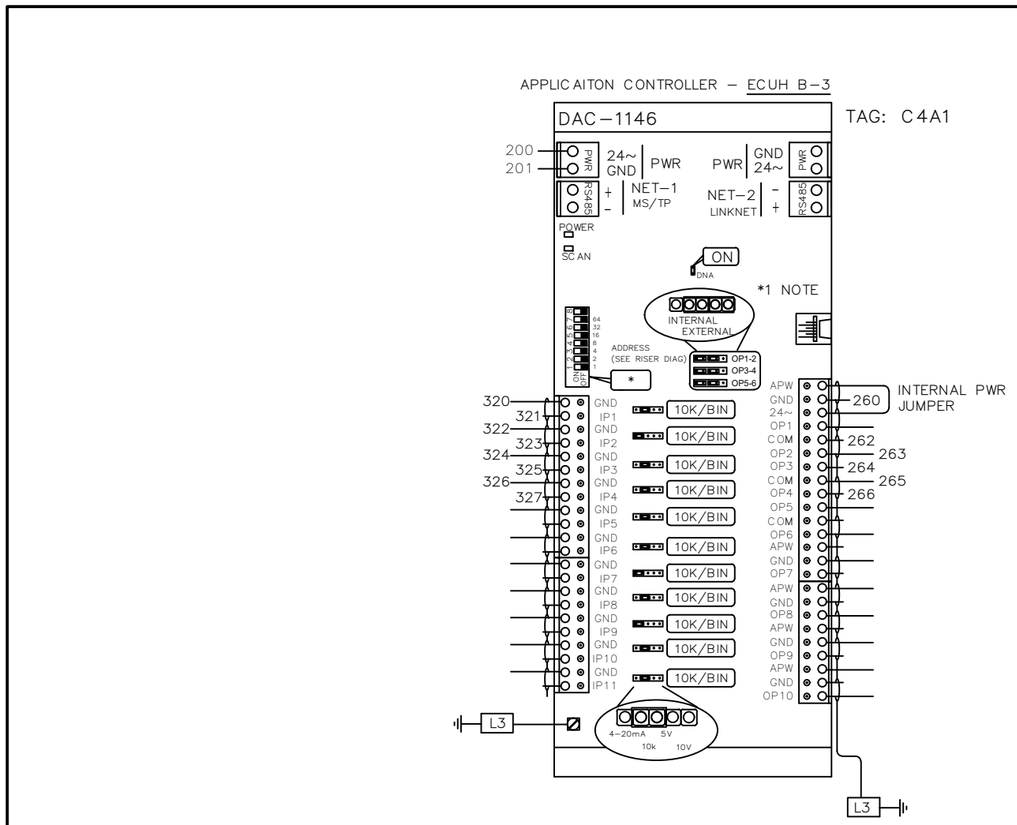
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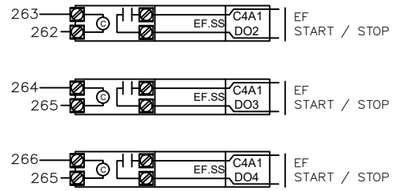
SHEET
JEL–17
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH B-3 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH B-3 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
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DATE	REMARKS

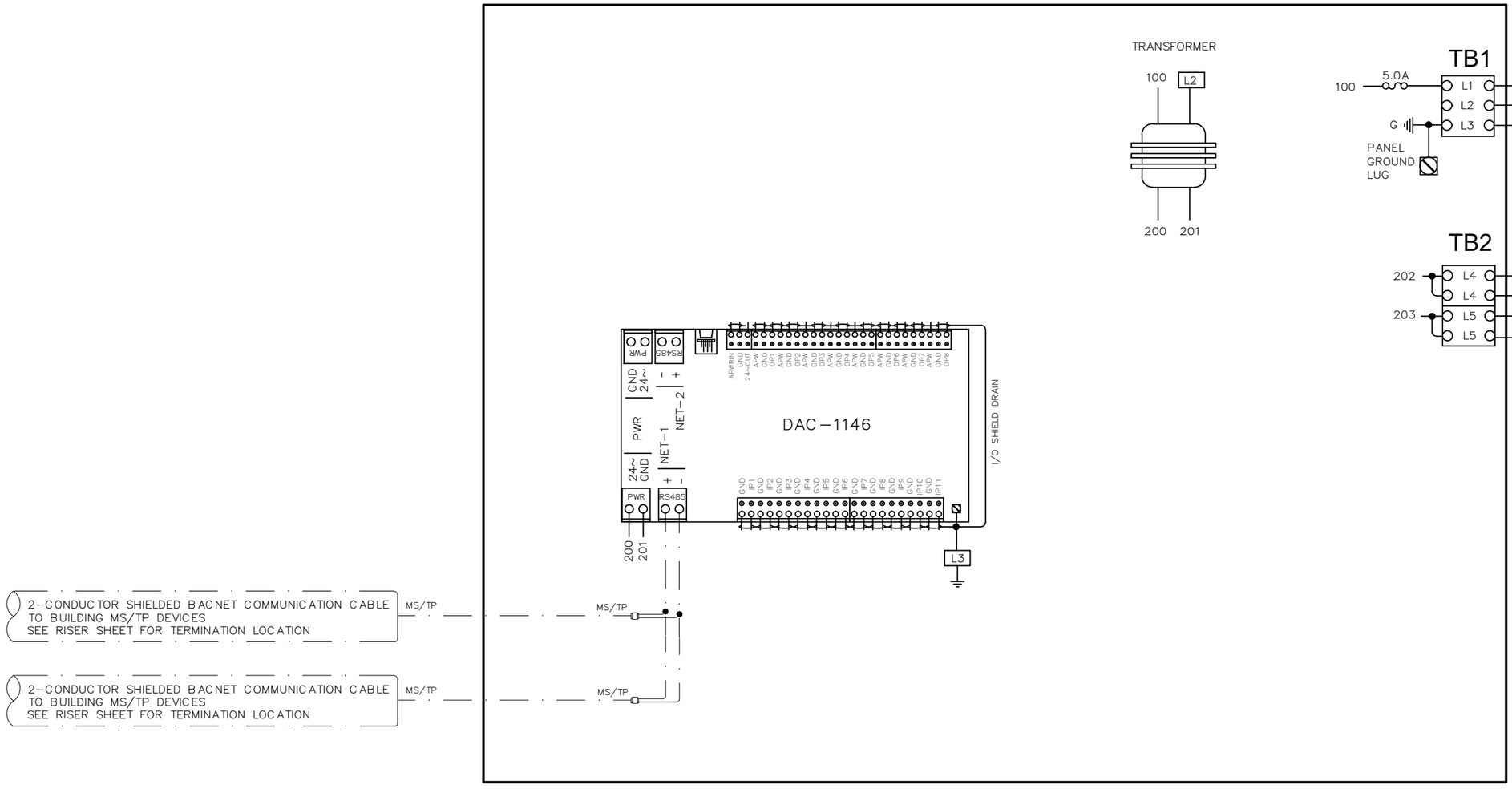
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-18
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH B–3 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

Temperature Control Services
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UPDATES	
DATE	REMARKS
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JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

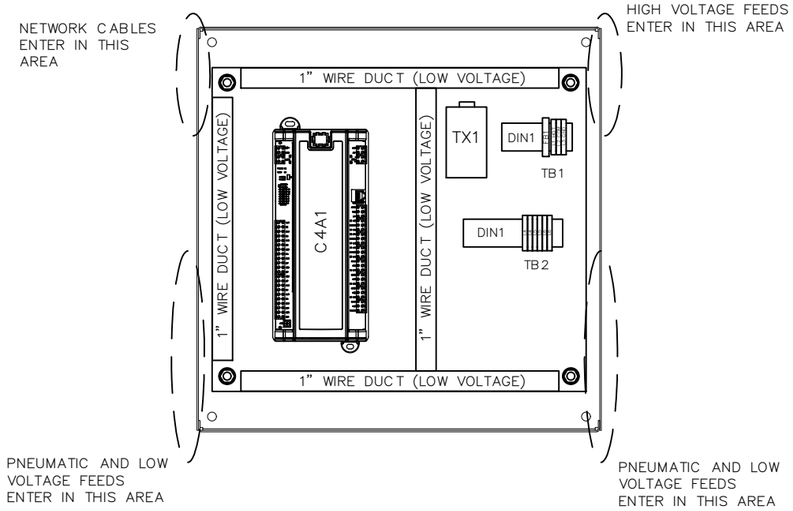
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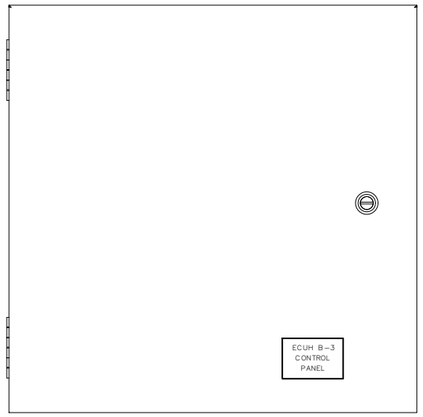
SHEET
JEL–19
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

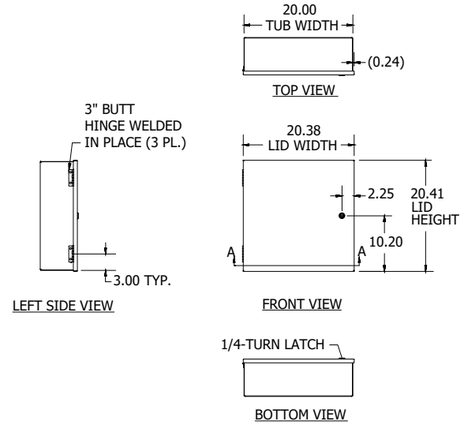
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

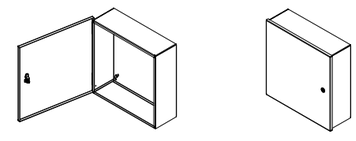
NO CONDUITS THROUGH THE TOP OF THE PANEL!



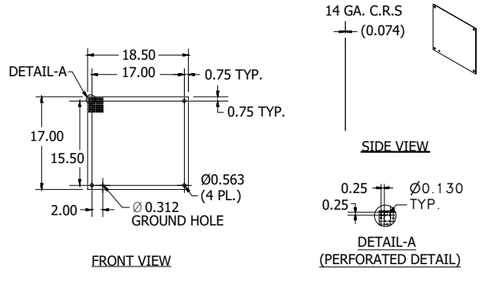


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

ECUH B-3 CONTROL PANEL – DIMENSIONS & BOM

Delta Controls
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108 N MAIN, PO BOX 95
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DATE	REMARKS
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REVISIONS	
DATE	REMARKS

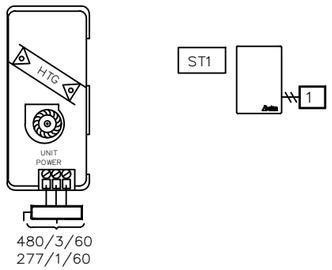
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

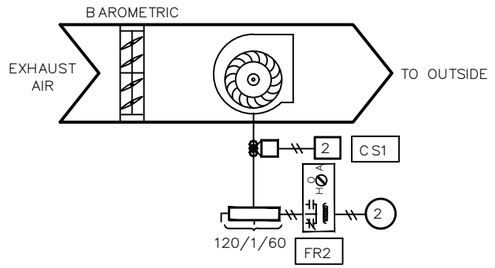
SHEET
JEL–20
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

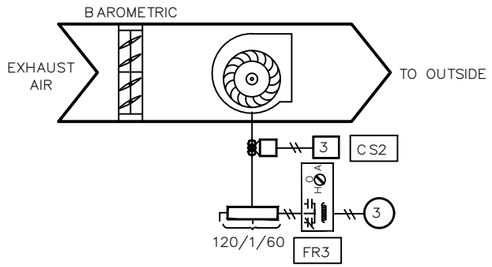
CABINET UNIT HEATER
ECUH C–1



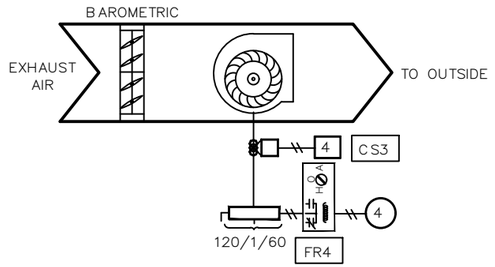
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF C–1



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–11



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–13



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-3	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	3	Functional Devices	Field
FR2-4	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	3	Functional Devices	Field
ST1	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field

NETWORK POINTS

N1 THROUGH N2

ECUH C–1 FIELD DEVICES

Delta Controls

Temperature Control Services

108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–21
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15605.AI01	ST1	ECUH-C1 SPACE TEMP	2004
2	2	15605.DI02	CS1	EF C-1 STATUS	1400
3	3	15605.DI03	CS2	EF D-11 STATUS	1400
4	4	15605.DI04	CS3	EF D-13 STATUS	1400
5	5	15605.DI05			
6	6	15605.DI06			
7	7	15605.DI07			
8	8	15605.DI08			
9	9	15605.DI09			
10	10	15605.DI10			
11	11	15605.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15605.DO01			
2	2	15605.DO02	FR2	EF C-1 START /STOP	3107
3	3	15605.DO03	FR3	EF D-11 START /STOP	3107
4	4	15605.DO04	FR4	EF D-13 START /STOP	3107
5	5	15605.DO05			
6	6	15605.DO06			
7	7	15605.AO07			
8	8	15605.AO08			
9	9	15605.AO09			
10	10	15605.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15605.N1	OAT
N2	15605.N2	OAH
N3	15605.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
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UPDATES

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2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

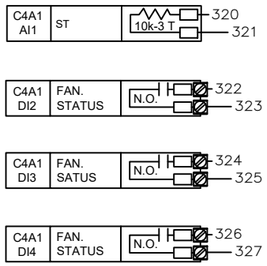
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

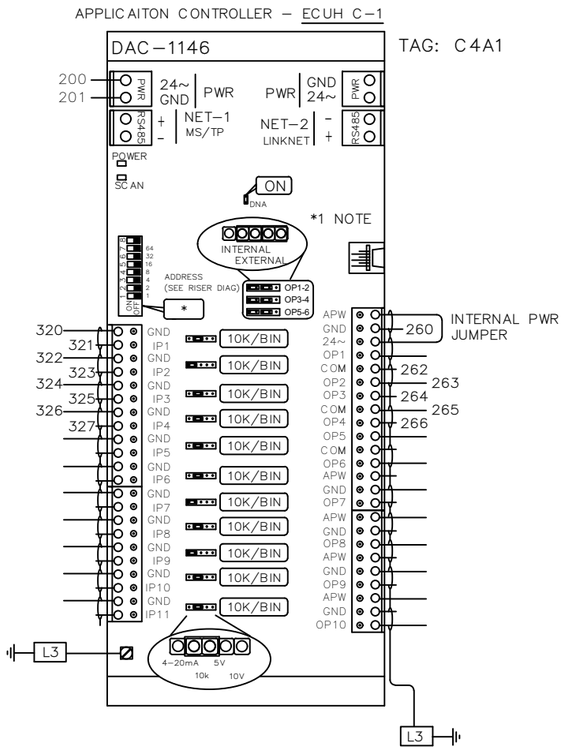
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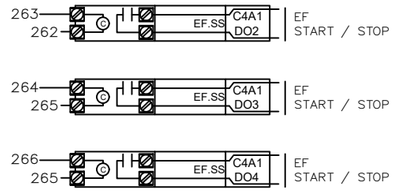
SHEET
JEL–22
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH C-1 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH C-1 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

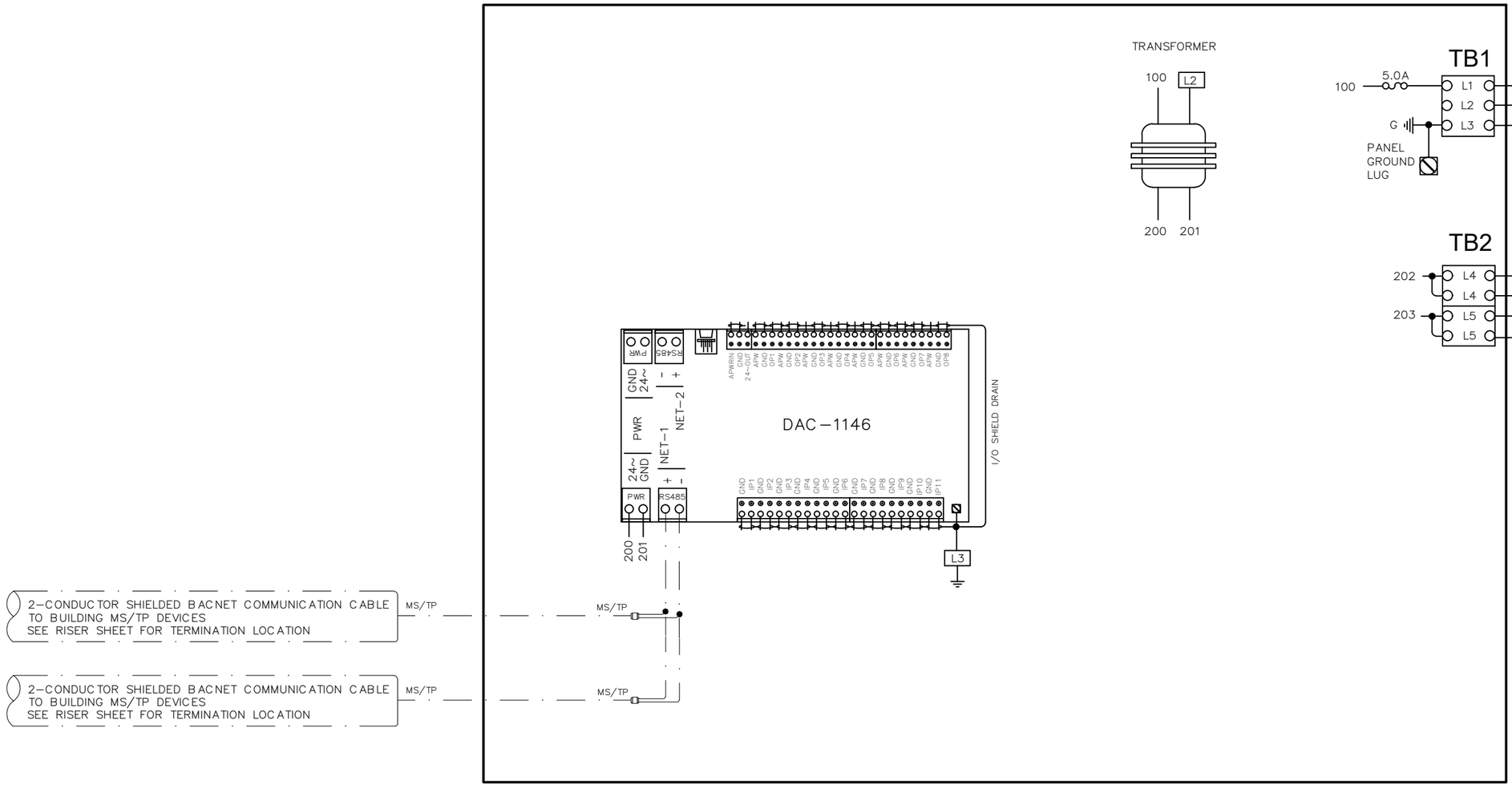
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-23
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH C–1 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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UPDATES	
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2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

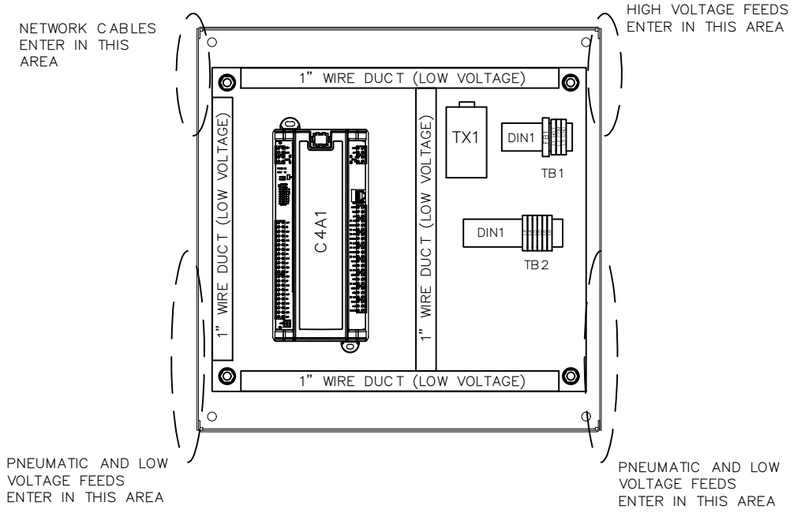
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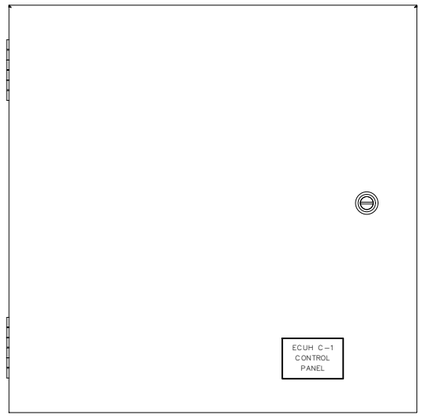
SHEET
JEL–24
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

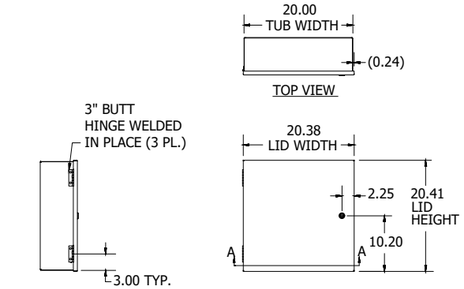
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

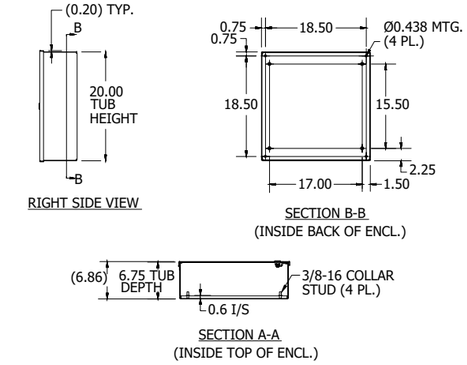
NO CONDUITS THROUGH THE TOP OF THE PANEL!

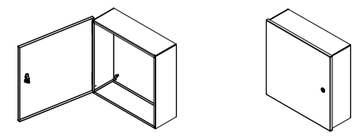




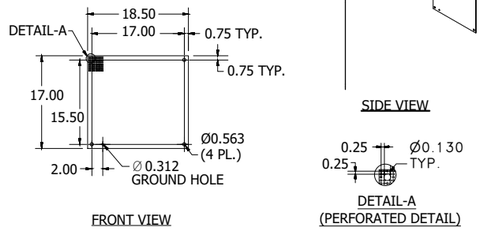
20" (W) x 20" (H) ENCLOSURE DIMENSIONS







PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 B	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
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2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

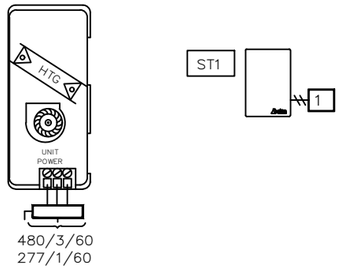
CONTRACT NO:

SHEET
JEL-25
JOB NUMBER:
J-2312002

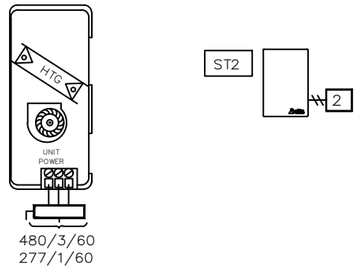
ECUH C-1 CONTROL PANEL – DIMENSIONS & BOM

Spec. Section: 230900.99

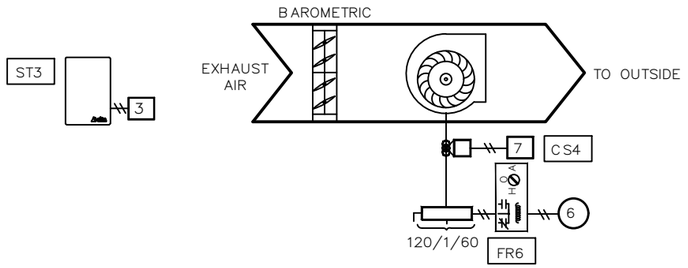
CABINET UNIT HEATER
ECUH C–2



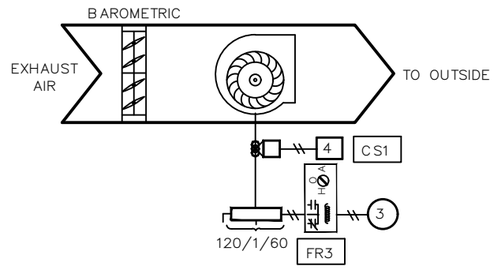
CABINET UNIT HEATER
ECUH C–3



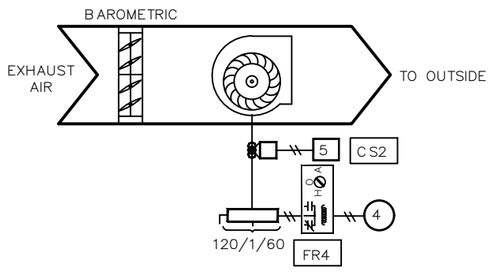
POWER VENTILATOR – TEMP CONTROLLED – FIELD DEVICES
EF CD–1



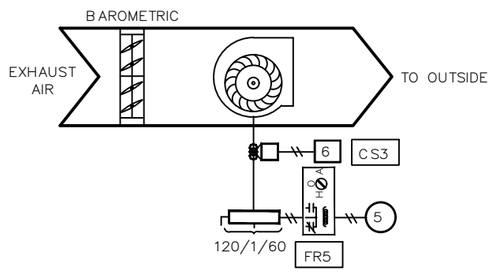
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF C–9



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–1



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–2



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-4	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	4	Functional Devices	Field
FR3-6	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	4	Functional Devices	Field
ST1-3	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	3	BAPI	Field

NETWORK POINTS
N1 THROUGH N2

ECUH C–2 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
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REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–26
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15606.AI01	ST1	ECUH-C2 SPACE TEMP	2004
2	2	15606.AI02	ST2	ECUH-C3 SPACE TEMP	2004
3	3	15606.AI03	ST3	EF CD-1 SPACE TEMP	2004
4	4	15606.DI04	CS1	EF C-9 STATUS	1400
5	5	15606.DI05	CS2	EF D-1 STATUS	1400
6	6	15606.DI06	CS3	EF D-2 STATUS	1400
7	7	15606.DI07	CS4	EF CD-1 STATUS	1400
8	8	15606.DI08			
9	9	15606.DI09			
10	10	15606.DI10			
11	11	15606.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15606.DO01			
2	2	15606.DO02			
3	3	15606.DO03	FR3	EF C-9 START /STOP	3107
4	4	15606.DO04	FR4	EF D-1 START /STOP	3107
5	5	15606.DO05	FR5	EF D-2 START /STOP	3107
6	6	15606.DO06	FR6	EF CD-1 START /STOP	3107
7	7	15606.AO07			
8	8	15606.AO08			
9	9	15606.AO09			
10	10	15606.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15606.N1	OAT
N2	15606.N2	OAH
N3	15606.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

POWERED VENTILATOR - TEMPERATURE CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN SHALL BE STARTED ACCORDING TO WALL MOUNTED BAS THERMOSTAT (ZN-T) TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (ADJ). IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

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UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

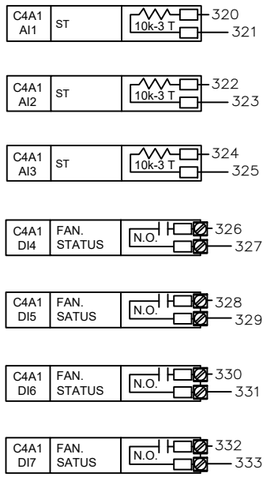
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

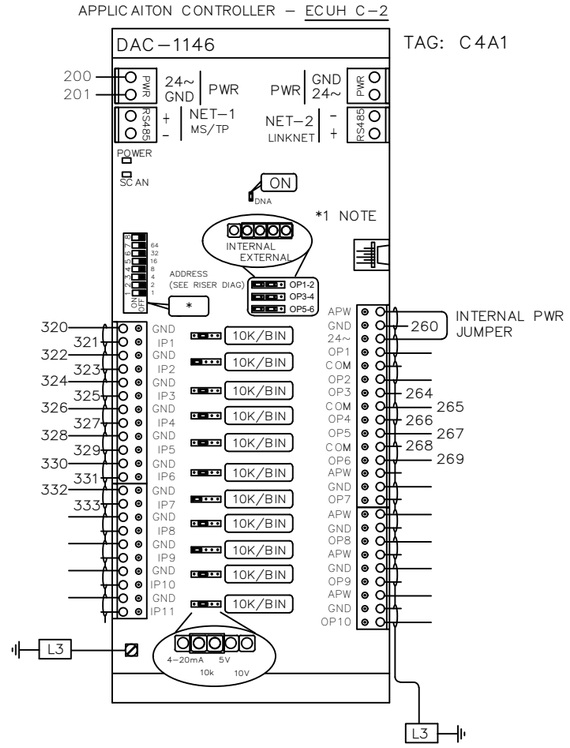
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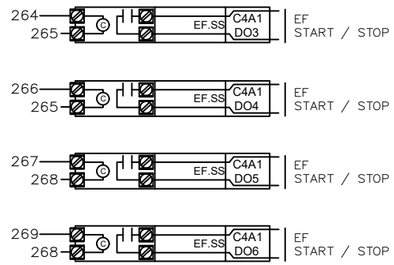
SHEET
JEL–27
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH C-2 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH C-2 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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UPDATES	
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DATE	REMARKS

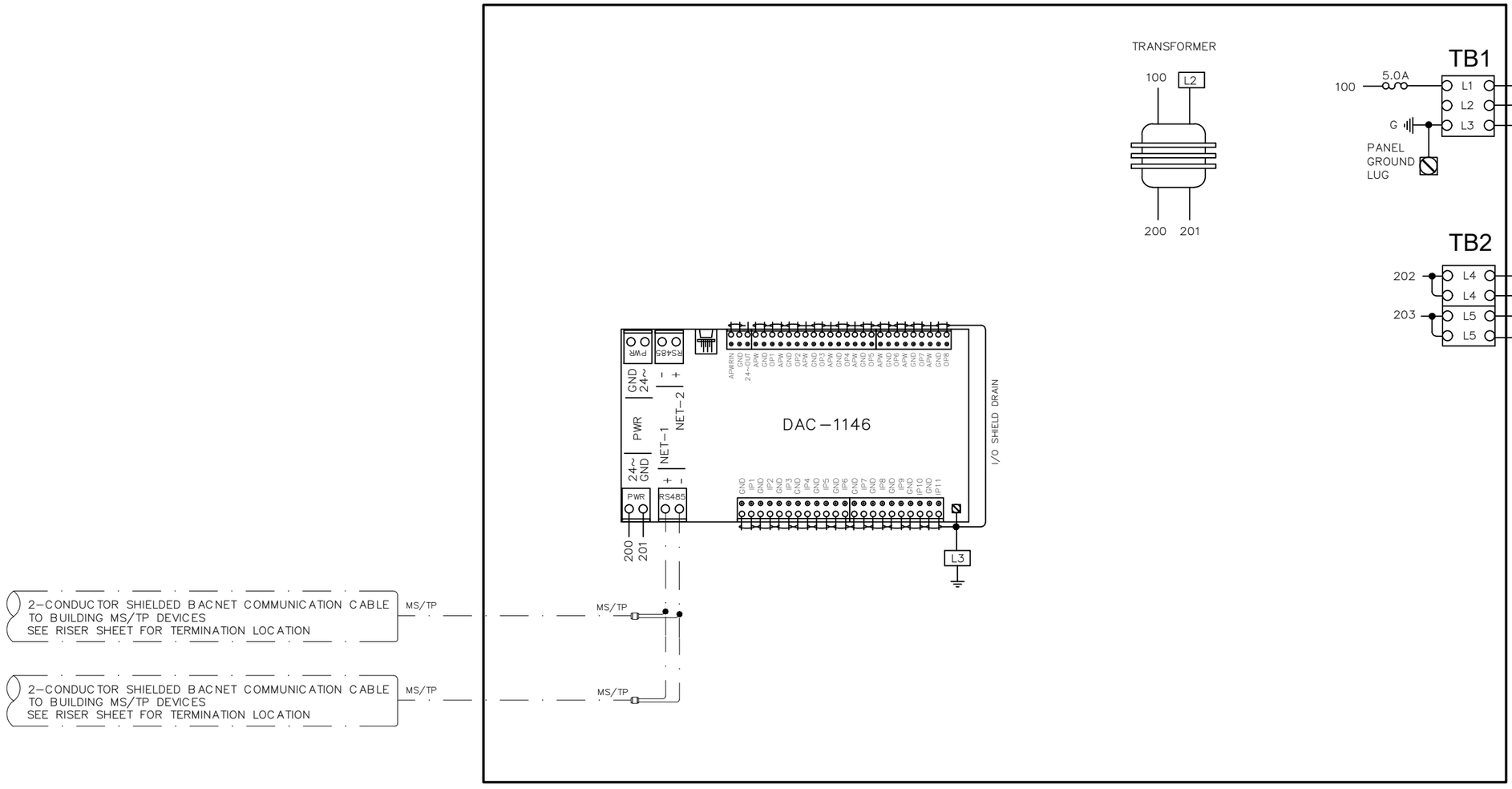
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-28
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH C–2 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
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REVISIONS	
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JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

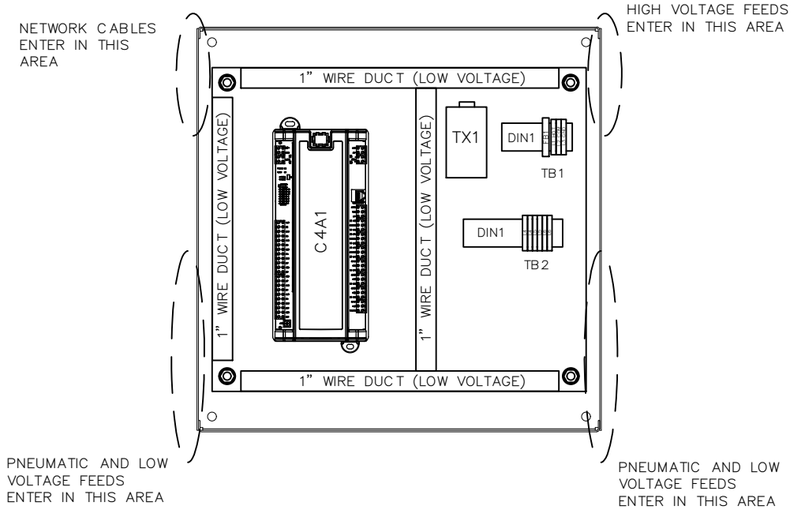
CONTRACT NO:

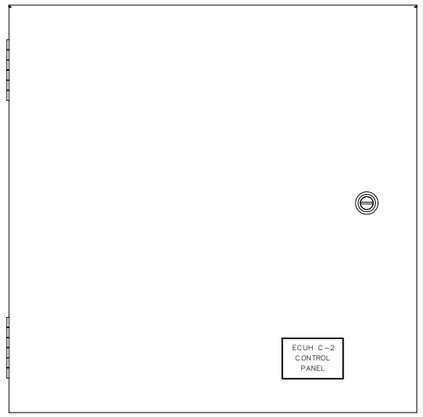
SHEET
JEL–29
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

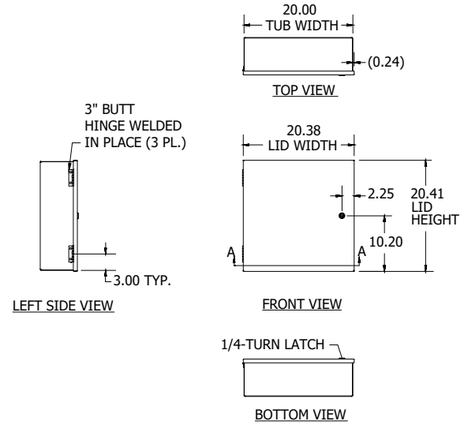
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

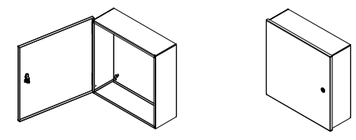
NO CONDUITS THROUGH THE TOP OF THE PANEL!



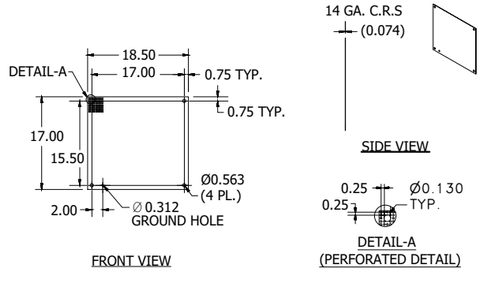


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

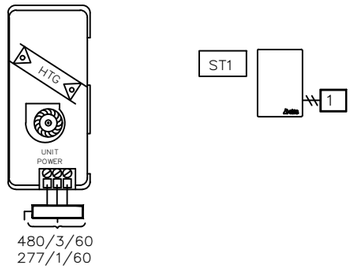
CONTRACT NO:

SHEET
JEL-30
JOB NUMBER:
J-2312002

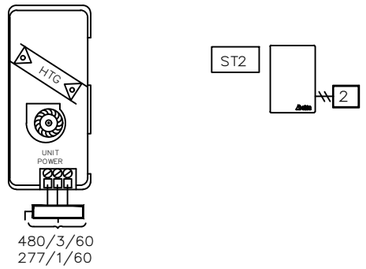
ECUH C-2 CONTROL PANEL – DIMENSIONS & BOM

Spec. Section: 230900.99

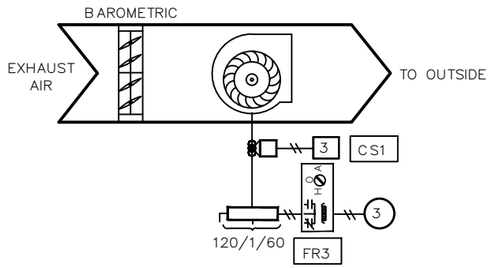
CABINET UNIT HEATER
ECUH C–4



CABINET UNIT HEATER
ECUH C–5

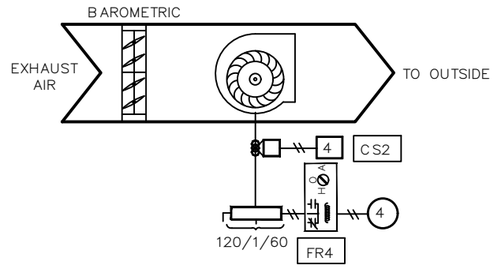


POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–3



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–14

(NOTE: NO DEFINED SCHEDULE FOR THIS FAN PER MEP SCHEDULES)



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-2	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	2	Functional Devices	Field
FR3-4	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	2	Functional Devices	Field
ST1-2	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	2	BAPI	Field

NETWORK POINTS

N1 THROUGH N2

ECUH C–4 FIELD DEVICES

Delta Controls

Temperature Control Services

108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–31
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15607.AI01	ST1	ECUH-C4 SPACE TEMP	2004
2	2	15607.AI02	ST2	ECUH-C5 SPACE TEMP	2004
3	3	15607.DI03	CS1	EF D-3 STATUS	1400
4	4	15607.DI04	CS2	EF D-14 STATUS	1400
5	5	15607.DI05			
6	6	15607.DI06			
7	7	15607.DI07			
8	8	15607.DI08			
9	9	15607.DI09			
10	10	15607.DI10			
11	11	15607.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15607.DO01			
2	2	15607.DO02			
3	3	15607.DO03	FR3	EF D-3 START /STOP	3107
4	4	15607.DO04	FR4	EF D-14 START /STOP	3107
5	5	15607.DO05			
6	6	15607.DO06			
7	7	15607.AO07			
8	8	15607.AO08			
9	9	15607.AO09			
10	10	15607.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15607.N1	OAT
N2	15607.N2	OAH
N3	15607.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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UPDATES

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2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

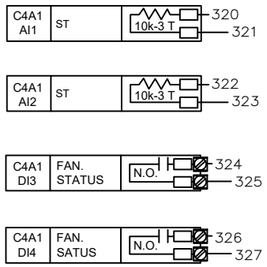
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

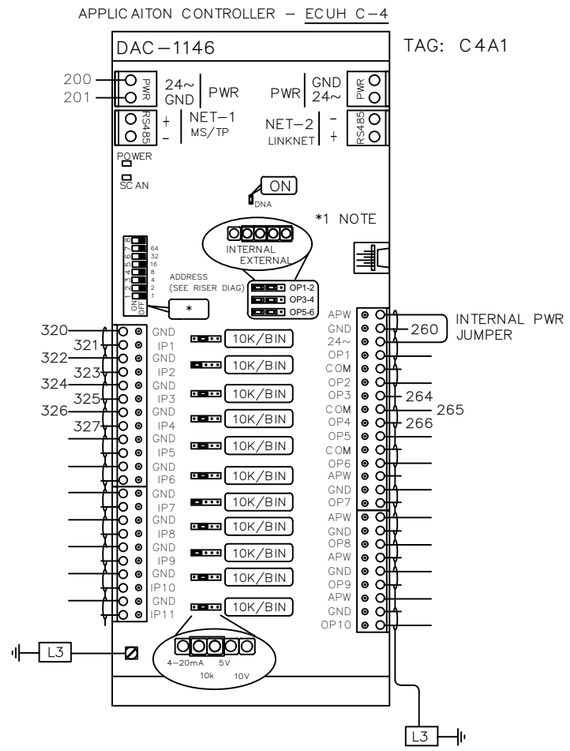
CONTRACT NO:

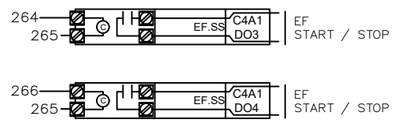
SHEET
JEL–32
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH C-4 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH C-4 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
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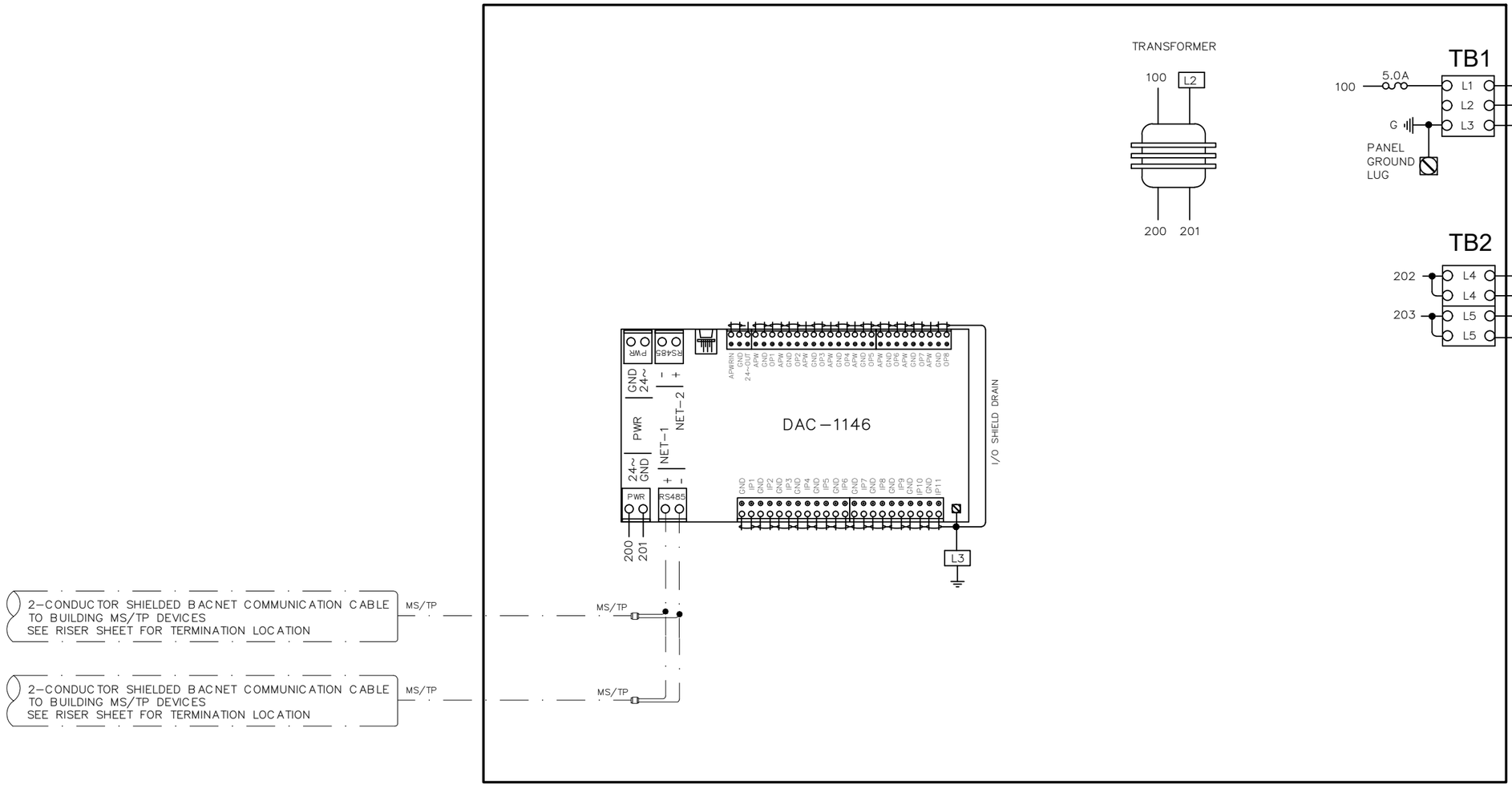
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-33
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH C–4 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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UPDATES	
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2/1/2024	ADDENDUM #1

REVISIONS	
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JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
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CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

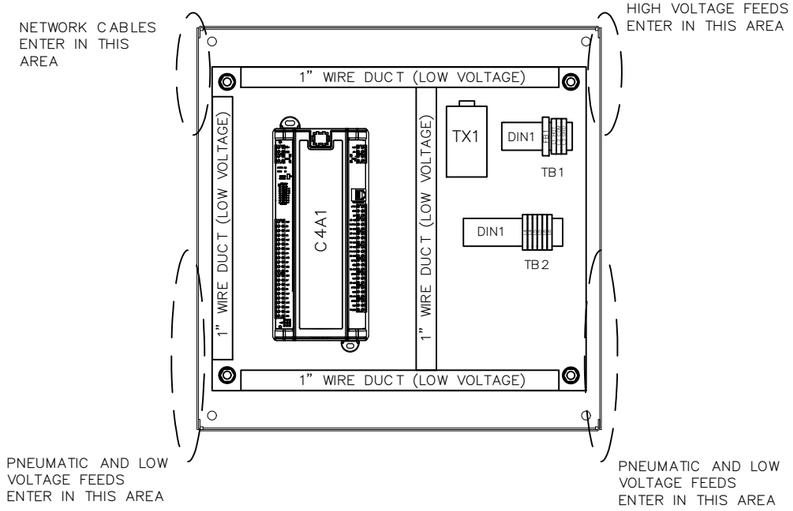
CONTRACT NO:

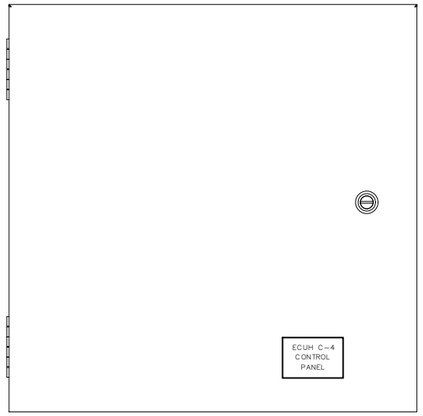
SHEET
JEL–34
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

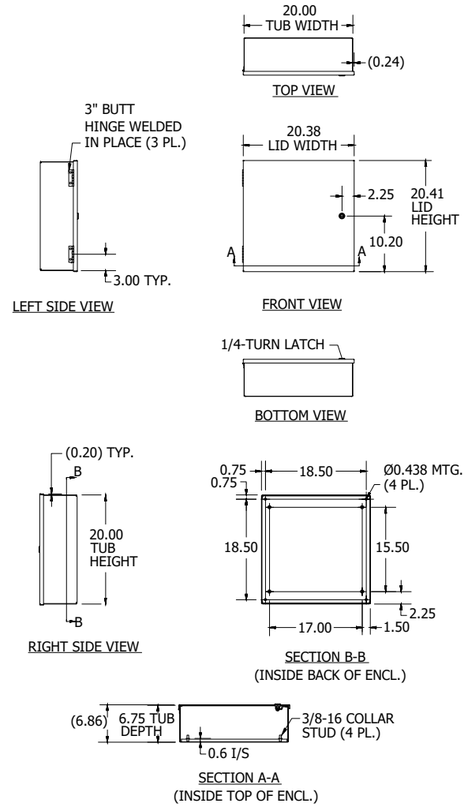
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

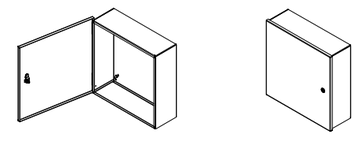
NO CONDUITS THROUGH THE TOP OF THE PANEL!



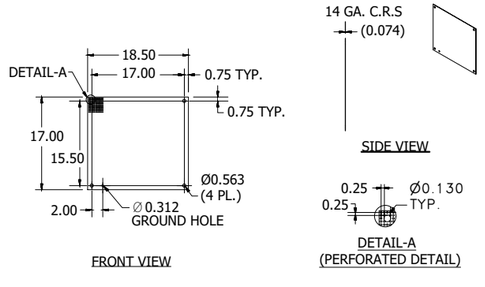


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
108 N MAIN, PO BOX 95
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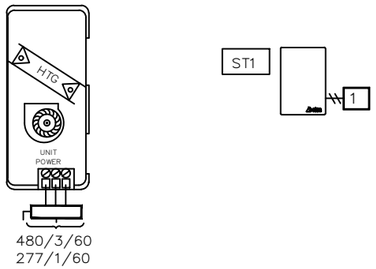
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

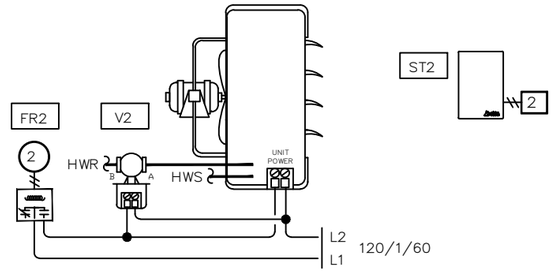
SHEET
JEL-35
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

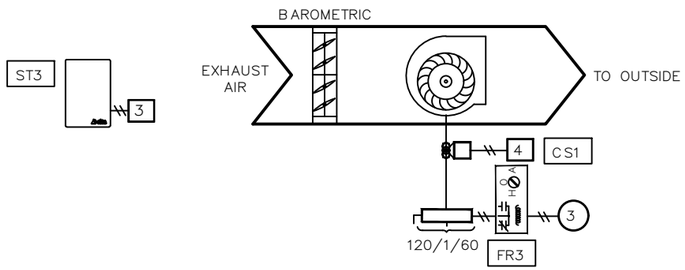
CABINET UNIT HEATER
ECUH D–1



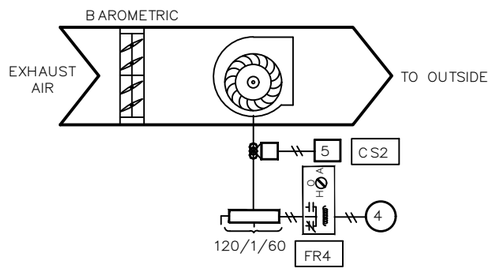
PROPELLER UNIT HEATER
UH CD–12



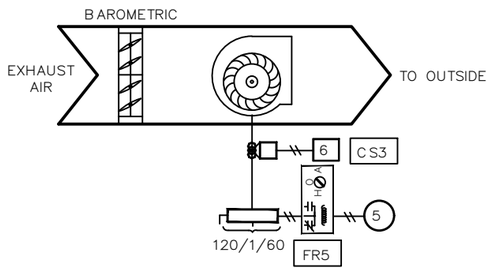
POWER VENTILATOR – TEMP CONTROLLED – FIELD DEVICES
EF D–5



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–7



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–17



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-3	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	3	Functional Devices	Field
FR2	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	1	Functional Devices	Field
FR3-5	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	3	Functional Devices	Field
ST1-3	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	3	BAPI	Field
V2	HW Valve	See Schedule	See Valve Sch for Details	1	Belimo	TBD

NETWORK POINTS
N1 THROUGH N2

ECUH D–1 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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DATE	REMARKS

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LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–36
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15608.AI01	ST1	ECUH-D1 SPACE TEMP	2004
2	2	15608.AI02	ST2	UH CD-12 SPACE TEMP	1400
3	3	15608.AI03	ST3	EF D-5 SPACE TEMP	2004
4	4	15608.DI04	CS1	EF D-5 STATUS	1400
5	5	15608.DI05	CS2	EF D-7 STATUS	1400
6	6	15608.DI06	CS3	EF D-17 STATUS	1400
7	7	15608.DI07			
8	8	15608.DI08			
9	9	15608.DI09			
10	10	15608.DI10			
11	11	15608.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15608.DO01			
2	2	15608.DO02	FR2	UH CD-12 START /STOP	3001
3	3	15608.DO03	FR3	EF D-5 START /STOP	3107
4	4	15608.DO04	FR4	EF D-7 START /STOP	3107
5	5	15608.DO05	FR5	EF D-17 START /STOP	3107
6	6	15608.DO06			
7	7	15608.AO07			
8	8	15608.AO08			
9	9	15608.AO09			
10	10	15608.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15608.N1	OAT
N2	15608.N2	OAH
N3	15608.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

POWERED VENTILATOR - TEMPERATURE CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN SHALL BE STARTED ACCORDING TO WALL MOUNTED BAS THERMOSTAT (ZN-T) TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (ADJ). IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

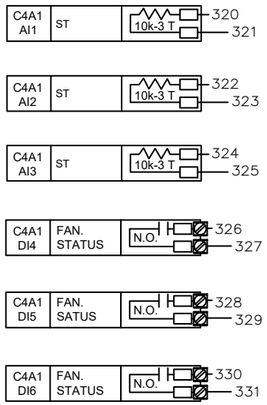
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

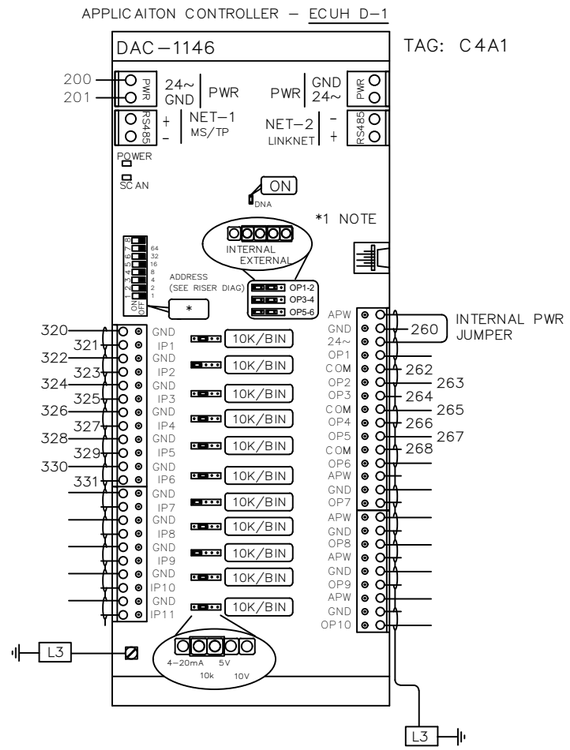
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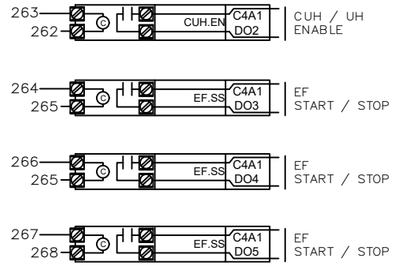
SHEET
JEL–37
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH D-1 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH D-1 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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UPDATES	
DATE	REMARKS
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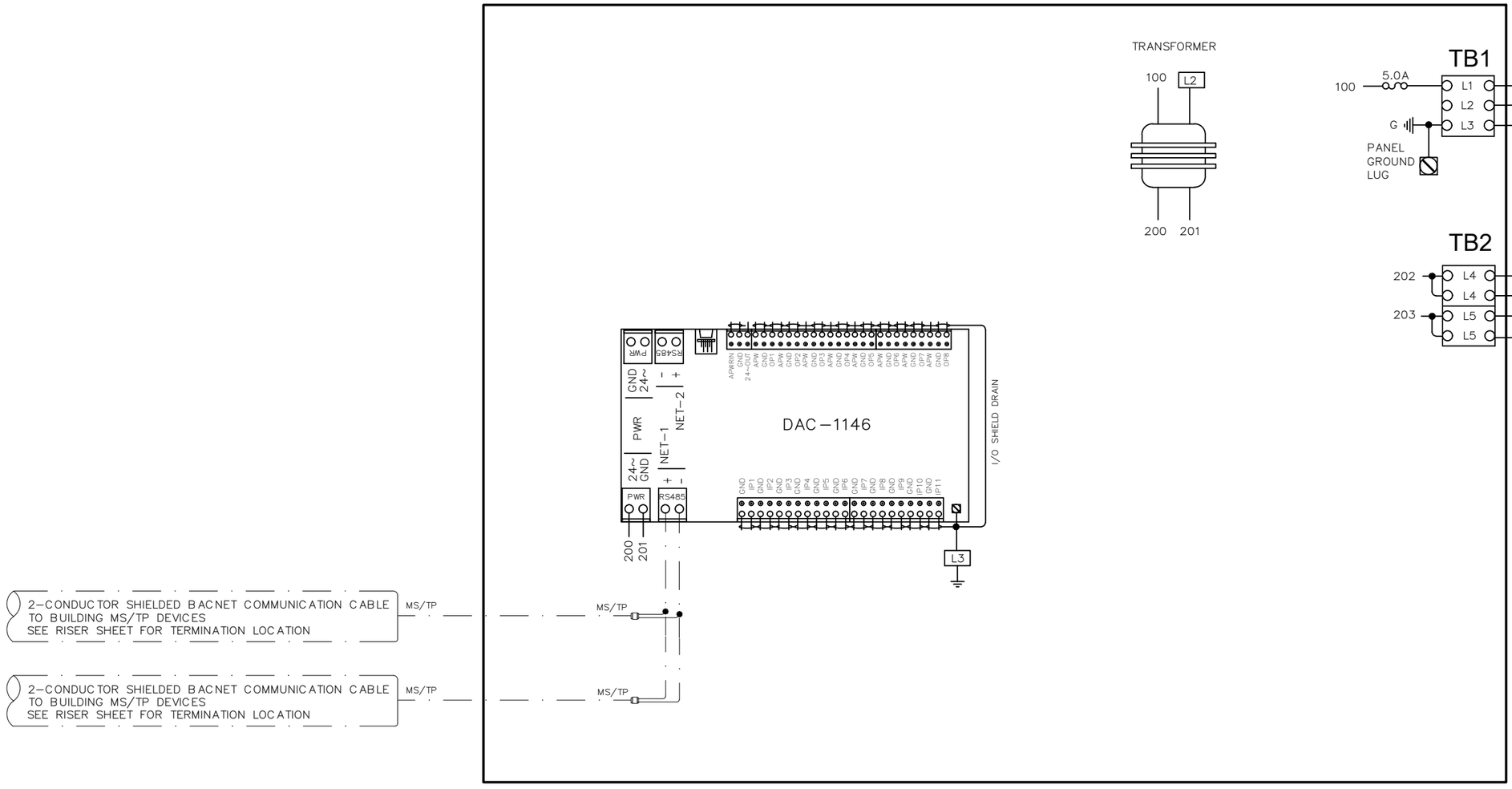
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–38
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH D–1 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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UPDATES	
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REVISIONS	
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JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

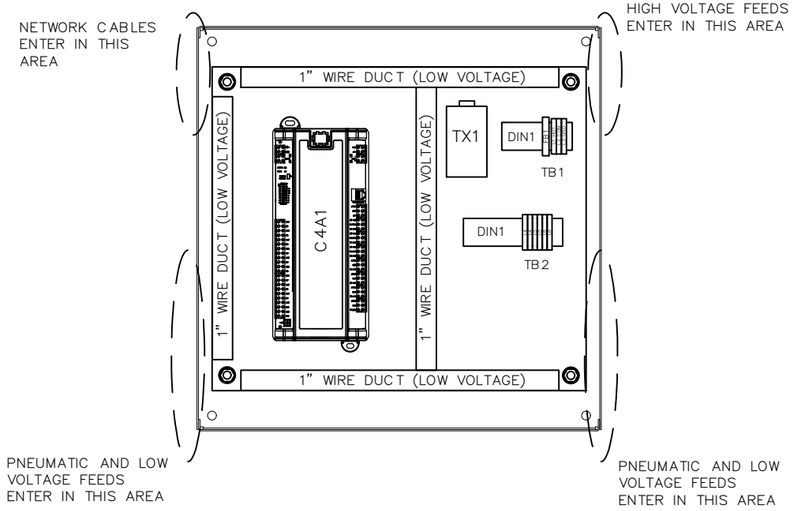
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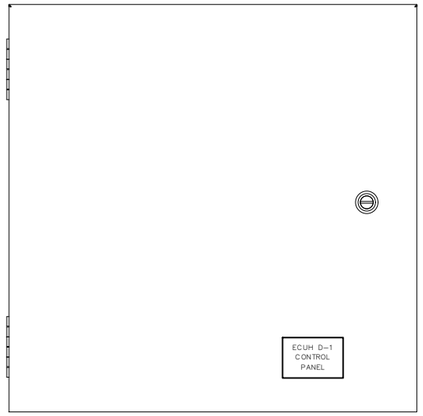
SHEET
JEL–39
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

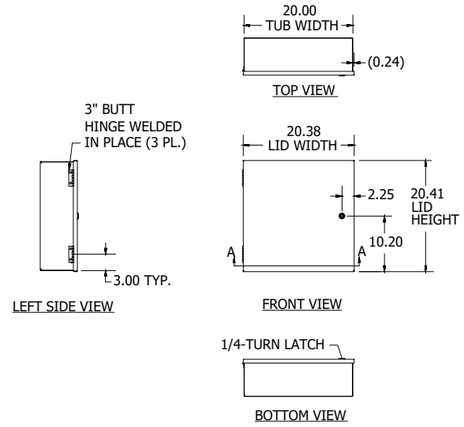
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

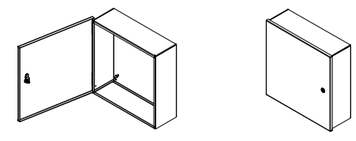
NO CONDUITS THROUGH THE TOP OF THE PANEL!



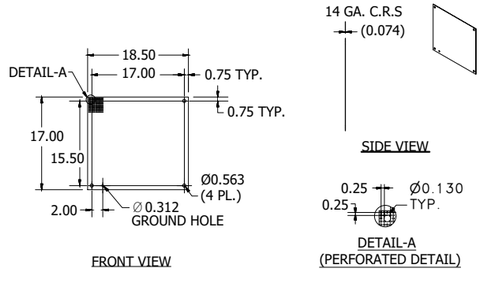


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
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2/1/2024	ADDENDUM #1

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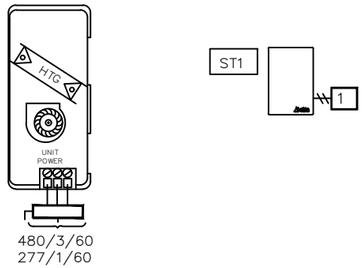
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

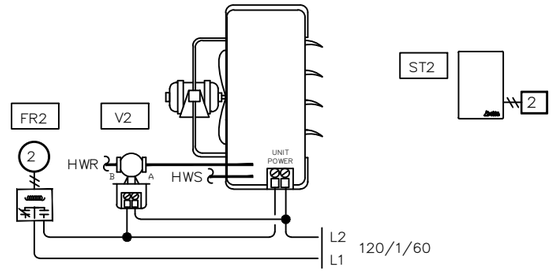
SHEET
JEL-40
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

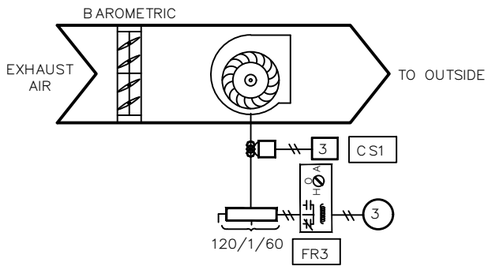
CABINET UNIT HEATER
ECUH D-2



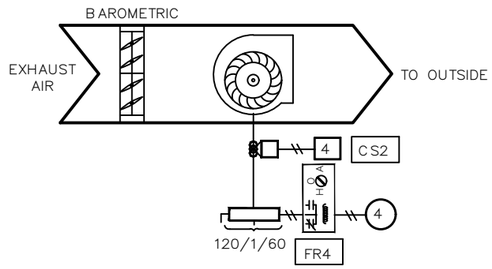
PROPELLER UNIT HEATER
UH CD-8



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D-6



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D-9



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-2	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	2	Functional Devices	Field
FR2	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	1	Functional Devices	Field
FR3-4	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	2	Functional Devices	Field
ST1-2	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	2	BAPI	Field
V2	HW Valve	See Schedule	See Valve Sch for Details	1	Belimo	TBD

NETWORK POINTS
N1 THROUGH N2

ECUH D-2 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
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REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-41
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15609.AI01	ST1	ECUH-D2 SPACE TEMP	2004
2	2	15609.AI02	ST2	UH CD-8 SPACE TEMP	2004
3	3	15609.DI03	CS1	EF D-6 STATUS	1400
4	4	15609.DI04	CS2	EF D-9 STATUS	1400
5	5	15609.DI05			
6	6	15609.DI06			
7	7	15609.DI07			
8	8	15609.DI08			
9	9	15609.DI09			
10	10	15609.DI10			
11	11	15609.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15609.DO01			
2	2	15609.DO02	FR2	UH CD-8 ENABLE	3001
3	3	15609.DO03	FR3	EF D-6 START /STOP	3107
4	4	15609.DO04	FR4	EF D-9 START /STOP	3107
5	5	15609.DO05			
6	6	15609.DO06			
7	7	15609.AO07			
8	8	15609.AO08			
9	9	15609.AO09			
10	10	15609.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15609.N1	OAT
N2	15609.N2	OAH
N3	15609.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

ECUH D-2 POINT TABLES & SEQUENCE OF OPERATION

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

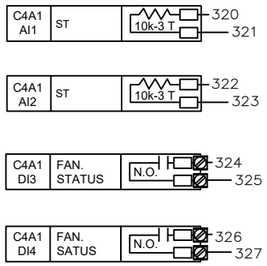
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

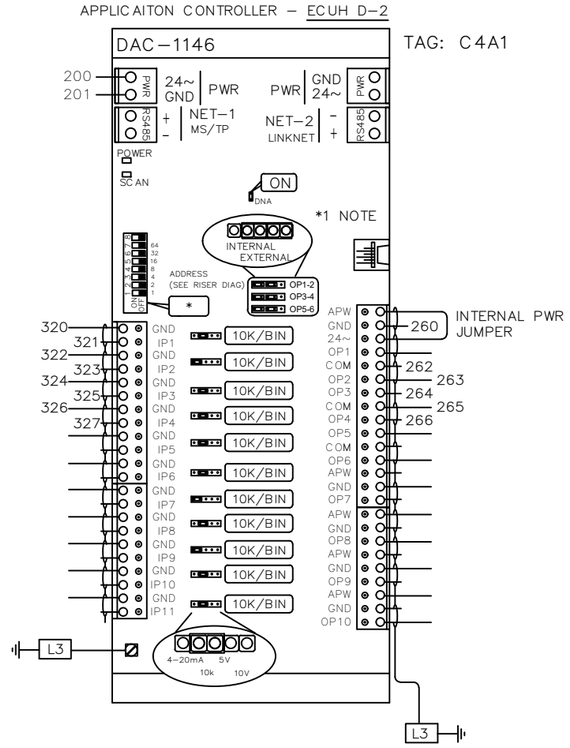
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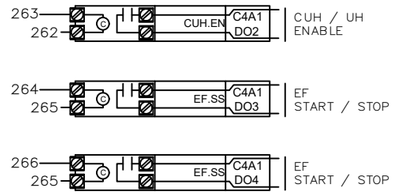
SHEET
JEL-42
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH D-2 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH D-2 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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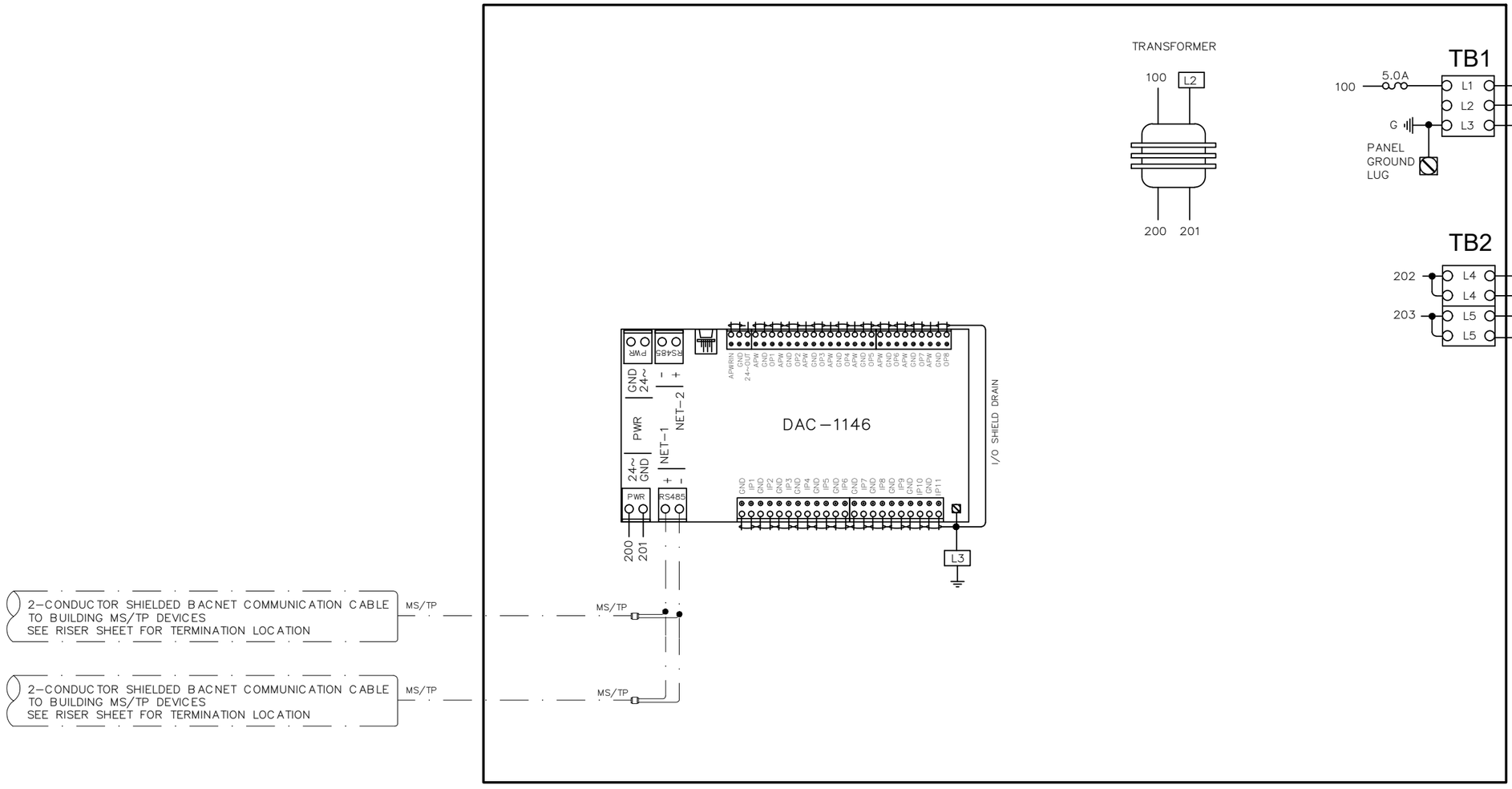
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-43
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH D–2 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
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UPDATES	
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JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

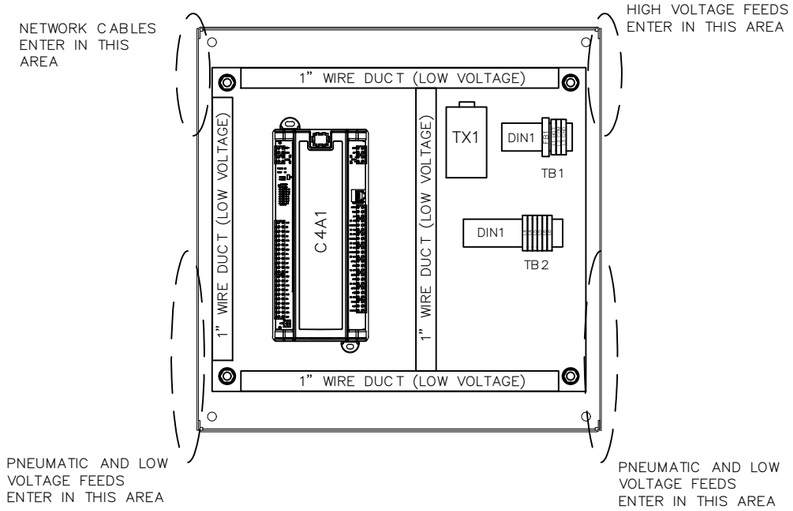
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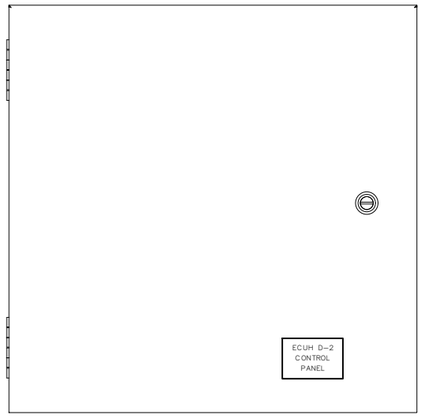
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JEL–44
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

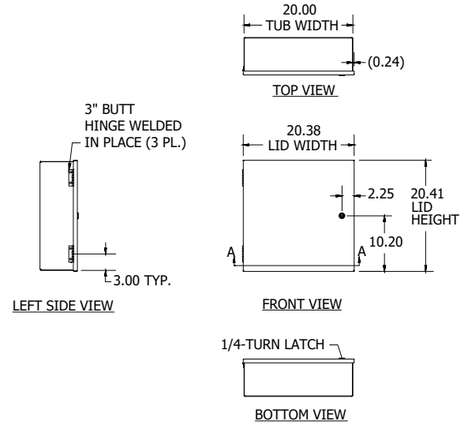
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

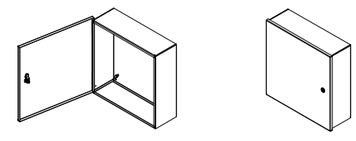
NO CONDUITS THROUGH THE TOP OF THE PANEL!



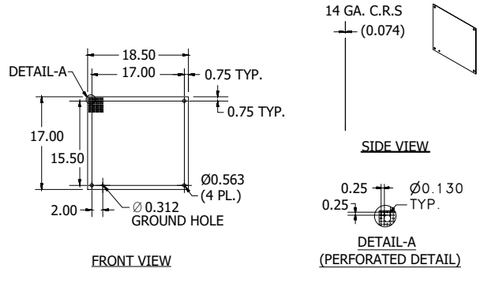


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
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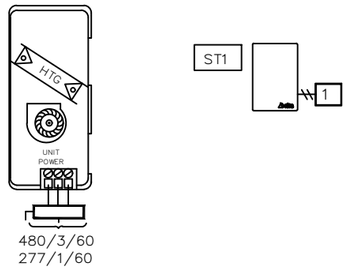
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:___ DRAWN BY: BSS

CONTRACT NO:

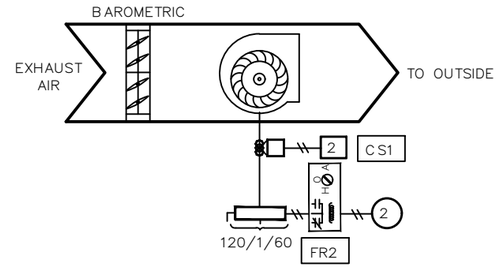
SHEET
JEL-45
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

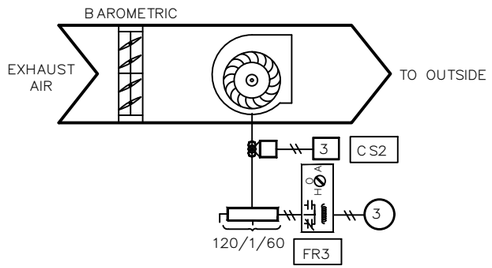
CABINET UNIT HEATER
ECUH E–2



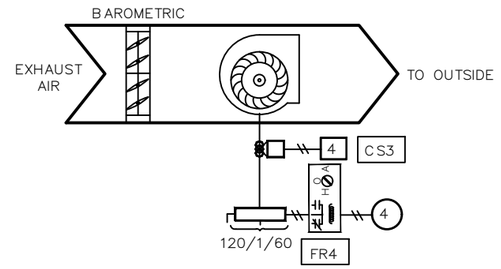
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–11



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF C–5



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF E–8



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-3	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	3	Functional Devices	Field
FR2-4	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	3	Functional Devices	Field
ST1	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field

NETWORK POINTS
N1 THROUGH N2

ECUH E–2 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–46
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15610.AI01	ST1	ECUH-E2 SPACE TEMP	2004
2	2	15610.DI02	CS1	EF A-11 STATUS	1400
3	3	15610.DI03	CS2	EF C-5 STATUS	1400
4	4	15610.DI04	CS3	EF E-8 STATUS	1400
5	5	15610.DI05			
6	6	15610.AI06			
7	7	15610.DI07			
8	8	15610.DI08			
9	9	15610.DI09			
10	10	15610.DI10			
11	11	15610.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15610.DO01			
2	2	15610.DO02	FR2	EF A-11 START /STOP	3107
3	3	15610.DO03	FR3	EF C-5 START /STOP	3107
4	4	15610.DO04	FR4	EF E-8 START /STOP	3107
5	5	15610.DO05			
6	6	15610.DO06			
7	7	15610.AO07			
8	8	15610.AO08			
9	9	15610.AO09			
10	10	15610.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15610.N1	OAT
N2	15610.N2	OAH
N3	15610.N3	

ELECTRIC CABINET UNIT HEATER SEQUENCE OF OPERATION:

TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

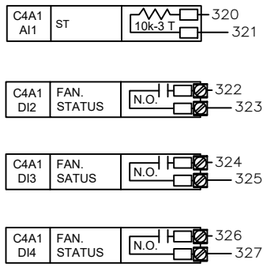
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

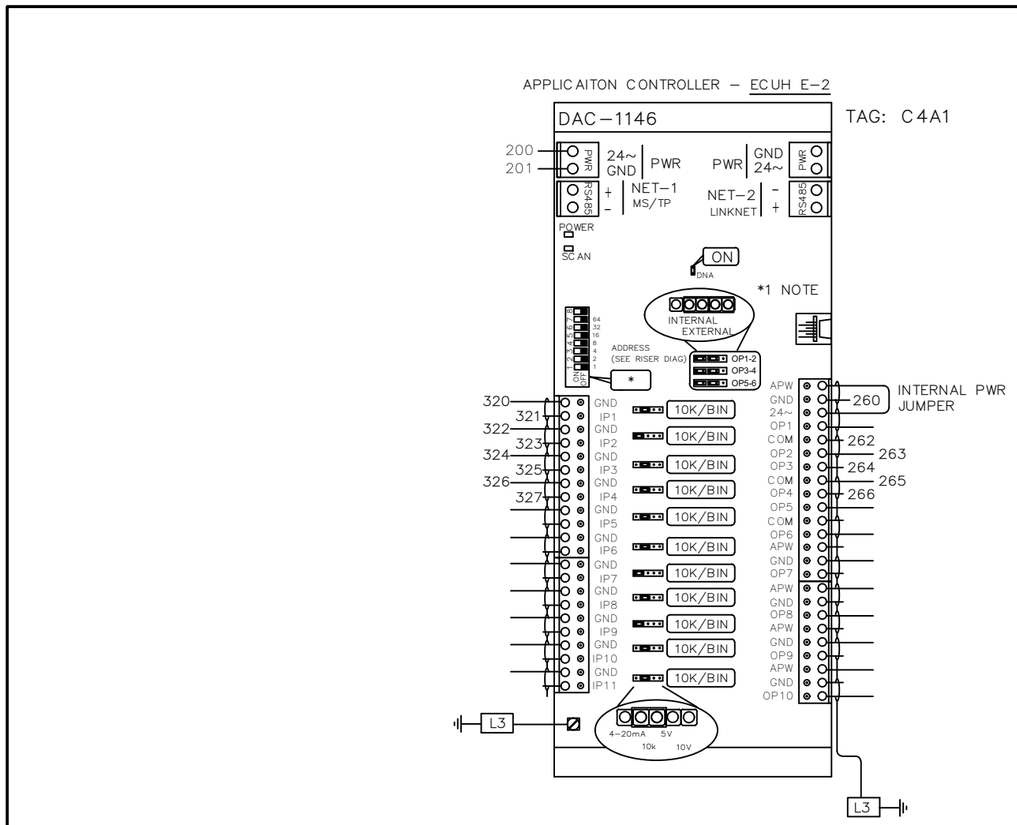
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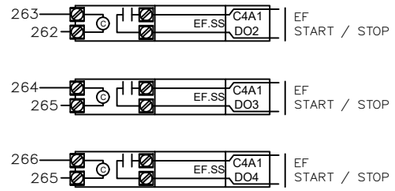
SHEET
JEL–47
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH E-2 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

ECUH E-2 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

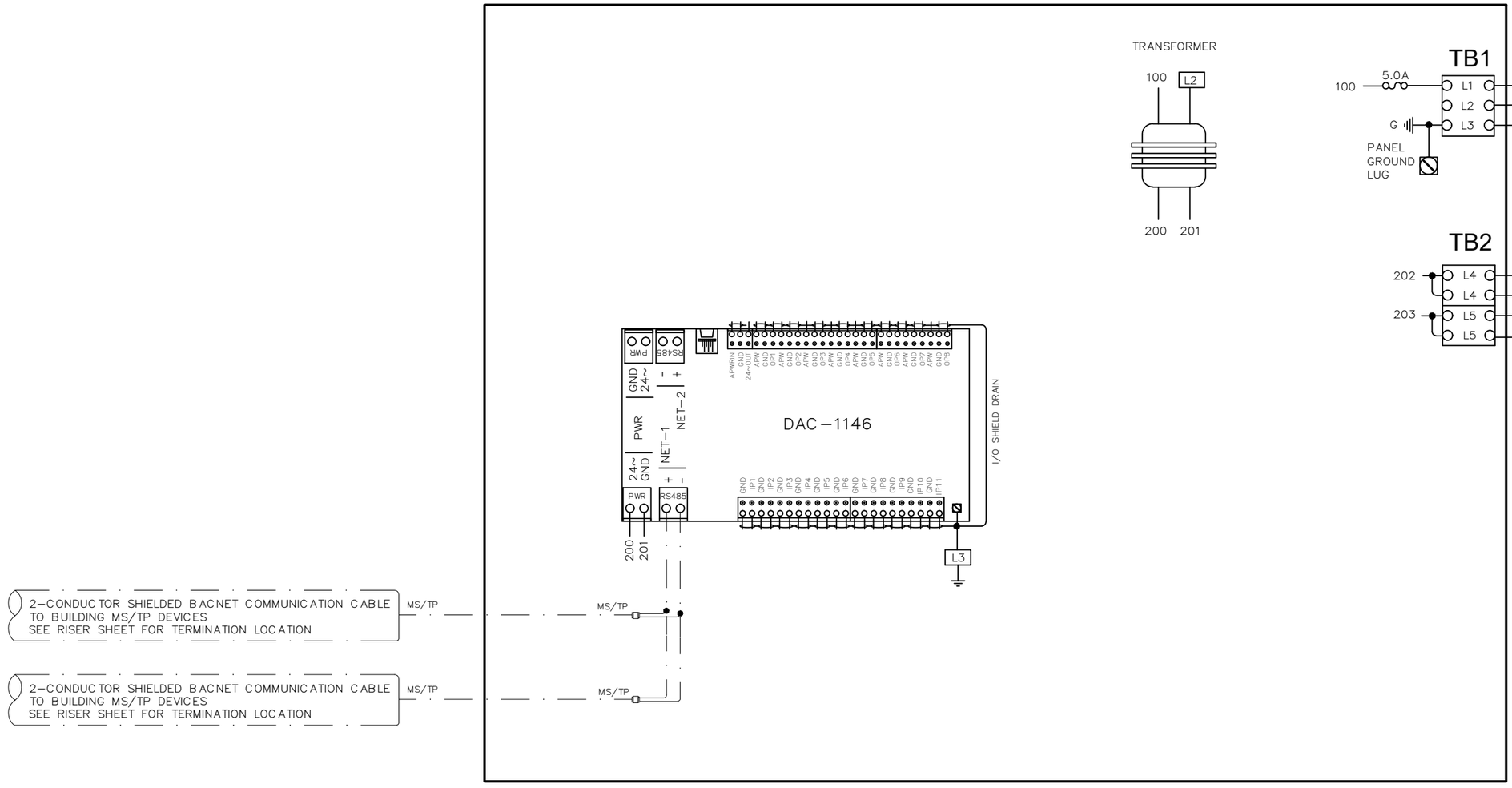
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-48
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



ECUH E–2 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

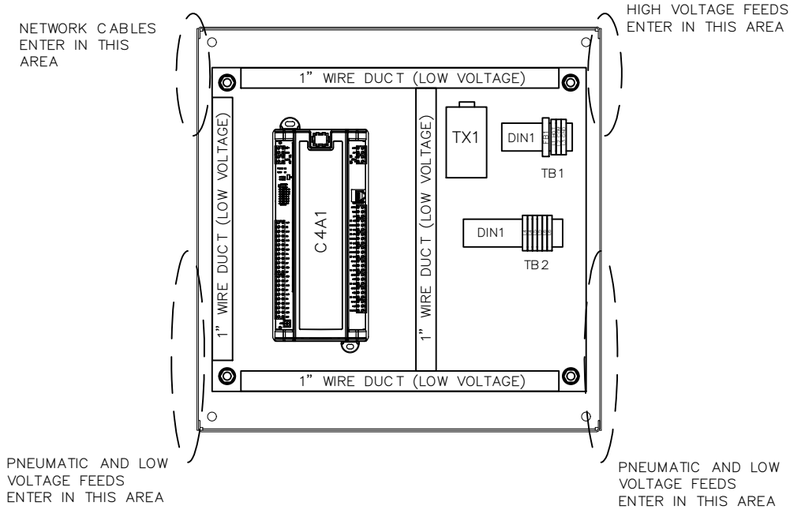
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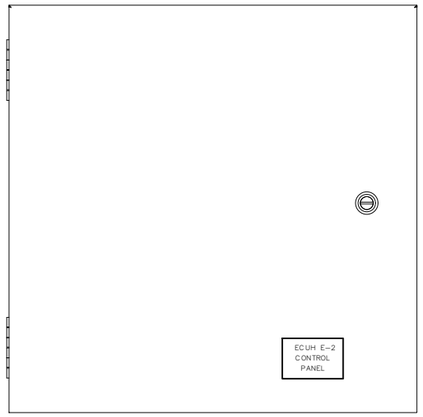
SHEET
JEL–49
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

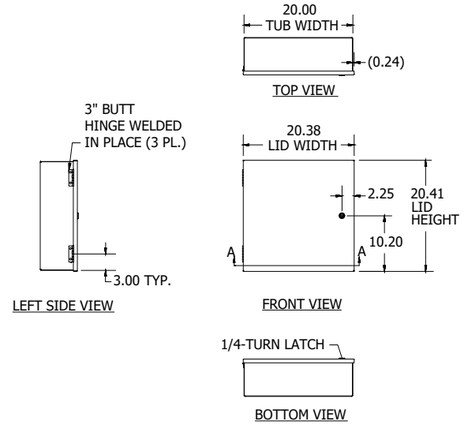
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

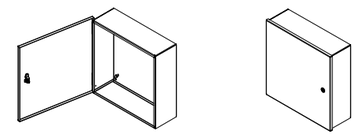
NO CONDUITS THROUGH THE TOP OF THE PANEL!



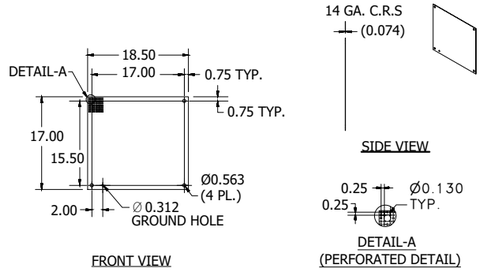


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 B	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
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2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

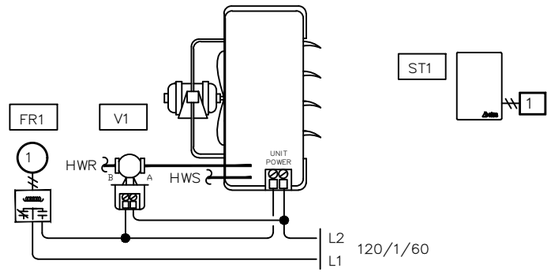
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

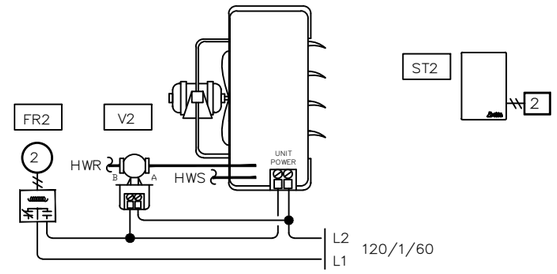
SHEET
JEL-50
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

PROPELLER UNIT HEATER
UH CD–4

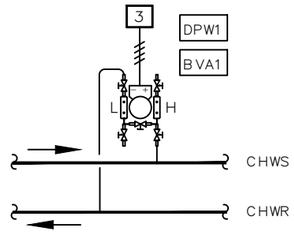


PROPELLER UNIT HEATER
UH CD–5



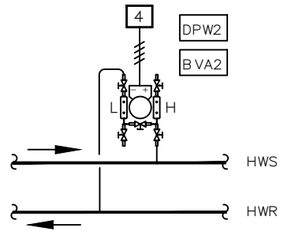
CHILL WATER DIFFERENTIAL PRESSURE MONITORING

(LOCATE IN CORRIDOR Z E–102. SEE MEP MP1F1, DETAIL 1A FOR DETAILS.)



HOT WATER DIFFERENTIAL PRESSURE MONITORING

(LOCATE IN CORRIDOR Z E–102. SEE MEP MP1F1, DETAIL 1A FOR DETAILS.)



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
BVA1-2	BVA-5-PW2	499705	BVA-5-PW2 5 VALVE BYPASS FOR VERIS PW2	2	Kele	Field
DPW1-2	PWLX04S	435030	PWLX04S Wet Media Pressure Transducer, LCD, 0-100psig	2	Veris	Field
FR1-2	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	2	Functional Devices	Field
ST1-2	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	2	BAPI	Field
V1-2	HW Valve	See Schedule	See Valve Sch for Details	2	Belimo	Field

NETWORK POINTS

N1 THROUGH N2

UH CD–4 FIELD DEVICES

Delta Controls

Temperature Control Services

108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–51
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15611.AI01	ST1	UH CD-4 SPACE TEMP	2004
2	2	15611.AI02	ST2	UH CD-5 SPACE TEMP	2004
3	3	15611.AI03	DPW1	CHWS SYSTEM DP	2202
4	4	15611.AI04	DPW2	HWS SYSTEM DP	2202
5	5	15611.DI05			
6	6	15611.DI06			
7	7	15611.DI07			
8	8	15611.DI08			
9	9	15611.DI09			
10	10	15611.DI10			
11	11	15611.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15611.DO01	FR1	UH CD-4 ENABLE	3001
2	2	15611.DO02	FR2	UH CD-5 ENABLE	3001
3	3	15611.DO03			
4	4	15611.DO04			
5	5	15611.DO05			
6	6	15611.DO06			
7	7	15611.AO07			
8	8	15611.AO08			
9	9	15611.AO09			
10	10	15611.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15611.N1	OAT
N2	15611.N2	OAH
N3	15611.N3	

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

HOT WATER DIFFERENTIAL PRESSURE MONITORING:

TCC SHALL PROVIDE DIFFERENTIAL PRESSURE TRANSDUCER MOUNTED IN A PANEL WITH A 5-VALVE MANIFOLD TO CIC FOR INSTALLATION AND WIRING. MECHANICAL CONTRACTOR RESPONSIBLE TO TUBE FROM TRANSDUCER PANEL HIGH AND LOW PORTS BACK TO THE MAIN SUPPLY AND RETURN PIPING AS INDICATED WITHIN TCC DRAWINGS. TCC SHALL PLACE DIFFERENTIAL PRESSURE VALUE (HW-DP) ON MAIN GRAPHIC.

CHILLED WATER DIFFERENTIAL PRESSURE MONITORING:

TCC SHALL PROVIDE DIFFERENTIAL PRESSURE TRANSDUCER MOUNTED IN A PANEL WITH A 5-VALVE MANIFOLD TO CIC FOR INSTALLATION AND WIRING. MECHANICAL CONTRACTOR RESPONSIBLE TO TUBE FROM TRANSDUCER PANEL HIGH AND LOW PORTS BACK TO THE MAIN SUPPLY AND RETURN PIPING AS INDICATED WITHIN TCC DRAWINGS. TCC SHALL PLACE DIFFERENTIAL PRESSURE VALUE (CW-DP) ON MAIN GRAPHIC.

Delta Controls
Temperature Control Services
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UPDATES

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2/1/2024	ADDENDUM #1

REVISIONS

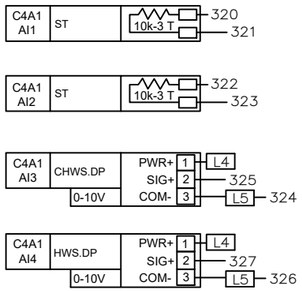
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

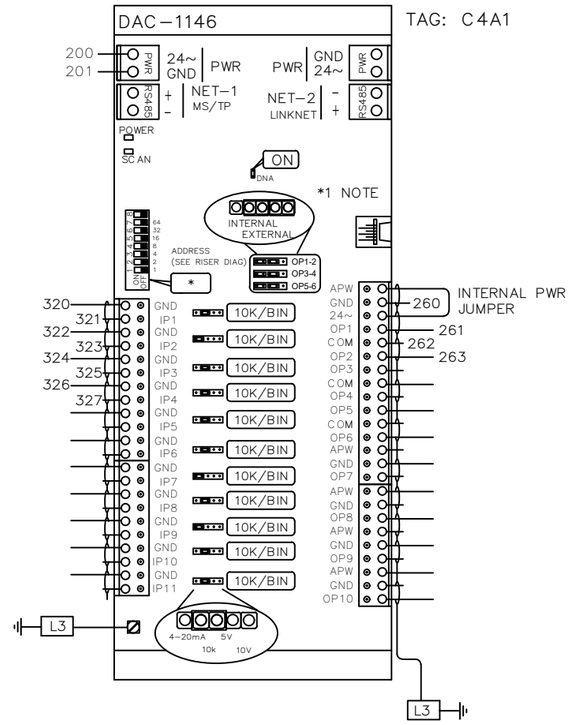
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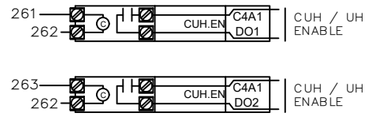
SHEET
JEL-52
JOB NUMBER:
J-2312002

Spec. Section: 230900.99



APPLICAITON CONTROLLER – UH CD-4





NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

UH CD-4 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

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DATE	REMARKS
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REVISIONS	
DATE	REMARKS

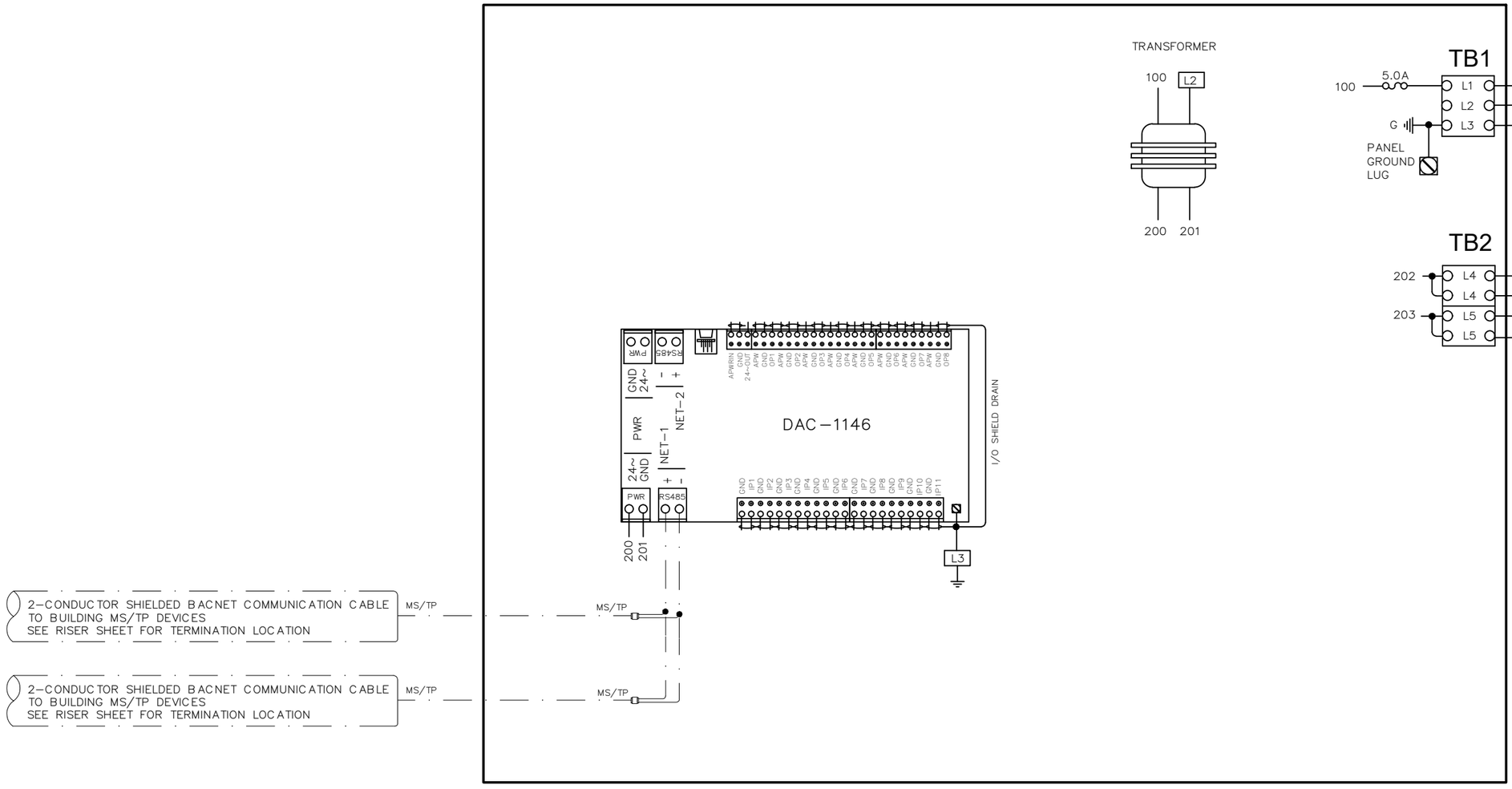
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-53
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



UH CD–4 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

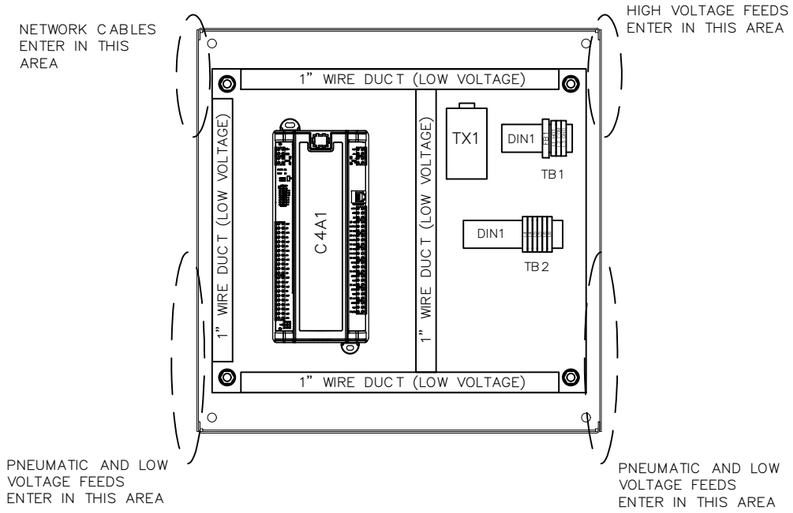
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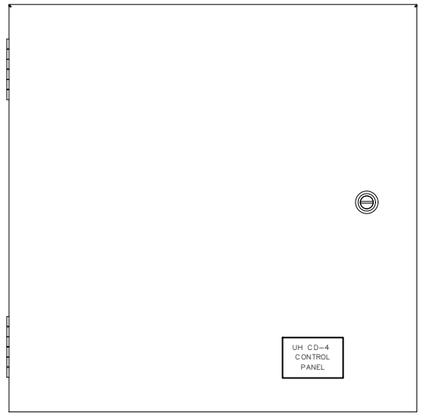
SHEET
JEL–54
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

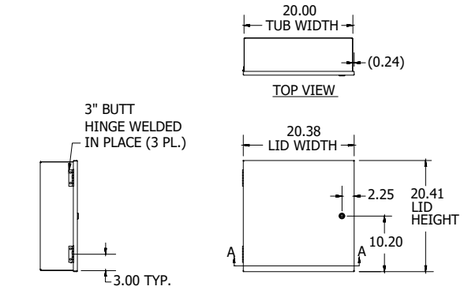
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

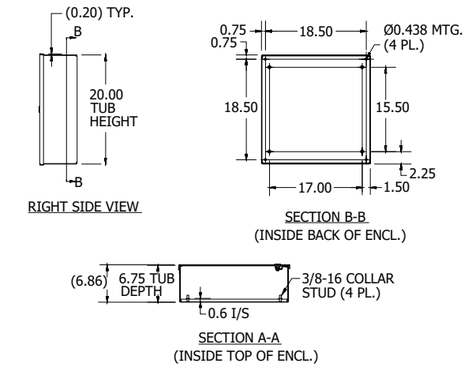
NO CONDUITS THROUGH THE TOP OF THE PANEL!

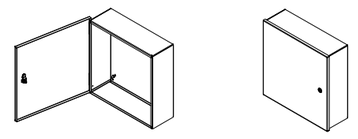




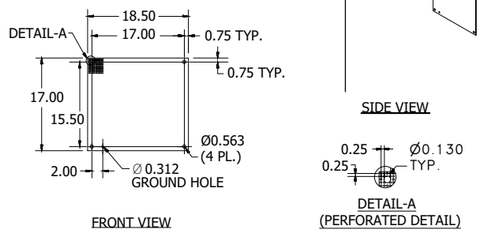
20" (W) x 20" (H) ENCLOSURE DIMENSIONS







PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

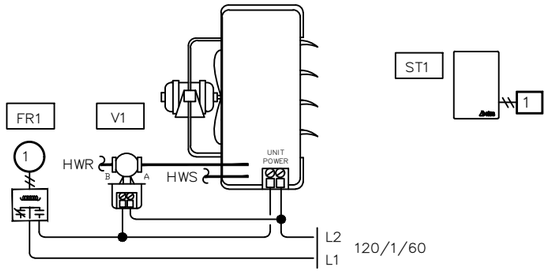
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

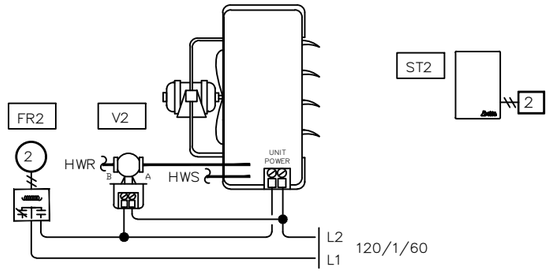
SHEET
JEL–55
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

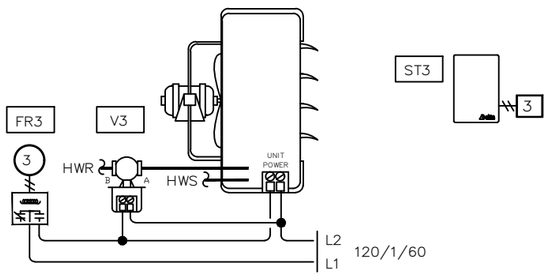
PROPELLER UNIT HEATER
UH CD–6



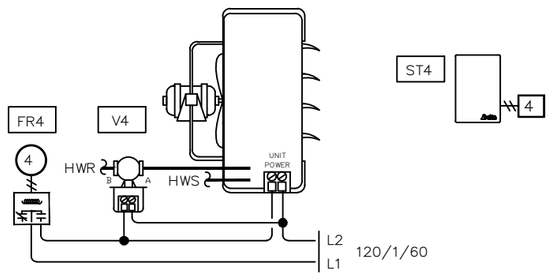
PROPELLER UNIT HEATER
UH CD–7



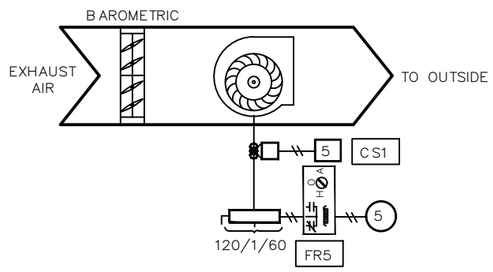
PROPELLER UNIT HEATER
UH CD–13



PROPELLER UNIT HEATER
UH CD–14



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–8



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	1	Functional Devices	Field
FR1-4	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	4	Functional Devices	Field
FR5	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	1	Functional Devices	Field
ST1-4	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	4	BAPI	Field
V1-4	HW Valve	See Schedule	See Valve Sch for Details	4	Belimo	Field

NETWORK POINTS

N1 THROUGH N2

UH CD–6 FIELD DEVICES

Delta Controls

Temperature Control Services

108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–56
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15612.AI01	ST1	UH CD-6 SPACE TEMP	2004
2	2	15612.AI02	ST2	UH CD-7 SPACE TEMP	2004
3	3	15612.AI03	ST3	UH CD-13 SPACE TEMP	2004
4	4	15612.AI04	ST4	UH CD-14 SPACE TEMP	2004
5	5	15612.DI05	CS1	EF D-8 STATUS	1400
6	6	15612.DI06			
7	7	15612.DI07			
8	8	15612.DI08			
9	9	15612.DI09			
10	10	15612.DI10			
11	11	15612.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15612.DO01	FR1	UH CD-6 ENABLE	3001
2	2	15612.DO02	FR2	UH CD-7 ENABLE	3001
3	3	15612.DO03	FR3	UH CD-13 ENABLE	3001
4	4	15612.DO04	FR4	UH CD-14 ENABLE	3001
5	5	15612.DO05	FR5	EF D-8 START /STOP	3107
6	6	15612.DO06			
7	7	15612.AO07			
8	8	15612.AO08			
9	9	15612.AO09			
10	10	15612.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15612.N1	OAT
N2	15612.N2	OAH
N3	15612.N3	

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

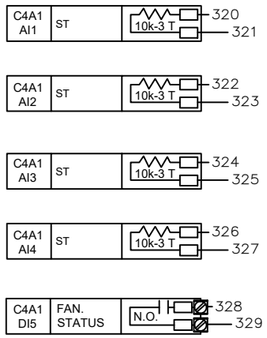
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

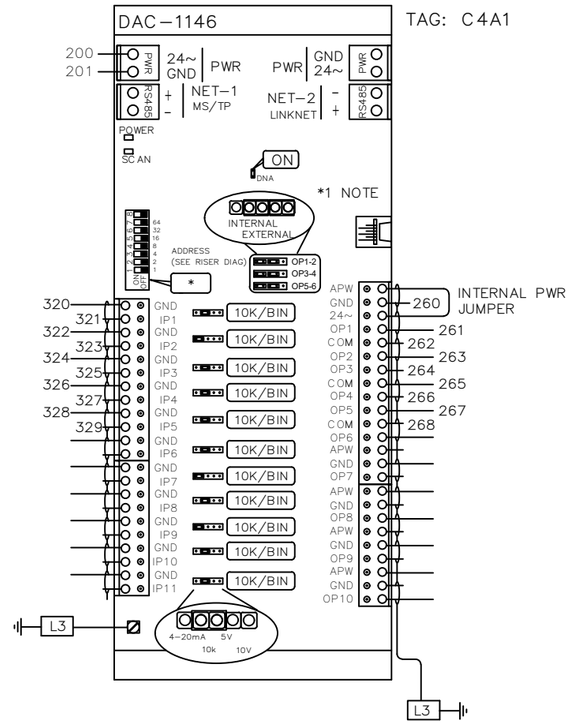
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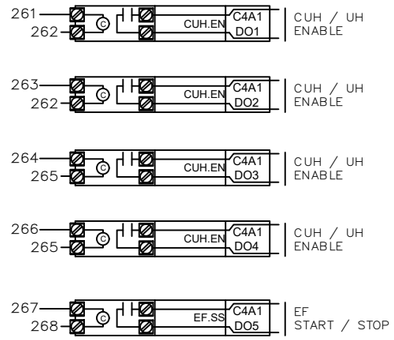
SHEET
JEL–57
JOB NUMBER:
J–2312002

Spec. Section: 230900.99



APPLICAITON CONTROLLER – UH CD-6





NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

UH CD-6 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
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E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

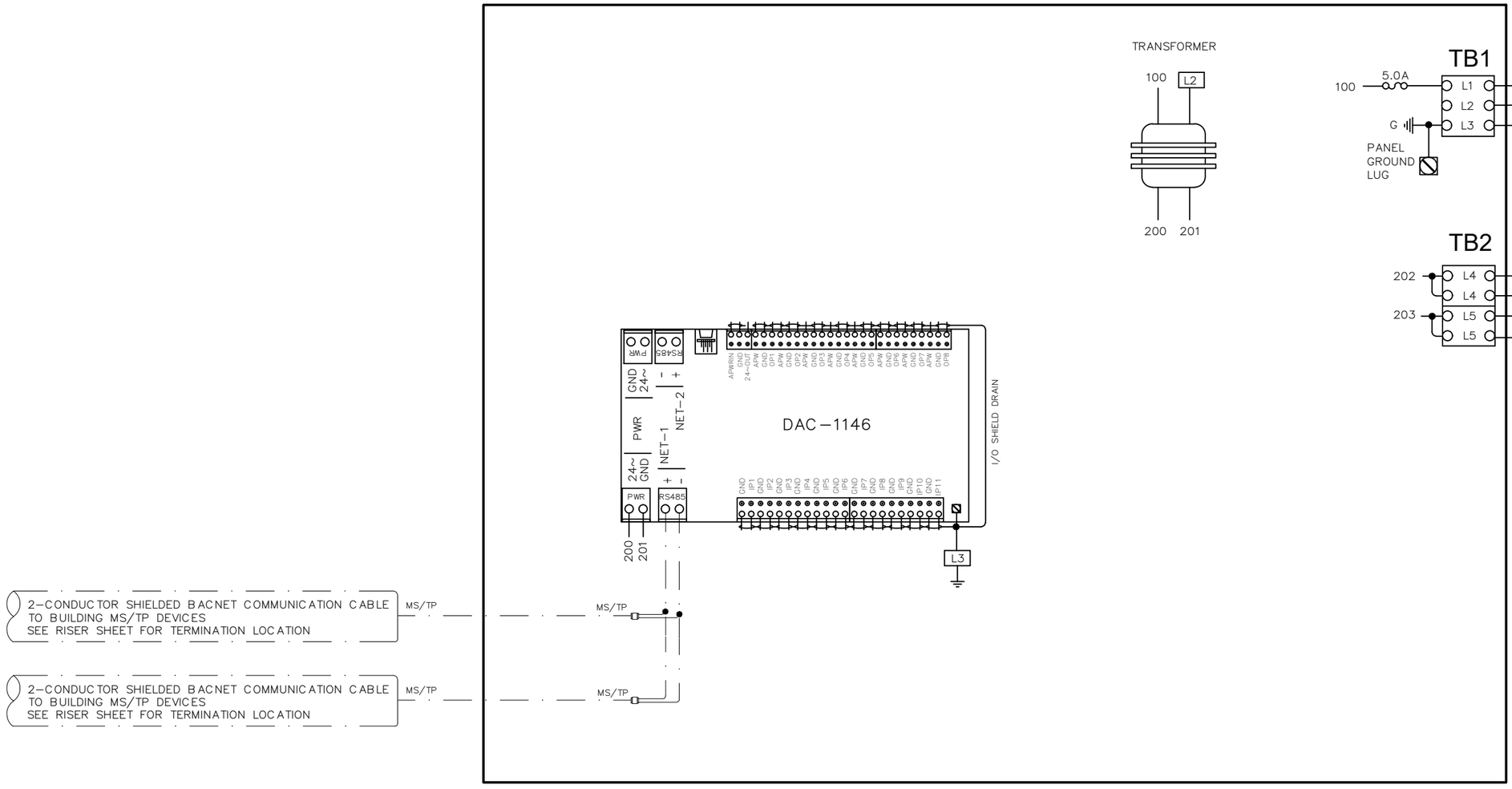
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-58
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



UH CD–6 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

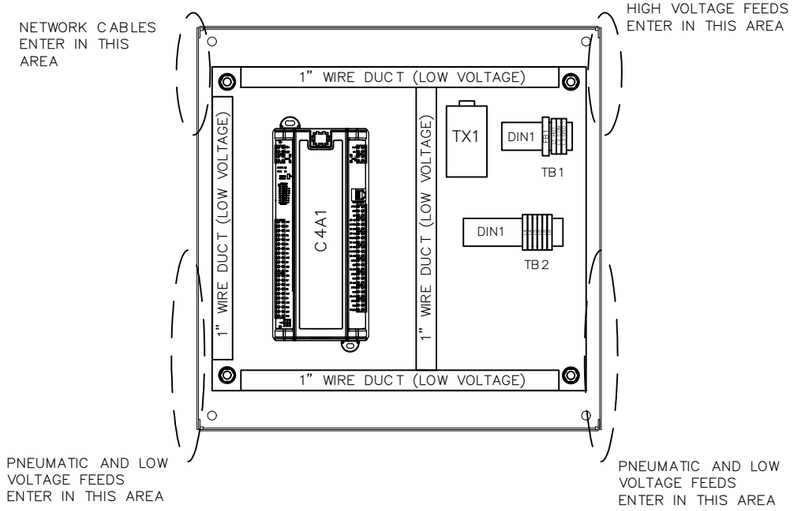
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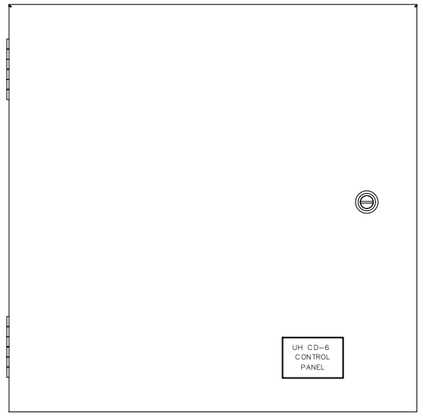
SHEET
JEL–59
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

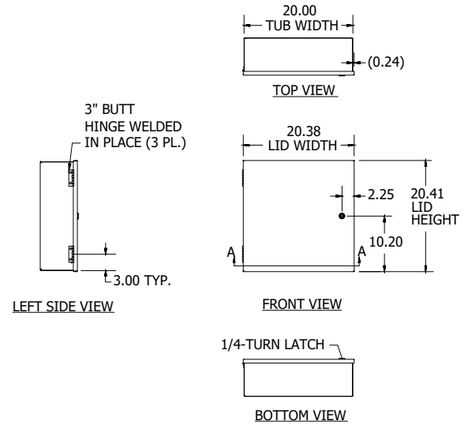
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

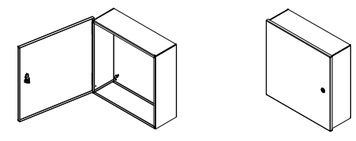
NO CONDUITS THROUGH THE TOP OF THE PANEL!



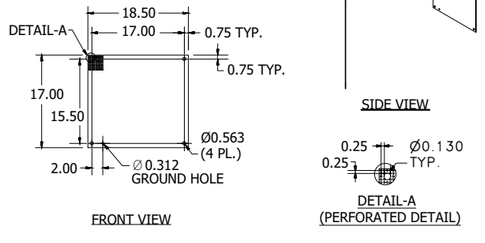


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
108 N MAIN, PO BOX 95
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UPDATES	
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2/1/2024	ADDENDUM #1

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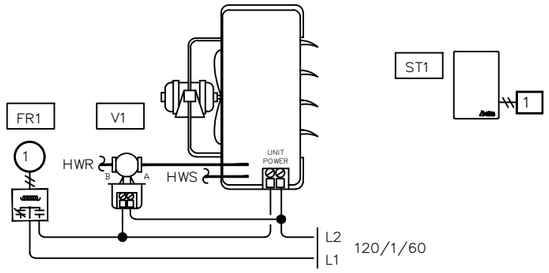
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

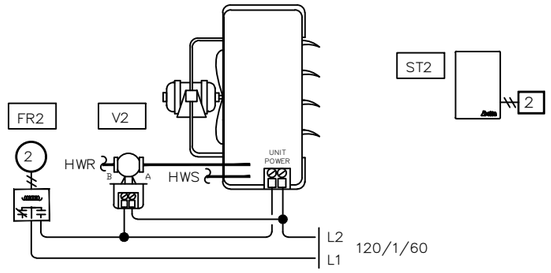
SHEET
JEL-60
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

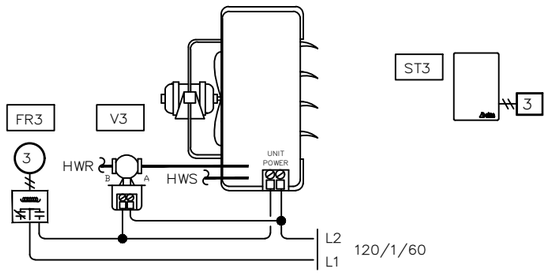
PROPELLER UNIT HEATER
UH CD–2



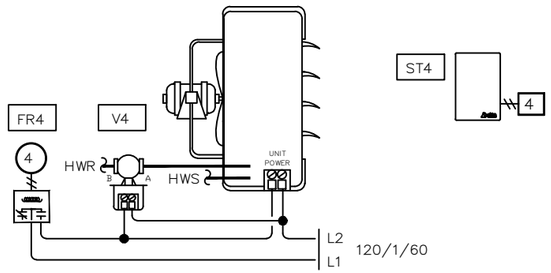
PROPELLER UNIT HEATER
UH CD–3



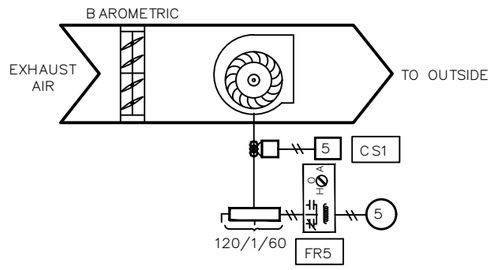
PROPELLER UNIT HEATER
UH CD–9



PROPELLER UNIT HEATER
UH CD–10



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–15



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	1	Functional Devices	Field
FR1-4	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	4	Functional Devices	Field
FR5	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	1	Functional Devices	Field
ST1-4	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	4	BAPI	Field
V1-4	HW Valve	See Schedule	See Valve Sch for Details	4	Belimo	Field

NETWORK POINTS
N1 THROUGH N2

UH CD–9 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–61
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15613.AI01	ST1	UH CD-2 SPACE TEMP	2004
2	2	15613.AI02	ST2	UH CD-3 SPACE TEMP	2004
3	3	15613.AI03	ST3	UH CD-9 SPACE TEMP	2004
4	4	15613.AI04	ST4	UH CD-10 SPACE TEMP	2004
5	5	15613.DI05	CS1	EF D-15 STATUS	1400
6	6	15613.DI06			
7	7	15613.DI07			
8	8	15613.DI08			
9	9	15613.DI09			
10	10	15613.DI10			
11	11	15613.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15613.DO01	FR1	UH CD-2 ENABLE	3001
2	2	15613.DO02	FR2	UH CD-3 ENABLE	3001
3	3	15613.DO03	FR3	UH CD-9 ENABLE	3001
4	4	15613.DO04	FR4	UH CD-10 ENABLE	3001
5	5	15613.DO05	FR5	EF D-15 START /STOP	3107
6	6	15613.DO06			
7	7	15613.AO07			
8	8	15613.AO08			
9	9	15613.AO09			
10	10	15613.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15613.N1	OAT
N2	15613.N2	OAH
N3	15613.N3	

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

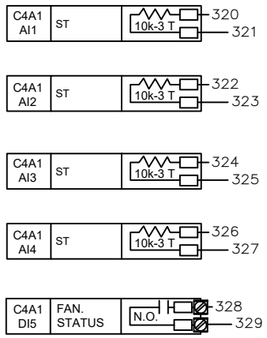
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–62
JOB NUMBER:
J–2312002

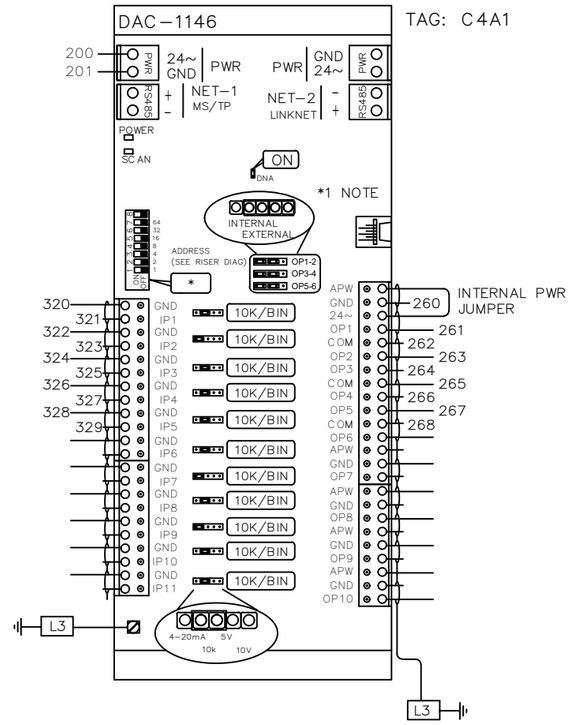
Spec. Section: 230900.99

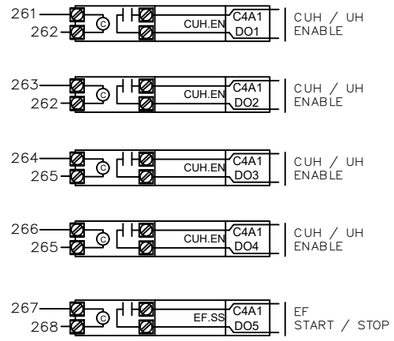
UH CD-9 CONTROL PANEL



APPLICAITON CONTROLLER – UH CD-9

TAG: C4A1





NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

UH CD-9 PANEL – I/O WIRING

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DATE	REMARKS
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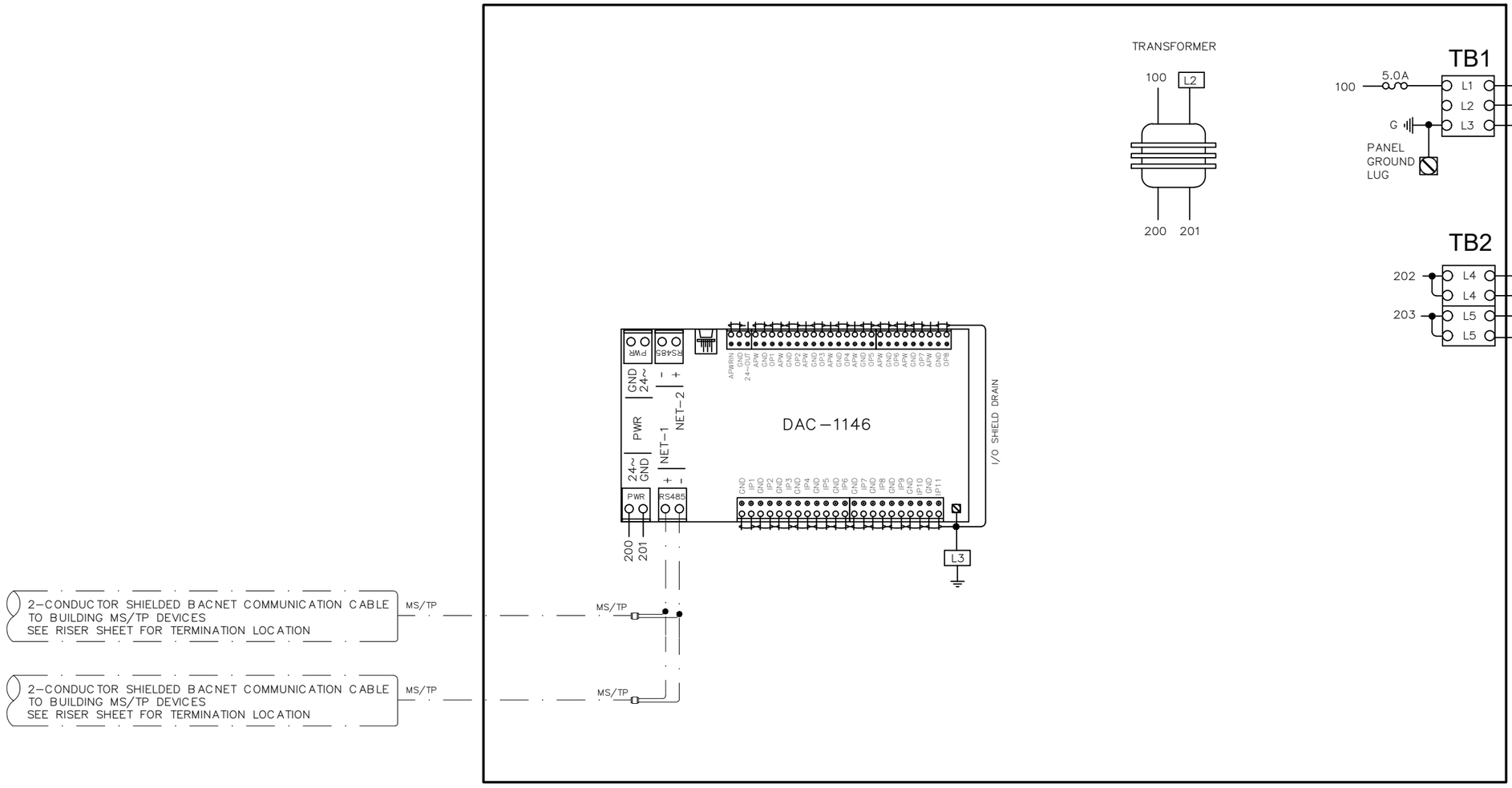
JOB TITLE: J. Everett Light Career Center
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CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-63
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



UH CD–9 CONTROL PANEL – POWER & NETWORK WIRING

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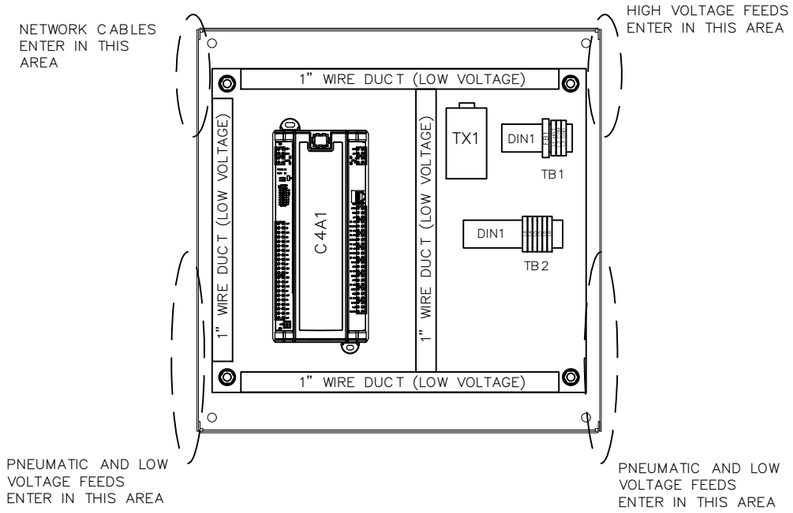
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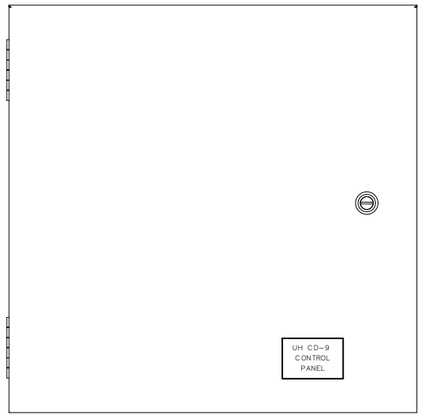
SHEET
JEL–64
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

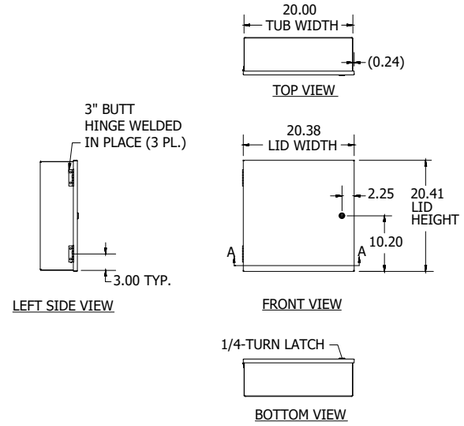
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

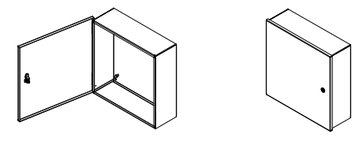
NO CONDUITS THROUGH THE TOP OF THE PANEL!



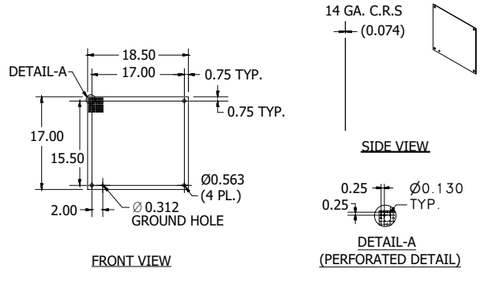


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 B	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

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2/1/2024	ADDENDUM #1

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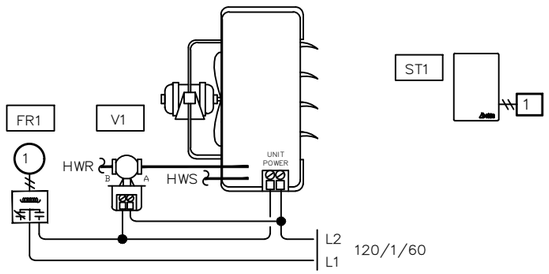
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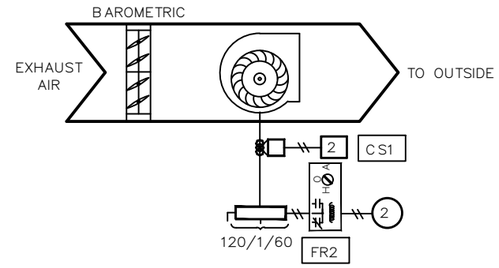
SHEET
JEL-65
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

PROPELLER UNIT HEATER
UH CD–11

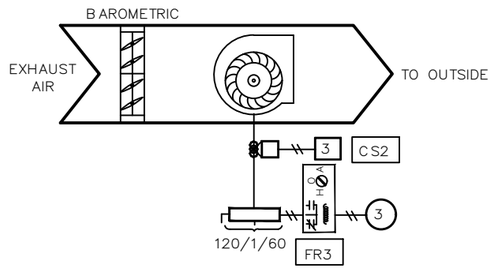


POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF D–4



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF E–7

(NOTE: NO DEFINED SCHEDULE FOR THIS FAN PER MEP SCHEDULES)



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-2	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	2	Functional Devices	Field
FR1	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	1	Functional Devices	Field
FR2-3	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	2	Functional Devices	Field
ST1	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field
V1	HW Valve	See Schedule	See Valve Sch for Details	1	Belimo	Field

NETWORK POINTS

N1 THROUGH N2

UH CD–11 FIELD DEVICES

Delta Controls

Temperature Control Services

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CONTRACT NO:

SHEET
JEL–66
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15614.AI01	ST1	UH CD-11 SPACE TEMP	2004
2	2	15614.DI02	CS1	EF D-4 STATUS	1400
3	3	15614.DI03	CS2	EF E-7 STATUS	1400
4	4	15614.DI04			
5	5	15614.DI05			
6	6	15614.DI06			
7	7	15614.DI07			
8	8	15614.DI08			
9	9	15614.DI09			
10	10	15614.DI10			
11	11	15614.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15614.DO01	FR1	UH CD-11 ENABLE	3001
2	2	15614.DO02	FR2	EF D-4 START /STOP	3107
3	3	15614.DO03	FR3	EF E-7 START /STOP	3107
4	4	15614.DO04			
5	5	15614.DO05			
6	6	15614.DO06			
7	7	15614.AO07			
8	8	15614.AO08			
9	9	15614.AO09			
10	10	15614.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15614.N1	OAT
N2	15614.N2	OAH
N3	15614.N3	

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

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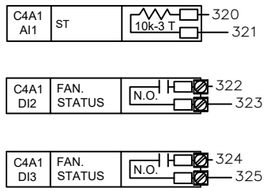
DATE	REMARKS

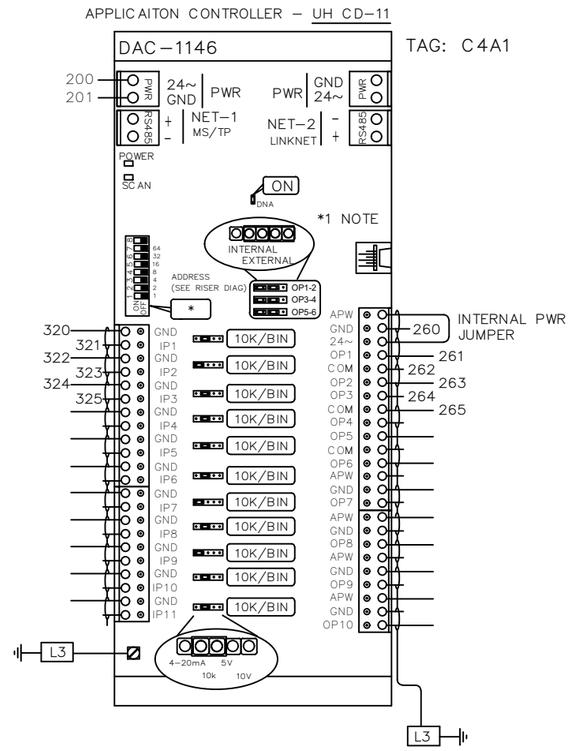
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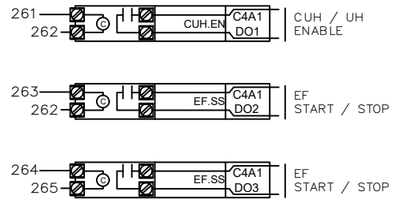
CONTRACT NO:

SHEET
JEL–67
JOB NUMBER:
J–2312002

Spec. Section: 230900.99







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

UH CD-11 PANEL – I/O WIRING

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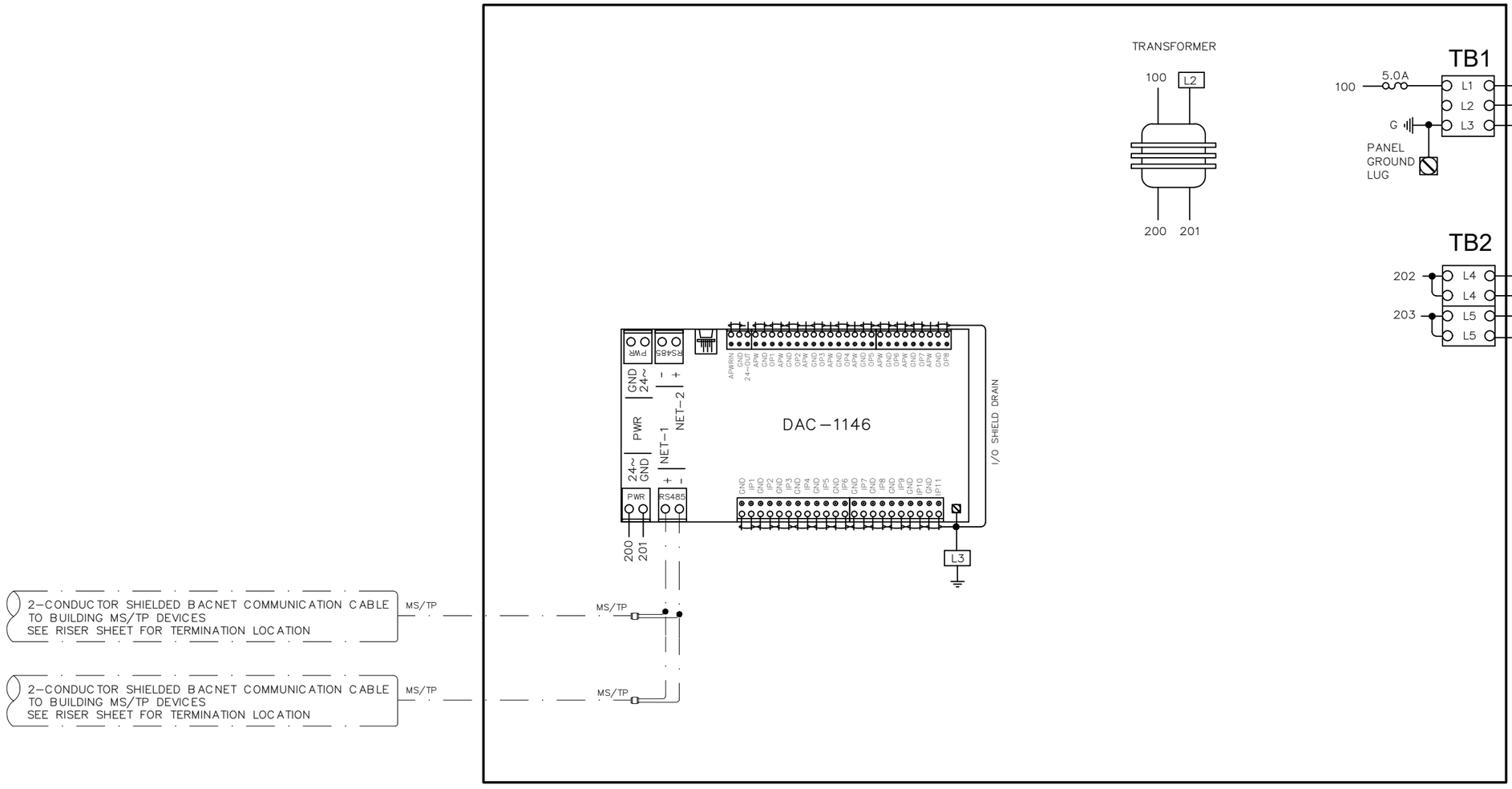
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CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-68
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



UH CD–11 CONTROL PANEL – POWER & NETWORK WIRING

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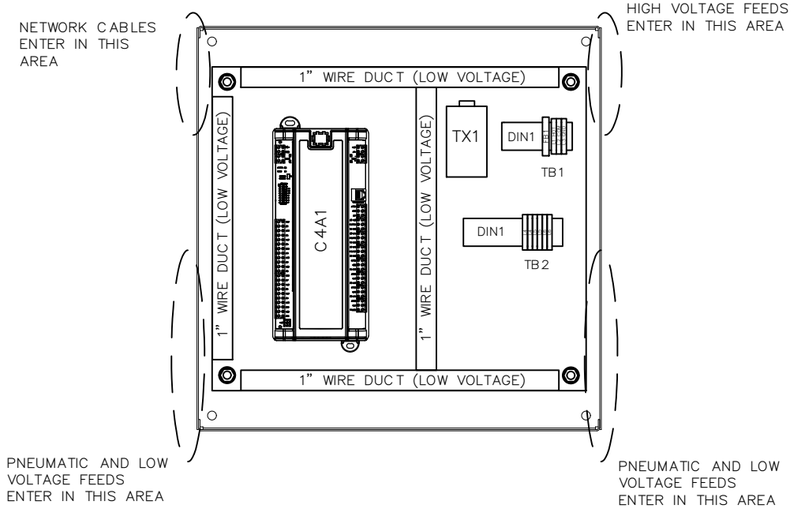
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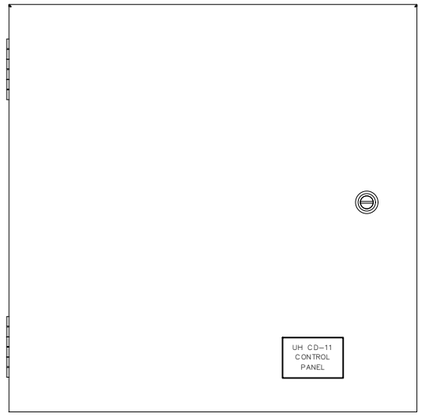
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JEL–69
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

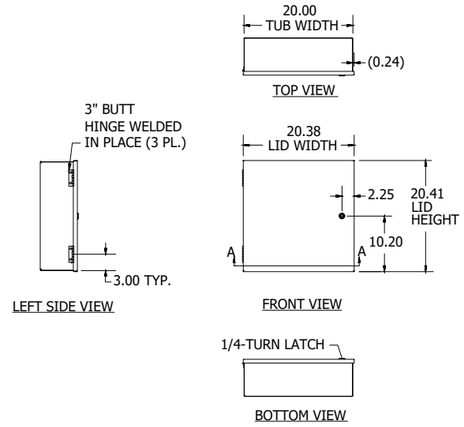
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

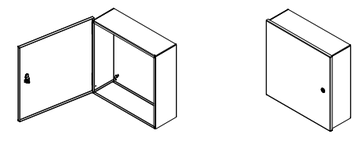
NO CONDUITS THROUGH THE TOP OF THE PANEL!



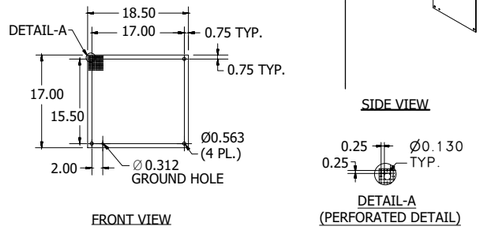


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

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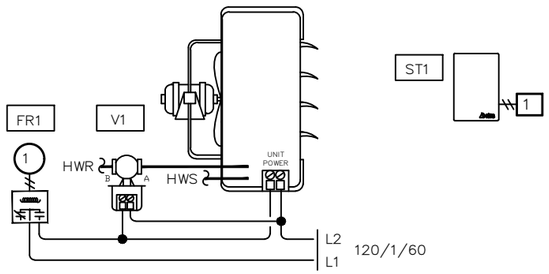
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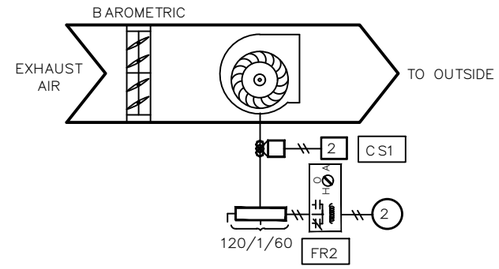
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JEL–70
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

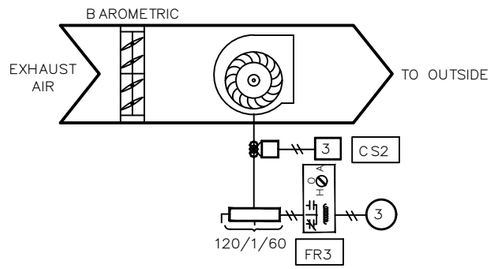
PROPELLER UNIT HEATER
UH CE–1



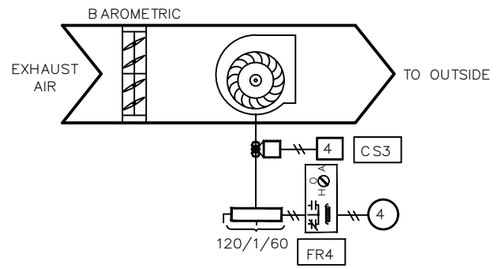
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF E–1



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF E–3



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF E–5



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-3	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	3	Functional Devices	Field
FR1	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	1	Functional Devices	Field
FR2-4	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	3	Functional Devices	Field
ST1	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field
V1	HW Valve	See Schedule	See Valve Sch for Details	1	Belimo	Field

NETWORK POINTS
N1 THROUGH N2

UH CE–1 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–71
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15615.AI01	ST1	UH CE-1 SPACE TEMP	2004
2	2	15615.DI02	CS1	EF E-1 STATUS	1400
3	3	15615.DI03	CS2	EF E-3 STATUS	1400
4	4	15615.DI04	CS3	EF E-5 STATUS	1400
5	5	15615.DI05			
6	6	15615.DI06			
7	7	15615.DI07			
8	8	15615.DI08			
9	9	15615.DI09			
10	10	15615.DI10			
11	11	15615.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15615.DO01	FR1	UH CE-1 ENABLE	3001
2	2	15615.DO02	FR2	EF E-1 START /STOP	3107
3	3	15615.DO03	FR3	EF E-3 START /STOP	3107
4	4	15615.DO04	FR4	EF E-5 START /STOP	3107
5	5	15615.DO05			
6	6	15615.DO06			
7	7	15615.AO07			
8	8	15615.AO08			
9	9	15615.AO09			
10	10	15615.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15615.N1	OAT
N2	15615.N2	OAH
N3	15615.N3	

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

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UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

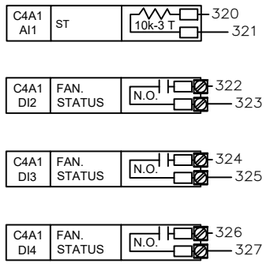
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

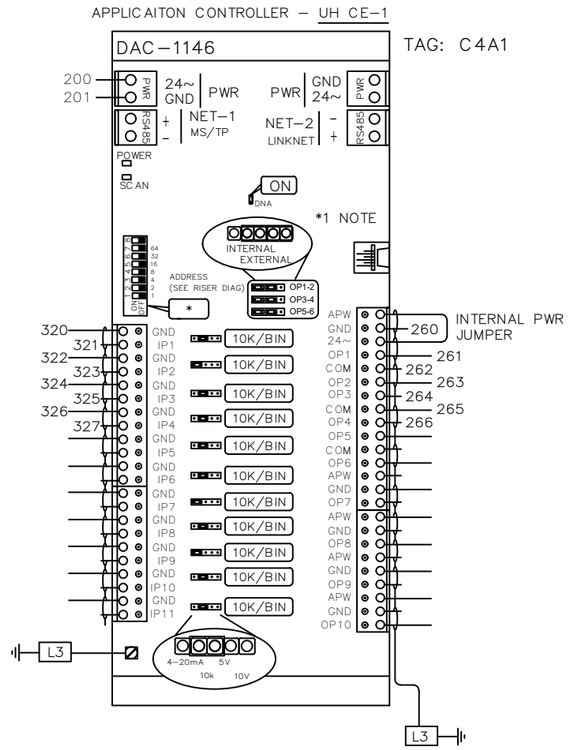
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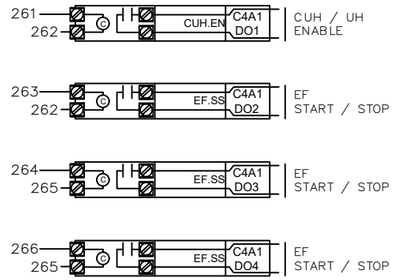
SHEET
JEL–72
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

UH CE–1 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

UH CE–1 PANEL – I/O WIRING

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UPDATES	
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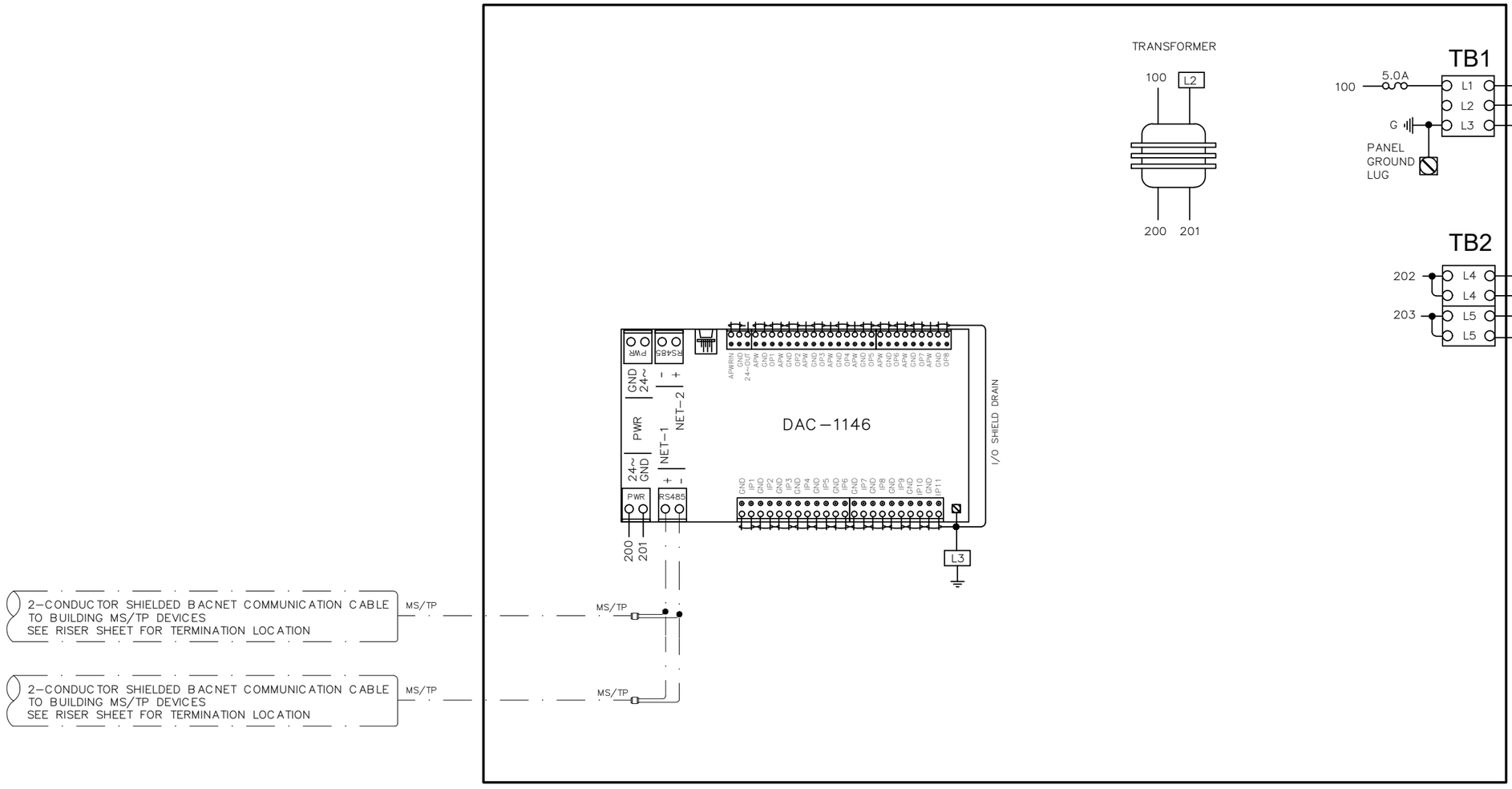
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–73
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



UH CE–1 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

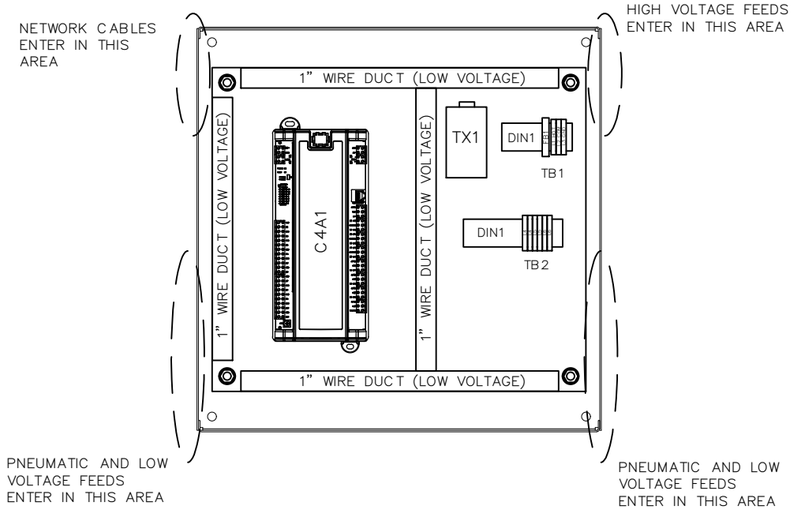
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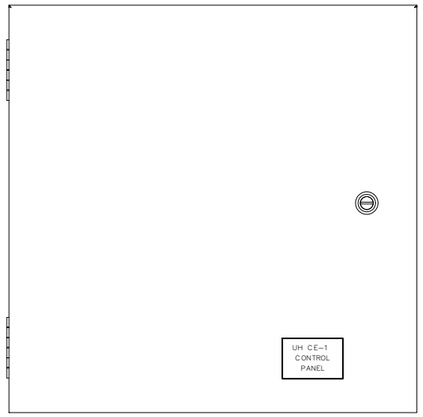
SHEET
JEL–74
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

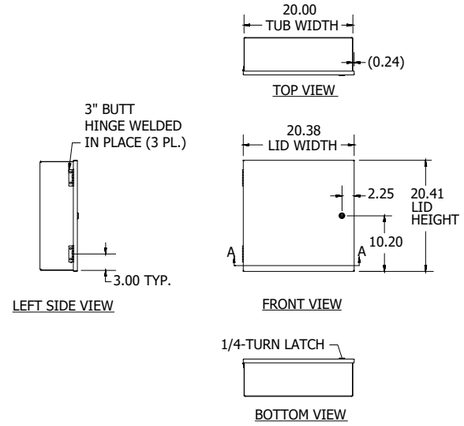
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

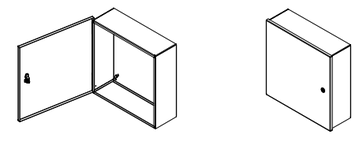
NO CONDUITS THROUGH THE TOP OF THE PANEL!



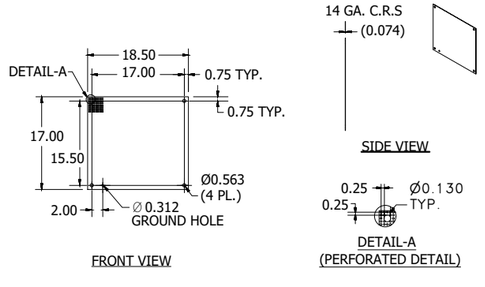


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 B	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

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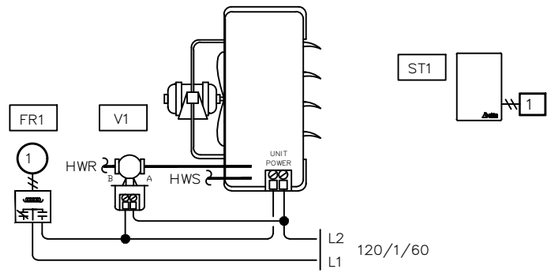
JOB TITLE: J. Everett Light Career Center
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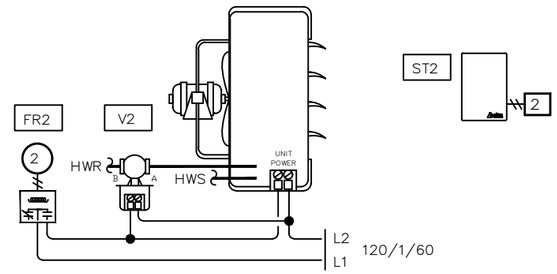
SHEET
JEL–75
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

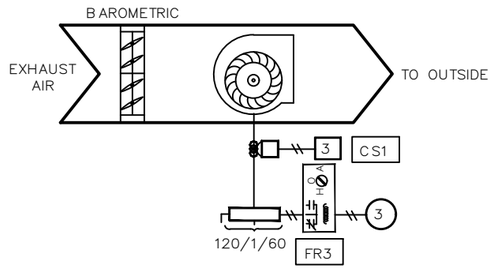
PROPELLER UNIT HEATER
UH CE–2



PROPELLER UNIT HEATER
UH CE–3



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF E–3



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	1	Functional Devices	Field
FR1-2	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	2	Functional Devices	Field
FR3	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	1	Functional Devices	Field
ST1-2	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	2	BAPI	Field
V1-2	HW Valve	See Schedule	See Valve Sch for Details	2	Belimo	Field

NETWORK POINTS
N1 THROUGH N2

UH CE–3 FIELD DEVICES

Delta Controls
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2/1/2024	ADDENDUM #1

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JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
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CONTRACT WITH: MSD Washington Township
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CONTRACT NO:

SHEET
JEL–76
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15616.AI01	ST1	UH CE-2 SPACE TEMP	2004
2	2	15616.AI02	ST2	UH CE-3 SPACE TEMP	2004
3	3	15616.DI03	CS1	EF E-6 STATUS	1400
4	4	15616.DI04			
5	5	15616.DI05			
6	6	15616.DI06			
7	7	15616.DI07			
8	8	15616.DI08			
9	9	15616.DI09			
10	10	15616.DI10			
11	11	15616.DI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15616.DO01	FR1	UH CE-2 ENABLE	3001
2	2	15616.DO02	FR2	UH CE-3 ENABLE	3001
3	3	15616.DO03	FR3	EF E-6 START /STOP	3107
4	4	15616.DO04			
5	5	15616.DO05			
6	6	15616.DO06			
7	7	15616.AO07			
8	8	15616.AO08			
9	9	15616.AO09			
10	10	15616.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15616.N1	OAT
N2	15616.N2	OAH
N3	15616.N3	

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

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UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

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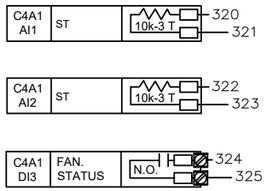
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–77
JOB NUMBER:
J–2312002

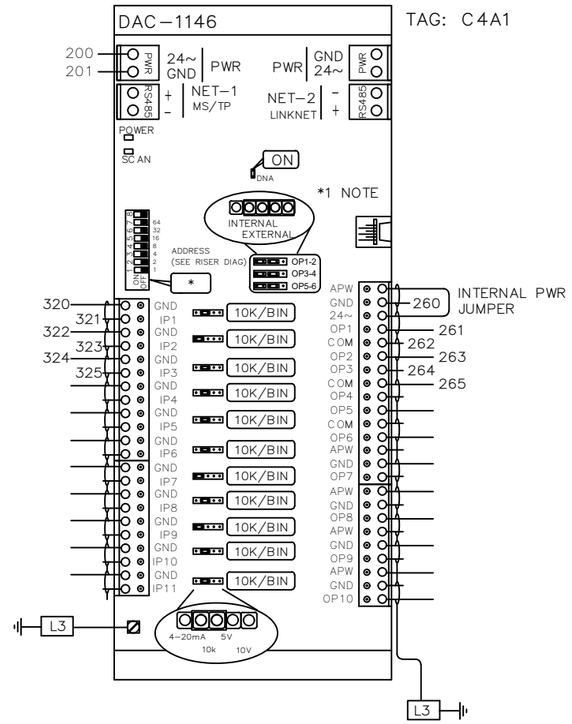
Spec. Section: 230900.99

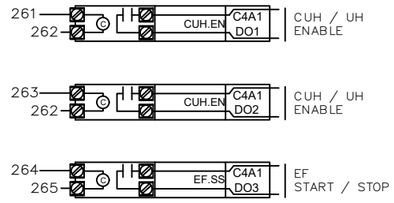
UH CE-3 CONTROL PANEL



APPLICAITON CONTROLLER – UH CE-3

TAG: C4A1





NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

UH CE-3 PANEL – I/O WIRING

Temperature Control Services
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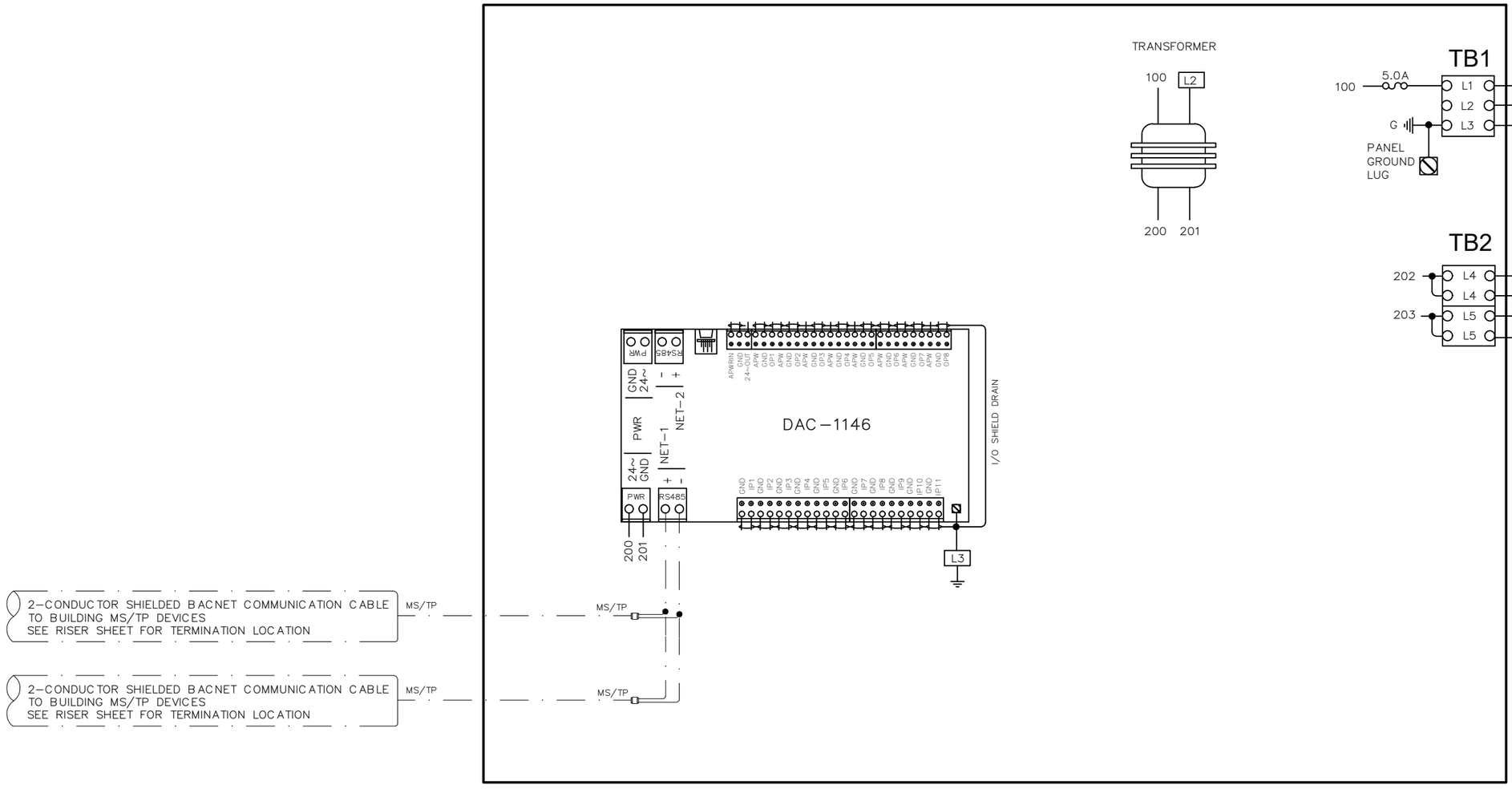
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-78
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



UH CE–3 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

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ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

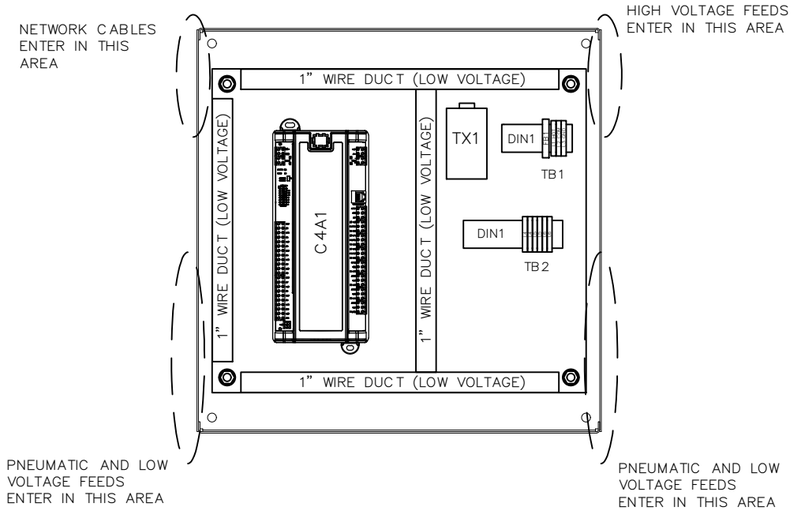
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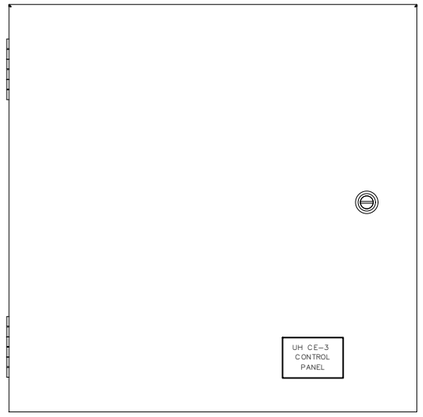
SHEET
JEL–79
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

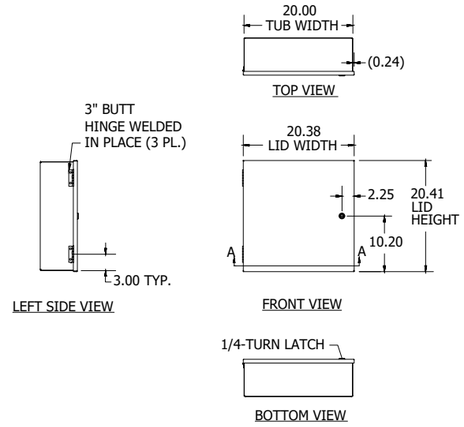
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

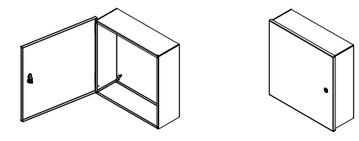
NO CONDUITS THROUGH THE TOP OF THE PANEL!



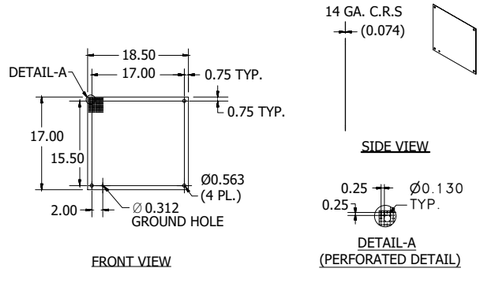


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

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2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

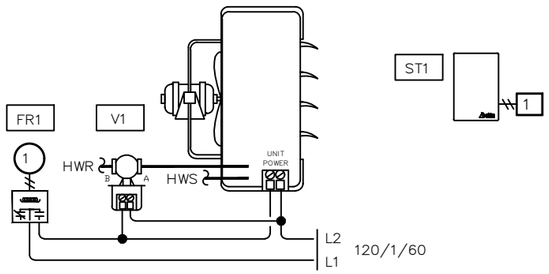
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

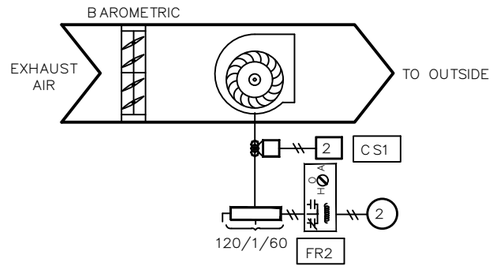
SHEET
JEL-80
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

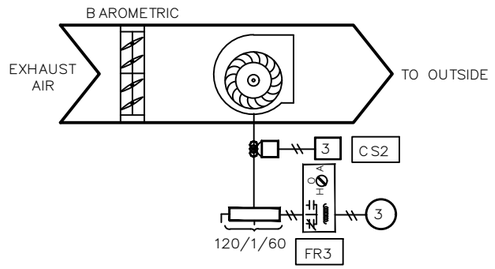
PROPELLER UNIT HEATER
UH CE–4



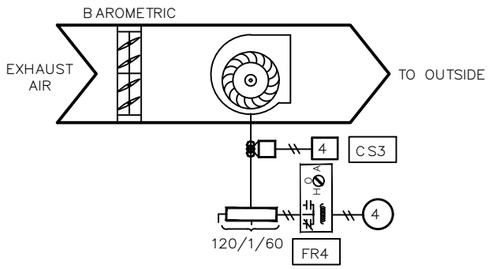
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–1



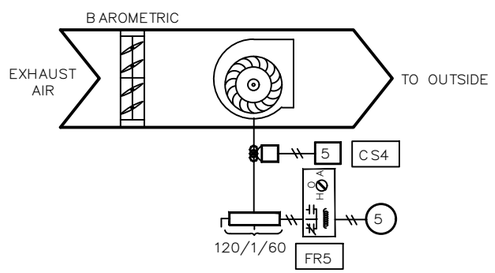
POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–14



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF C–1



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF E–4



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-4	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	4	Functional Devices	Field
FR1	RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	1	Functional Devices	Field
FR2-5	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	4	Functional Devices	Field
ST1	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field
V1	HW Valve	See Schedule	See Valve Sch for Details	1	Belimo	Field

NETWORK POINTS
N1 THROUGH N2

UH CE–4 FIELD DEVICES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
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DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–81
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

OUTPUTS

NETWORK POINTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15617.AI01	ST1	UH CE-4 SPACE TEMP	2004
2	2	15617.DI02	CS1	EF A-1 STATUS	1400
3	3	15617.DI03	CS2	EF A-14 STATUS	1400
4	4	15617.DI04	CS3	EF C-1 STATUS	1400
5	5	15617.DI05	CS4	EF E-4 STATUS	1400
6	6	15617.DI06			
7	7	15617.DI07			
8	8	15617.DI08			
9	9	15617.DI09			
10	10	15617.DI10			
11	11	15617.DI11			

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15617.DO01	FR1	UH CE-4 ENABLE	3001
2	2	15617.DO02	FR2	EF A-1 START /STOP	3107
3	3	15617.DO03	FR3	EF A-14 START /STOP	3107
4	4	15617.DO04	FR4	EF C-1 START /STOP	3107
5	5	15617.DO05	FR5	EF E-4 START /STOP	3107
6	6	15617.DO06			
7	7	15617.AO07			
8	8	15617.AO08			
9	9	15617.AO09			
10	10	15617.AO10			

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15617.N1	OAT
N2	15617.N2	OAH
N3	15617.N3	

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS

DATE	REMARKS

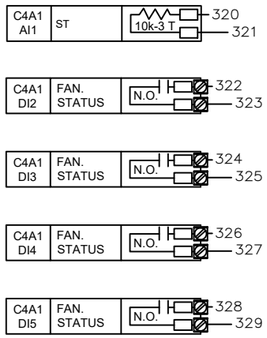
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

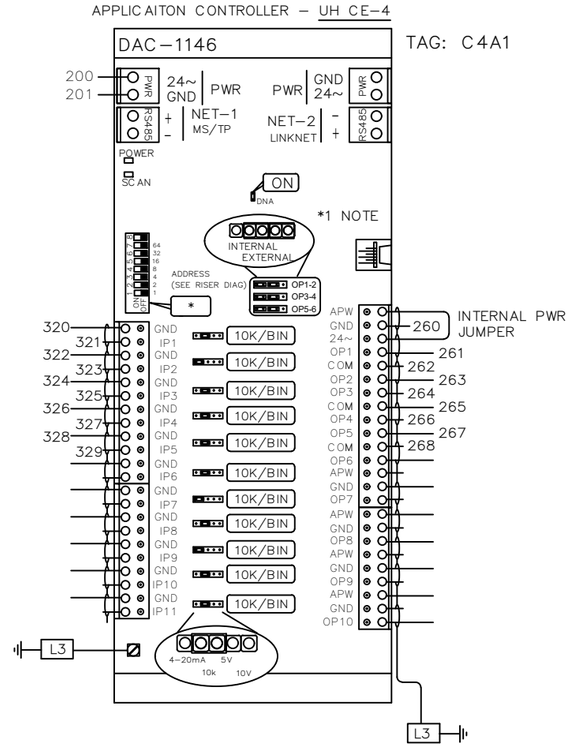
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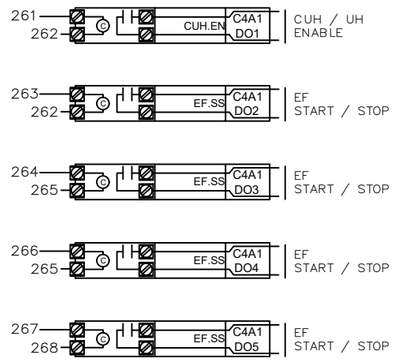
SHEET
JEL–82
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

UH CE-4 CONTROL PANEL







NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

UH CE-4 PANEL – I/O WIRING

Delta Controls
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UPDATES	
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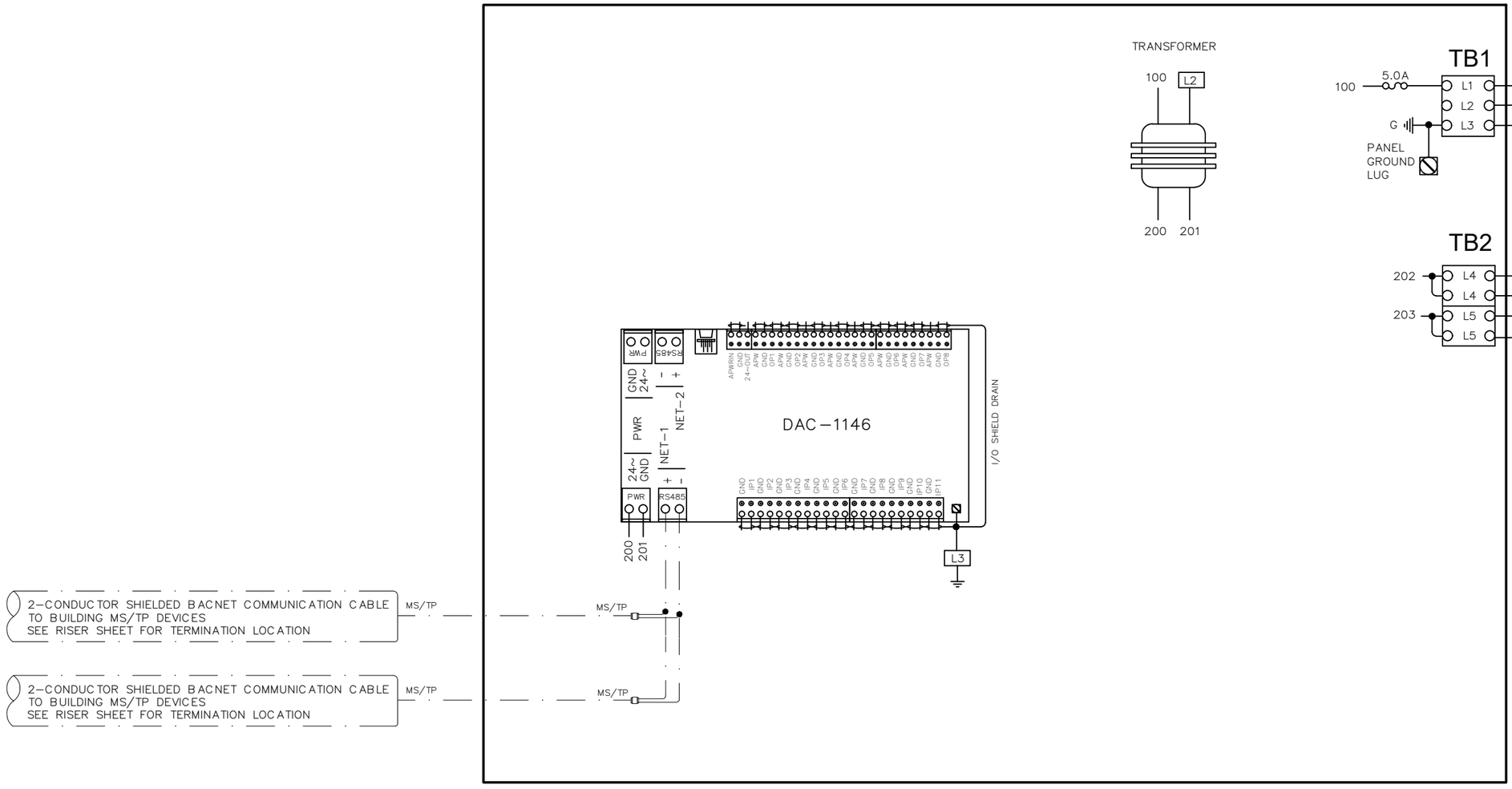
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-83
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

ECUH / UH – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)



UH CE–4 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
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LOCATION: MSD Washington Township, Indianapolis, IN
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CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

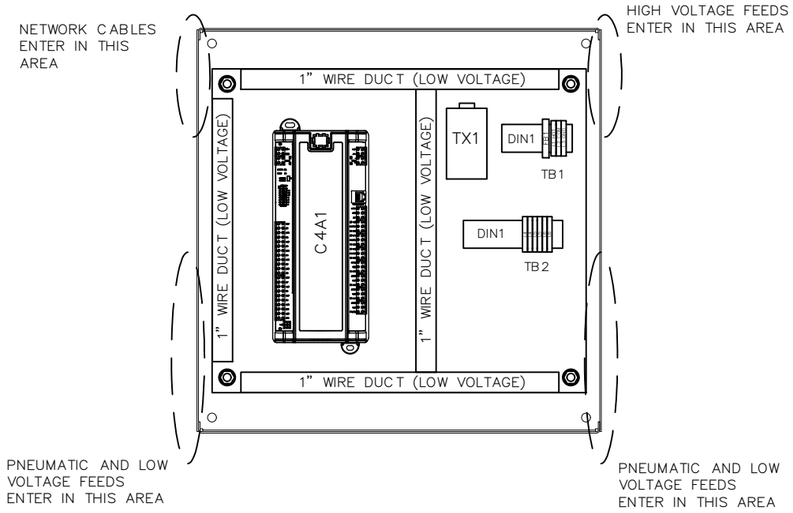
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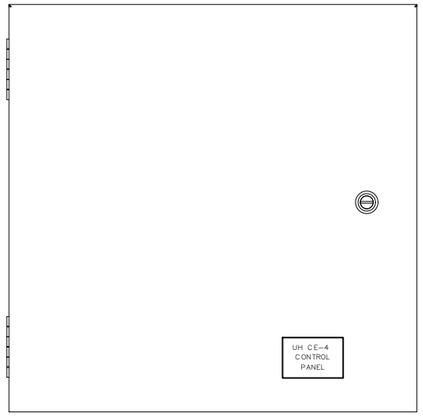
SHEET
JEL–84
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

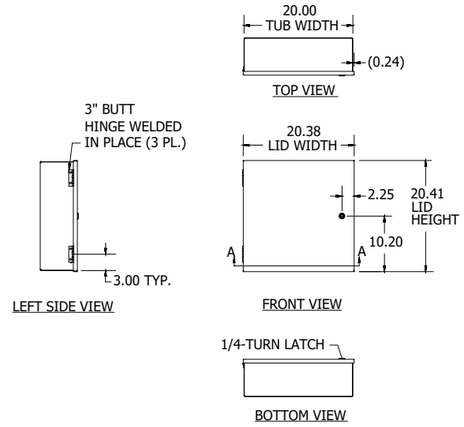
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

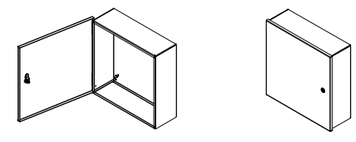
NO CONDUITS THROUGH THE TOP OF THE PANEL!



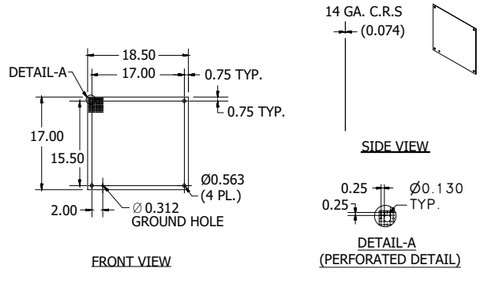


20" (W) x 20" (H) ENCLOSURE DIMENSIONS





PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Temperature Control Services
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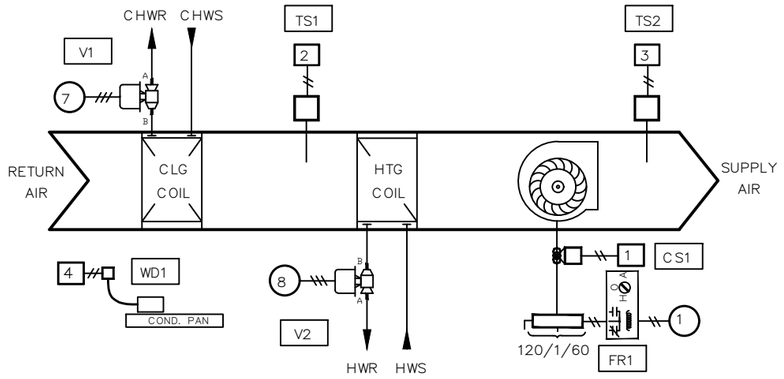
JOB TITLE: J. Everett Light Career Center
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ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL-85
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

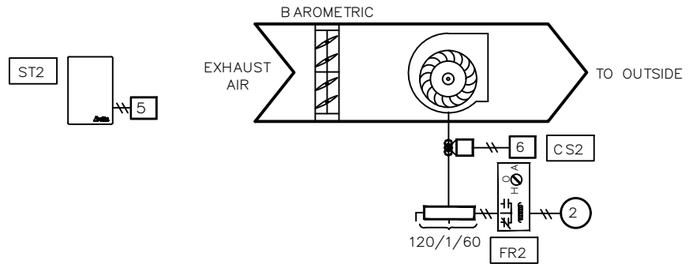
FAN COIL UNIT FIELD DEVICES
(TYPICAL FOR 1)



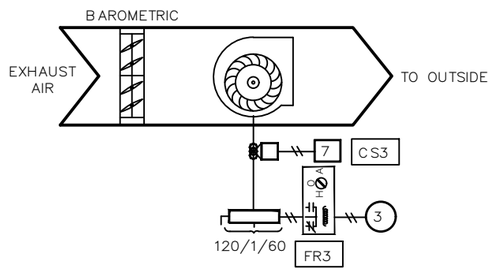
eZNS–T100 SERIES ROOM SENSOR (LINKNET)
(ST, SH, CO2, OCCUPIED, FOR FCU CA–1)



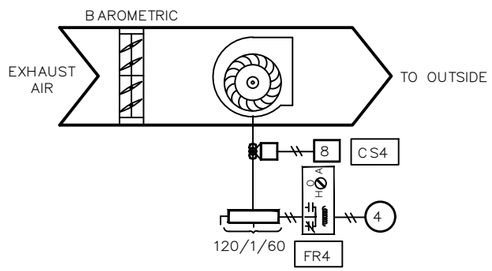
POWER VENTILATOR – TEMP CONTROLLED – FIELD DEVICES
EF A–3



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–5



POWER VENTILATOR – BAS CONTROLLED – FIELD DEVICES
EF A–6



BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
CS1-4	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	4	Functional Devices	Field
FR1-4	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	4	Functional Devices	Field
ST1	eZNS-T100CHM-ND-SC-000-WWG	337370	eZNS-T100CHM-ND-SC-000-WWG enteliZONE Network Sensor (No Display, Temp, CO2, Hum, Motion, Surfa	1	Delta Controls	Field
ST2	BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	1	BAPI	Field
TS1-2	BA/10K-3-RPP-5'	400411	BA/10K-3-RPP-5' Remote Temp Probe, 5' Lead, Plenum Rated Cable	2	BAPI	Field
V1-2	CW Valve	See Schedule	See Valve Sch for Details	2	Belimo	Field
WD1	500EP	500EP	Safe-T-Switch Water Detector	1	Rectorseal	Field

NETWORK POINTS
N1 THROUGH N9

FCU CA–1 FIELD DEVICES

Delta Controls
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CONTRACT NO:

SHEET
JEL–86
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

INPUTS

INPUTS - DAC-1146

ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15618.DI01	CS1	FCU CA-1 FAN STATUS	1400
2	2	15618.AI02	TS1	CCDAT	2002
3	3	15618.AI03	TS2	DISCHARGE AIR TEMP	2008
4	4	15618.DI04	WD1	WATER DETECTOR	1804
5	5	15618.AI05	ST2	EF A-3 SPACE TEMP	2004
6	6	15618.DI06	CS2	EF A-3 STATUS	1400
7	7	15618.DI07	CS3	EF A-5 STATUS	1400
8	8	15618.DI08	CS4	EF A-6 STATUS	1400
9	9	15618.AI09			
10	10	15618.AI10			
11	11	15618.AI11			

OUTPUTS

OUTPUTS - DAC-1146

ID.	CH	BAC_ID	TAG	IN USE BY	DATA SHEET
1	1	15618.DO01	FR1	FCU CA-1 FAN START / STOP	3001
2	2	15618.DO02	FR2	EF A-3 START /STOP	3107
3	3	15618.DO03	FR3	EF A-5 START /STOP	3107
4	4	15618.DO04	FR4	EF A-6 START /STOP	3107
5	5	15618.DO05			
6	6	15618.DO06			
7	7	15618.AO07	V1	CWV	4406a
8	8	15618.AO08	V2	HWV	4406a
9	9	15618.AO09			
10	10	15618.AO10			

NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	15618.N1	OAT
N2	15618.N2	OAH
N3	15618.N3	SUPPLY FAN ALARM
N4	15618.N4	LOW DAT ALARM
N5	15618.N5	HIGH DAT ALARM
N6	15618.N6	OCCUPIED OVERRIDE
N7	15618.N7	HW AVAILABLE
N8	15618.N8	CW AVAILABLE
N9	15618.N9	OCCUPIED
N10	15618.N10	

LINKNET NETWORK POINTS - eZNS-T100

CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
LN1	15618.LN1	ST1	SPACE TEMP SENSOR	115
LN2	15618.LN2	ST1	SPACE HUMIDITY	115
LN3	15618.LN3	ST1	SPACE CO2	115
LN4	15618.LN4	ST1	OCCUPANCY STATUS	115

FAN COIL UNIT WITH REHEAT SEQUENCE OF OPERATION:

TCC SHALL PROVIDE CONTROLS AND DEVICES SPECIFIED AND CIC SHALL INSTALL AND PROVIDE ALL CONTROL AND POWER WIRING NOT SPECIFIED OTHERWISE.

SUPPLY FAN START/STOP: THE SUPPLY FAN (SF-C) WILL BE STARTED ACCORDING TO THE OWNER-DEFINED SCHEDULE. IF THE SUPPLY FAN STATUS (SF-S) DOES NOT MATCH THE COMMANDED VALUE, AN ALARM WILL BE GENERATED. WHEN THE SUPPLY FAN STATUS INDICATES THE FAN STARTED, THE CONTROL SEQUENCE WILL BE ENABLED.

ZONE CONTROL: THE COOLING VALVE (CLG-VLV) AND HEATING VALVE (HTG-VLV) WILL MODULATE IN SEQUENCE TO MAINTAIN THE ZONE TEMPERATURE (ZN-T) AT SETPOINT OF 74F (ADJ) COOLING AND 70F (ADJ) HEATING. IF ZONE HUMIDITY RISES ABOVE 55% RH AND HOT WATER IS AVAILABLE, THE CHILLED WATER VALVE SHALL OPEN FULLY AND THE HOT WATER CONTROL VALVE WILL MODULATE TO MAINTAIN SPACE TEMPERATURE AT SETPOINT. ZONE CONTROL WILL RETURN TO NORMAL MODE WHEN SPACE HUMIDITY FALLS BELOW 50% RH (ADJ).

SHUTDOWN:
GENERATE AN ALARM AND SHUTDOWN OPERATION OF THE UNIT IN THE EVENT OF CONDENSATE SWITCH ALARM (COND-SW).

WHEN THE UNIT IS SHUTDOWN BY EITHER A STOP COMMAND OR SYSTEM SAFETY THE UNIT WILL BE SET AS FOLLOWS:

SUPPLY FAN WILL BE OFF
COOLING VALVE WILL CLOSE
HEATING VALVE WILL CLOSE

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

POWERED VENTILATOR - TEMPERATURE CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN SHALL BE STARTED ACCORDING TO WALL MOUNTED BAS THERMOSTAT (ZN-T) TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (ADJ). IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

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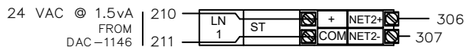
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

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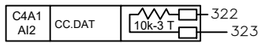
SHEET
JEL–87
JOB NUMBER:
J–2312002

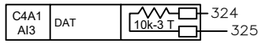
Spec. Section: 230900.99

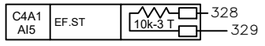
FCU CA–1 CONTROL PANEL

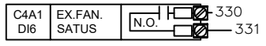


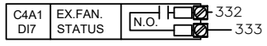




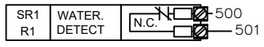




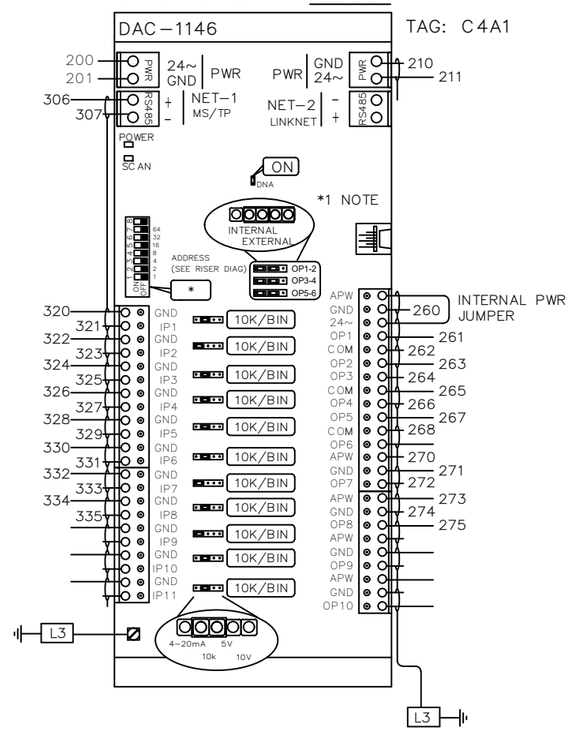


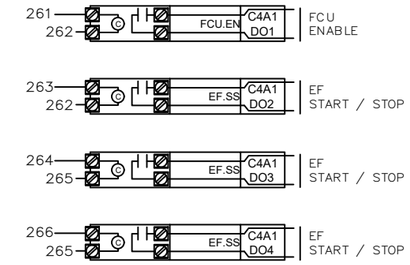


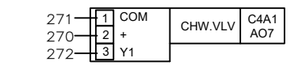


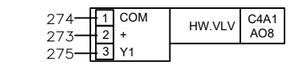


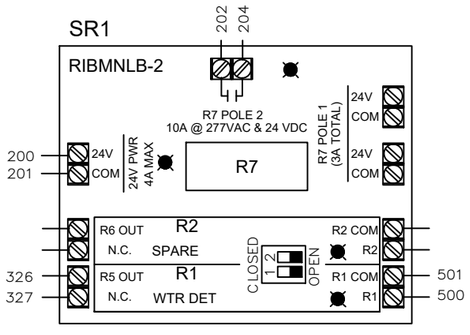
APPLICAITON CONTROLLER – FCU CA–1











NOTES:
*1 – SET POWER JUMPERS TO INTERNAL FOR OUTPUTS 1–6.

FCU CA–1 PANEL – I/O WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

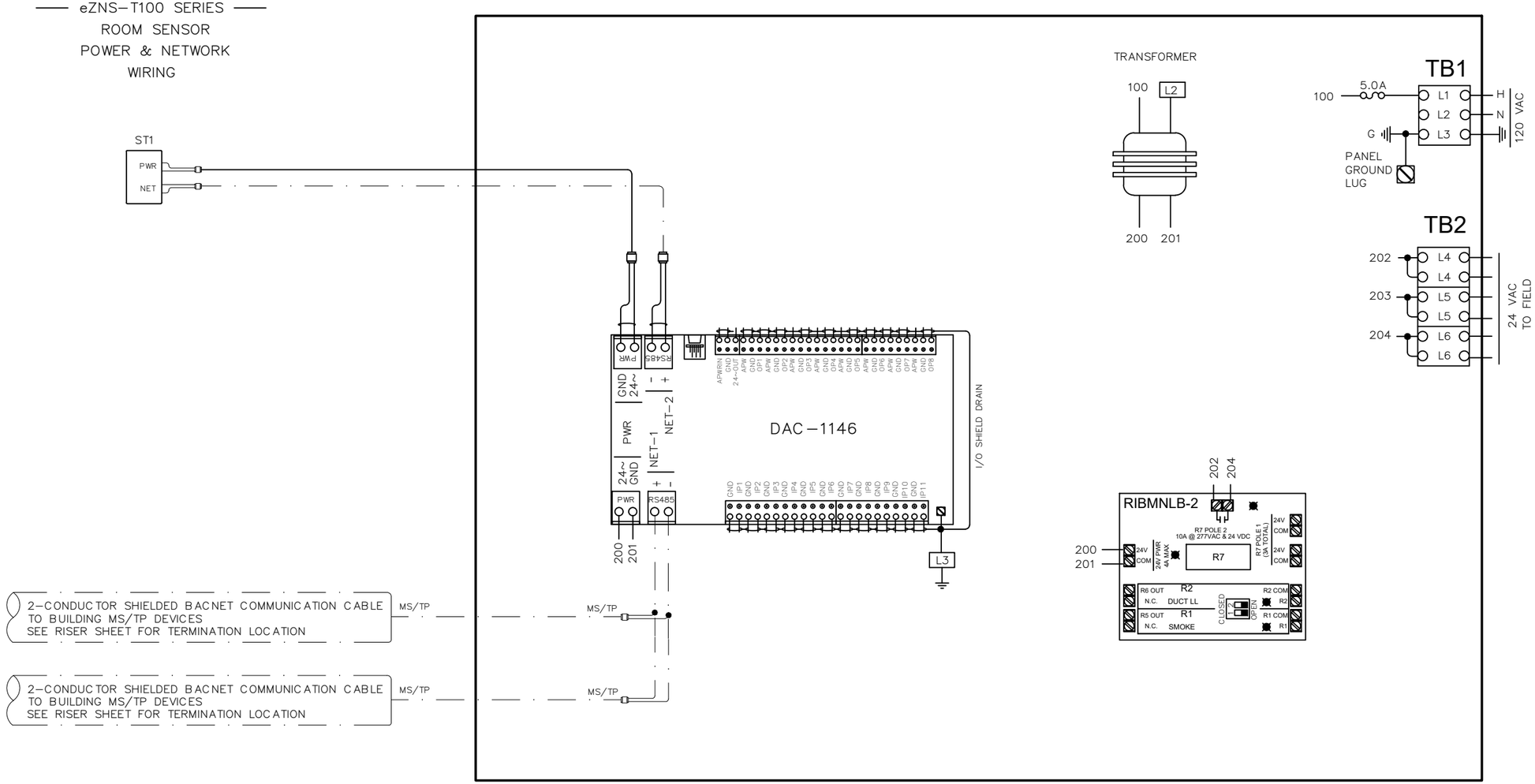
CONTRACT NO:

SHEET
JEL–88
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

FCU – APPLICATION CONTROL PANEL
(TYPICAL FOR 1)

eZNS–T100 SERIES
ROOM SENSOR
POWER & NETWORK
WIRING



FCU CA–1 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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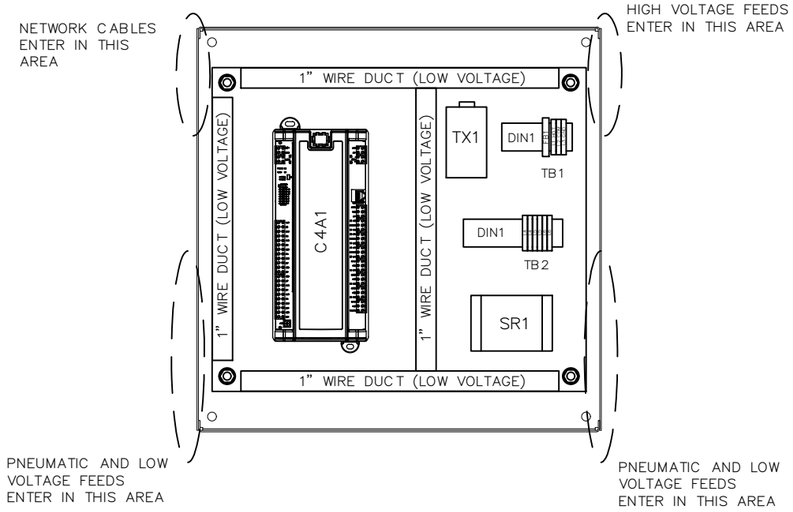
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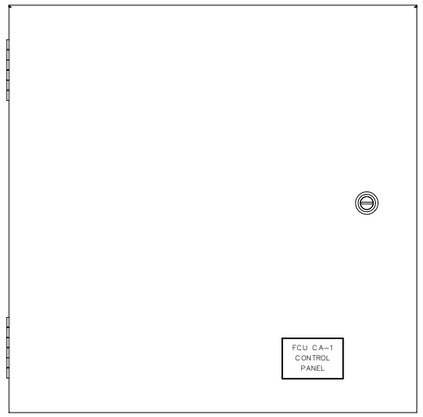
SHEET
JEL–89
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

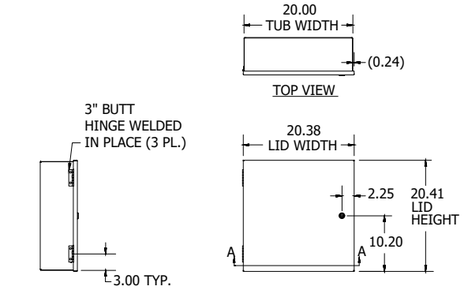
APPLICATION CONTROL PANEL LAYOUT
(TYPICAL FOR 1 PANEL)

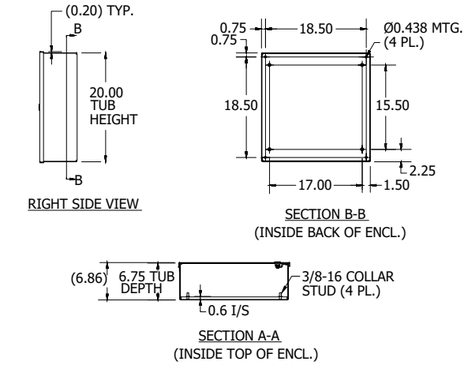
NO CONDUITS THROUGH THE TOP OF THE PANEL!

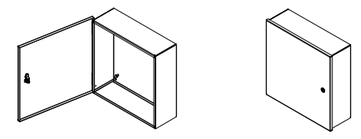




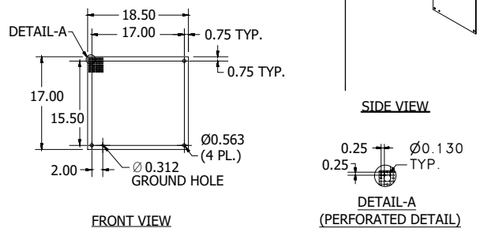
20" (W) x 20" (H) ENCLOSURE DIMENSIONS







PANEL DIMENSIONS



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C4A1	DAC-1146	321146	DAC-1146 Application Controller (11 UI,4 AOs,6 E	1	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	20 x 20 Perf Plate	N1P2020PP	Perf Backplate for 20"x20" Enc	1	Hubbell W.	Panel
ENC1	20 x 20 Enc	N1C202006LP	NEMA 1 20"x20"x6" Enc	1	Hubbell W.	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
JBH1	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	4	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PF2	K235-5	499341	K235-5 FUSE 5X20MM FAST 5 AMP 125V PKG5	1	Kele	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
SR1	RIBMNLB-2	403385	RIBMNLB-2 2.75" Track Mount AHU Fan Safety Al	1	Functional D	Panel
TS1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	8	Kele	Panel
TS2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
TS3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	4	Kele	Panel
TS4	FEM6	499921	FEM6 - END PLATE FOR M4/6	2	Kele	Panel
TS5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
TS6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	1	Kele	Panel
TX1	TR100VA005	403621	TR100VA005 Transformer 100VA, 480/277/240/11	1	Functional D	Panel

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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DATE: 1/25/2024 CHK. BY:___ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–90
JOB NUMBER:
J–2312002

FCU CA–1 CONTROL PANEL – DIMENSIONS & BOM

Spec. Section: 230900.99

VARIABLE AIR VOLUME BOX DETAIL 'E' FIELD DEVICES & CONTROLS

(TYPICAL FOR 14)

eZNS–T100 SERIES ROOM SENSOR (LINKNET)

(ST, SH, CO2, OCCUPIED)



NETWORK POINTS

NETWORK POINTS

CH.	BAC_ID	IN USE BY
N1	156xx.LN1	AIRFLOW SETPOINT
N2	156xx.LN2	COOLING SETPOINT
N3	156xx.LN3	DAT HEATING SETPOINT LIMIT
N4	156xx.LN4	HEATING SETPOINT
N5	156xx.LN5	HEATING MODE
N6	156xx.LN6	UNOCCUPIED HEATING STPT
N7	156xx.LN7	UNOCCUPIED COOLING STPT
N8	156xx.LN8	UNOCCUPIED LOW LIMIT
N9	156xx.LN9	HIGH DAT ALARM
N10	156xx.LN10	HIGH ZONE TEMP ALARM
N11	156xx.LN11	LOW DAT ALARM
N12	156xx.LN12	LOW ZONE TEMP ALARM
N13	156xx.LN13	OCCUPIED
N14	156xx.LN14	

LINKNET NETWORK POINTS - DNS-24L

CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
LN1	156xx.LN1	ST1	SPACE TEMP SENSOR	132
LN2	156xx.LN2	ST1	SPACE HUMIDITY	132
LN3	156xx.LN3	ST1	SPACE CO2	132
LN4	156xx.LN4	ST1	OCCUPANCY STATUS	132

INPUTS

INPUTS - eZV-440

CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
AF	156xx.AF	C1	AIRFLOW SENSOR	128
1	156xx.AI01	TS1	DISCHARGE AIR TEMP	2002
2	156xx.AI02	CS1	EF STATUS	1400
3	156xx.AI03			
4	156xx.DI04			

OUTPUTS

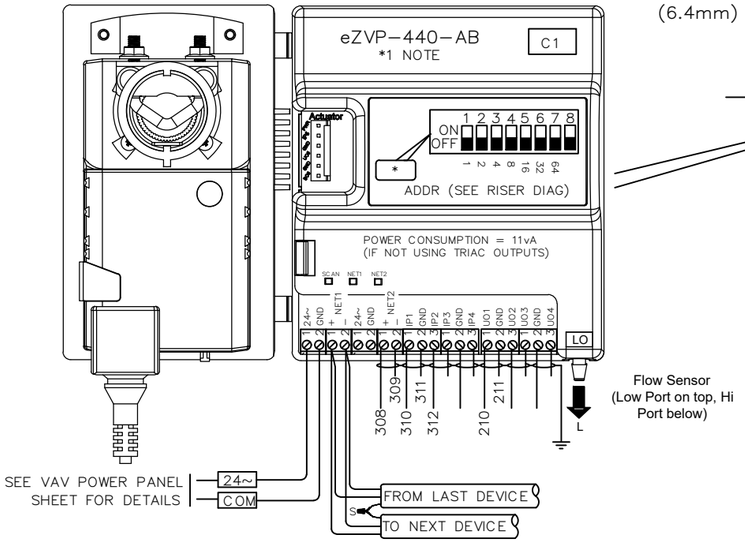
OUTPUTS - eZV-440

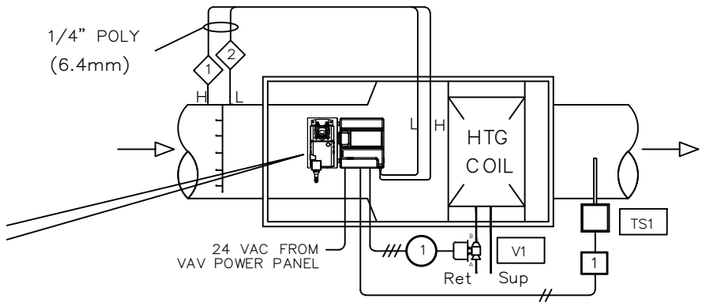
CH	BAC_ID	TAG	IN USE BY	DATA SHEET
DPR	156xx.DPR	C1	DAMPER	128
1	156xx.D001	V1	HOT WATER VLV	4305
2	156xx.D002	FR1	EF START / STOP	3107
3	156xx.D003			
4	156xx.A004			

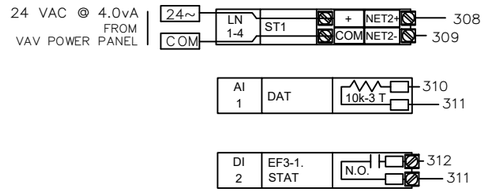
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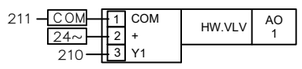
PNEUMATIC

LINE	IN USE BY
1	TOTAL PRESSURE (HI PORT)
2	STATIC PRESSURE (LO PORT)

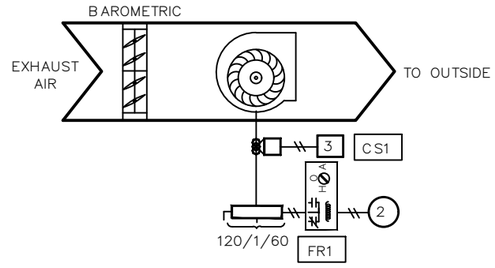








POWER VENTILATOR – BAS CONTROLLED



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C1	eZVP-440-AB	333010	eZVP-440-AB enteliZONE VAV Controller (Belimo, Programmable, MS/TP, DP sensor, 4UI, 4UO)	14	Delta Controls	Field
CS1	RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	14	Functional Devices	Field
FR1	RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	14	Functional Devices	Field
ST1	eZNS-T100CHM-ND-SC-000-WWG	337370	eZNS-T100CHM-ND-SC-000-WWG enteliZONE Network Sensor (No Display, Temp, CO2, Hum, Motion, Surfa	14	Delta Controls	Field
TS1	BA/10K-3-D-4"	400160	BA/10K-3-D-4 Duct Temp Sensor, 4 Stainless Steel Probe, Steel J-Box Enclosure	14	BAPI	Field
V1	RH Valve	See Schedule	See Valve Sch for Details	14	Belimo	Field

BACNet ADDRESS NOTES:
** – NUMBERS ARE DERIVED FROM THE SYSTEM CONTROLLER ADDRESS THAT THIS MS/TP DEVICE IS SUBORDINATE TO.
xx – NUMBERS ARE DERIVED FROM THE DIP SWITCH ADDRESS ON THE VAV CONTROLLER. VAV CONTROLLERS ON EACH MS/TP LEG MUST HAVE UNIQUE DIP SWITCH BACNet (MAC) ADDRESSES!

NOTES:
*1 – CONTROLLER TO BE SHIPPED TO FACTORY FOR MOUNTING.

VAV FIELD DEVICES & CONTROLS

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
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LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–91
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

IDENTITY DATA														NOTES
ITEM	AHU	MARK	ROOM	SERVICE	MANUF.	MODEL	INLET DIA	COOLING MAX AIRFLOW (CFM)	HEATING MAX AIRFLOW (CFM)	OCC MIN AIRFLOW (CFM)	HW FLOW (GPM)	VALVE TYPE	Exhaust Fan	
1	CB-4	VAV-CC1	C-160 / C-161	AB EDIT / AUDIO	PRICE	SDV	8"	460	270	140	1.00	2-WAY	EF C-3	
2	CB-4	VAV-CC2	C-152	OFFICE / CONF.	PRICE	SDV	8"	540	320	160	1.20	2-WAY	EF D-10	
3	CB-4	VAV-CC3	C-153	EDIT ROOMS	PRICE	SDV	10"	830	500	250	1.80	2-WAY	EF B-6	
4	CB-4	VAV-CC4	C-162	CONTROL ROOM	PRICE	SDV	8"	455	270	135	1.00	2-WAY	EF C-4	
5	CB-4	VAV-CC5	B-425	PRODUCTION	PRICE	SDV	10"	840	500	250	1.80	2-WAY	EF E-2	
6	CB-4	VAV-CC6	C-148 TO C-151	STUDIOS	PRICE	SDV	12"	1305	780	390	2.80	2-WAY	EF C-2	
7	CB-4	VAV-CC7	2	STUDIOS	PRICE	SDV	10"	810	485	240	1.80	2-WAY	EF CC-3	
8	CB-4	VAV-CC8	?	?	PRICE	SDV	6"	200	120	60	0.50	2-WAY	EF CC-2	
9	CB-4	VAV-CC9	B-???	TV STUDIO	PRICE	SDV	14"	2160	1300	650	4.70	2-WAY	EF B-10	
10	CB-4	VAV-CC10	B-???	TV STUDIO	PRICE	SDV	14"	2,160	1300	650	4.70	2-WAY	EF B-9	
11	CB-4	VAV-CC11	B-???	TV STUDIO	PRICE	SDV	14"	2,160	1300	650	4.70	2-WAY	EF B-1	
12	CB-4	VAV-CC12	F-415	WORKSHOP	PRICE	SDV	8"	340	200	100	0.70	2-WAY	EF B-7	
13	CB-4	VAV-CC13	B-???	TV STUDIO	PRICE	SDV	14"	2,160	1300	650	4.70	2-WAY	EF B-5	
14	CB-4	VAV-CC14	B-???	TV STUDIO	PRICE	SDV	14"	2,160	1300	650	4.70	2-WAY	EF CC-6	

VAV BOX SEQUENCE OF OPERATION:

TCC SHALL PROVIDE A DELTA CONTROLLER FOR EACH VAV BOX AND SHIP CONTROLLER AND REQUIRED SENSORS TO THE VAV BOX MANUFACTURER FOR FACTORY INSTALLATION OF CONTROLS WITH THE EXCEPTION TO THE CONTROL VALVE AND SPACE TEMPERATURE SENSOR WHICH WILL BE FIELD INSTALLED BY THE MECHANICAL CONTRACTOR AND CIC.

DISCHARGE AIR TEMPERATURE SENSOR:
TCC SHALL PROVIDE A SUPPLY AIR TEMPERATURE SENSOR (DA-T) FOR MONITORING PURPOSES AND TO LIMIT THE DISCHARGE AT 95F (ADJ).

OCCUPIED MODE:
WHEN THE ZONE TEMPERATURE (ZN-T) IS BETWEEN THE HEATING AND COOLING SETPOINTS, THE PRIMARY AIR DAMPER (DPR-O) WILL BE AT THE MINIMUM CFM (SA-CFM) AND THE REHEAT VALVE (HTG-VLV) SHALL BE FULLY CLOSED. ON A RISE IN ZONE TEMPERATURE ABOVE THE COOLING SETPOINT OF 72F (ADJ) PLUS THE DEAD BAND, THE PRIMARY AIR DAMPER SHALL INCREASE THE CFM AND THE REHEAT VALVE SHALL REMAIN FULLY CLOSED. ON A DROP IN TEMPERATURE BELOW THE HEATING SETPOINT OF 70F (ADJ), THE REHEAT VALVE SHALL MODULATE OPEN AFTER LOOP SIGNAL INCREASE AND THE PRIMARY AIR DAMPER SHALL MAINTAIN MINIMUM CFM UP TO THE HEATING MAX AIRFLOW. REFERENCE DIAGRAM AND SETPOINT MATRIX FOR FURTHER DETAILS.

UNOCCUPIED (NIGHT SETBACK) MODE:
WHEN IN THE UNOCCUPIED MODE, THE VAV BOX SEQUENCE SHALL BE THE SAME AS THE ABOVE OCCUPIED SEQUENCE. UNOCCUPIED HEATING SETPOINT SHALL BE 65F (ADJ) AND THE COOLING SETPOINT SHALL BE 82F (ADJ). WHEN ANY TWO VAV BOXES REACH EITHER THEIR HEATING OR COOLING SETPOINT, THE AIR HANDLING UNIT SHALL START AND RUN TO MAINTAIN THE UNOCCUPIED SETPOINT. PROVIDE DIFFERENTIAL TO PREVENT SHORT CYCLING OF AHU.

POWER VENTILATOR - BAS CONTROLLED:

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

VAV SCHEDULE & SEQUENCES OF OPERATION

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

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DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–92
JOB NUMBER:
J–2312002

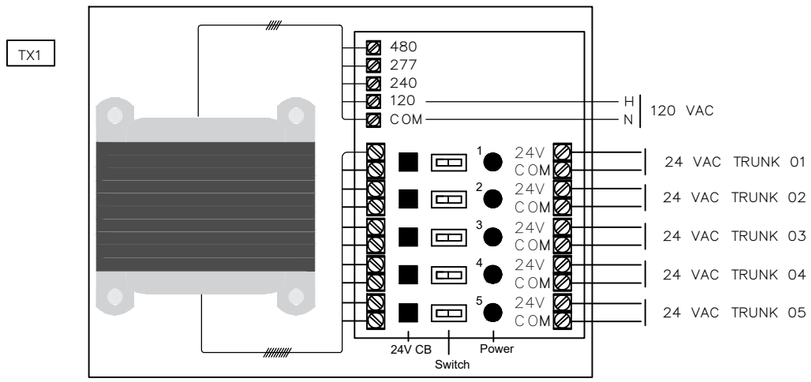
Spec. Section: 230900.99

VAV POWER DISTRIBUTION DETAILS

REMOTE 500 vA TRANSFORMER PANEL

(SEE VAV POWER PANEL SCHEDULE FOR LOCATIONS & QUANTITIES)

(LOCATE POWER PANELS ADJACENT TO THE SYSTEM CONTROL PANELS ON THE SCHEDULE)



PANEL SELECTION BASED ON 14 GA WIRE AND FIVE (5) VAV BOX CONTROLLERS PER SECONDARY TRANSFORMER LEG.

		AWG (ohms / kFt)						
		22 Ga	20 Ga	18 Ga	16 Ga	14 Ga	12 Ga	10 Ga
		16.46	10.35	7.95	4.99	3.14	1.98	1.24
A	VA	Max One-Way Distance to Load (ft)						
0.11	2.5	552	878	1144	1822	2895	4591	7331
0.21	5	289	460	599	954	1517	2405	3840
0.42	10	145	230	302	481	764	1212	1935
0.83	20	73	116	151	240	382	606	968
1.25	30	49	77	101	160	255	404	645
1.67	40	36	58	75	120	191	303	484
2.08	50	29	46	60	96	153	242	387
2.5	60	24	39	50	80	127	202	323
2.92	70	21	33	43	69	109	173	276
3.33	80	18	29	38	60	96	152	242
3.75	90	16	26	34	53	85	135	215
4	96	15	24	31	50	80	126	202

24 VAC Power Cable Sizing - Maximum allowable voltage drop

1. Supply voltage deviation should not exceed 2 VAC at any given terminal controller.
2. Table indicates the maximum one-way distance for power wiring based on load and wire size.
   a. These values will limit the voltage drop as indicated above.
3. To calculate the required wire size and maximum length:
   a. Determine power requirements for the controller and all connected devices including but not limited to:
      i. The controller itself with all onboard devices.
      ii. LINKNet controllers and devices
      iii. eZNS T-100 room sensors powered from the controller
      iv. Valve and damper actuators.
      v. Powered sensors.
      vi. Control relays.
4. Data for 18 AWG and greater wire in the accompanying table are from Chapter 9, Table 8 of the 2005 NEC. Resistance values based on a temperature of 75°C.
5. Data in the following table is based on the formula:
   a. Wire length (ft) = (Voltage Drop / (ohms per kFt * load in amps) * 1000) /2

Typical Power Calculations:

eZV-440	11 VA
eZFC-424R4-24	15 VA
DVC-V322A-B	15 VA
DNS-24L/LB/H24LB	1.5 VA
DNS-C24/CH24	3 VA
eZNS-T100 (ST)	2 VA (no backlight)
eZNS-T100 (ST)	4 VA (with backlight)
eZNS-T100 (ST/CO2)	6 VA (with backlight)
CQB24-SR	1 VA
LF24-SR	5 VA
TFB24-S	5 VA

24 VAC Power Trunks:

1. Typically utilizes #14 Gauge or heaver cable.
2. Typically, each leg is intended to support four (4) to five (5) VAV box controllers maximum.
3. See table for cable requirements for long runs and/or high VA requirements.

BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
TX1	PSH500A	403195	PSH500A Enclosed 500VA Power Supply with (5) 100VA Class 2 Outputs, 480/277/240/120 Vac to 24 Vac	1	Functional Devices	Field

VAV POWER DISTRIBUTION PANEL WIRING

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:___ DRAWN BY: BSS

CONTRACT NO:

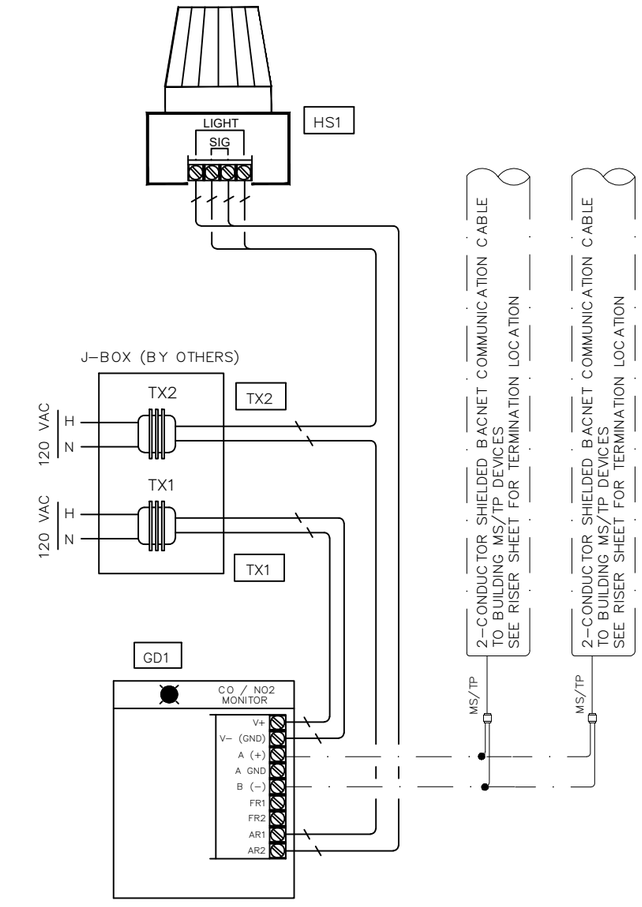
SHEET
JEL–93
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

CO2 / NO2 DETECTOR FIELD DEVICES & CONTROLS

AUTO DETAILING G–344

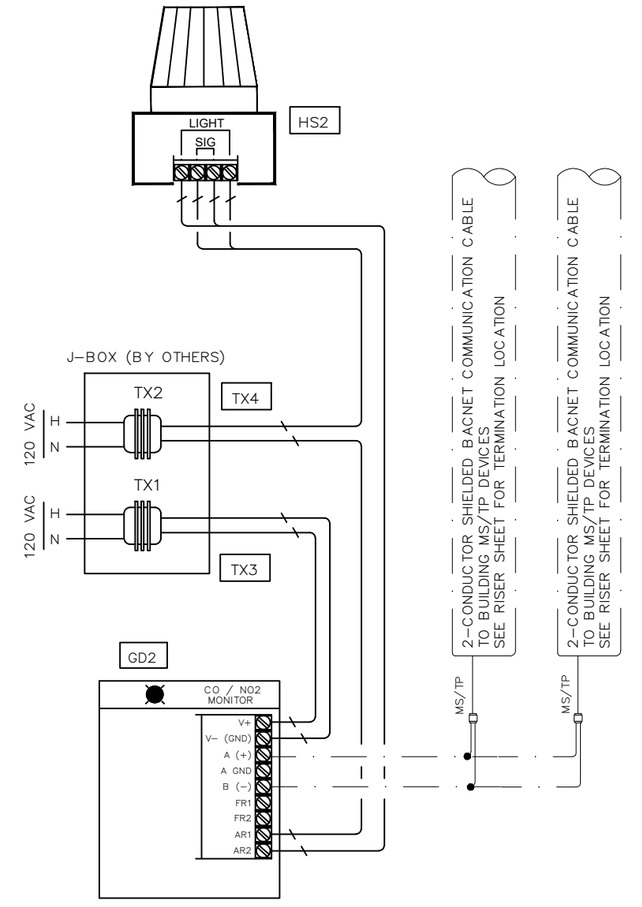
HORN & STROBE LIGHT



CO / NO2 DETECTOR

WELDING G–345

HORN & STROBE LIGHT



CO / NO2 DETECTOR

BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
GD1-2	TGM-BCN-A	TGM-BCN-A	CO / NO2 Dual Gas Sensor, Metal Case, no temp	2	Senva - Kele	Field
HS1-2	869STR-R-AQ	869STR-R-AQ	Indoor Flush Mt Horn/Strobe, Red, 24VAC	2	Edwards Signaling - Kele	Field
TX1-4	TR50VA015	403590	TR50VA015 Transformer 50VA, 480/277/240/208/120 to 24 Vac, Circuit Breaker, Foot & Single Threaded	4	Functional Devices	Field

CO / NO2 MONITORING FIELD DEVICES AND CONTROLS

Delta Controls

Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
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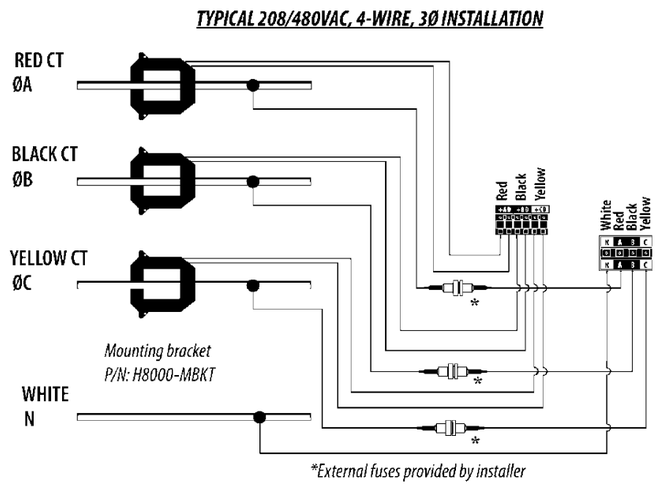
CONTRACT NO:

SHEET
JEL–94
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

POWER METER HIGH VOLTAGE WIRING DETAIL

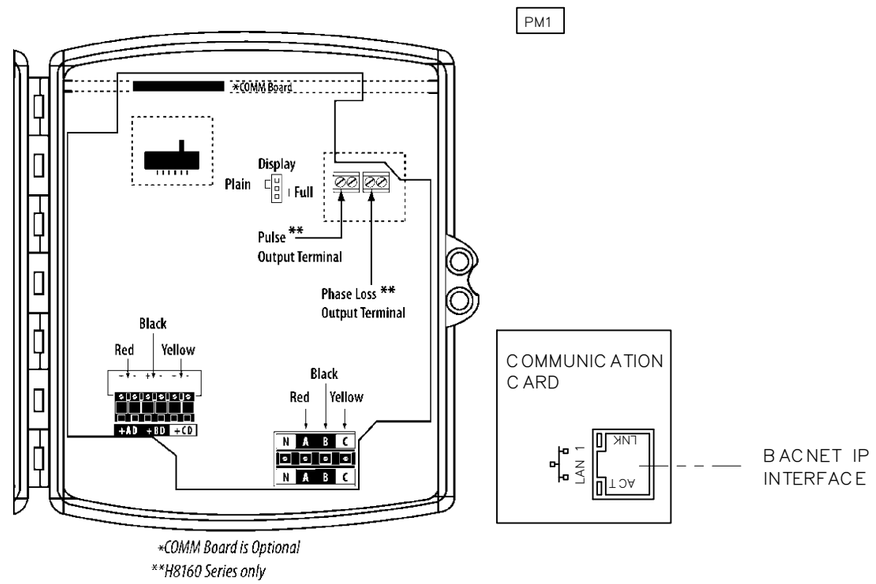
(FOR REFERENCE ONLY, WIRING EXISTING, NOT INCLUDED IN PHASE 4 SCOPE)
(TYPICAL FOR ONE (1) METER IN THIS AREA)



(CONFIRMATION OF INSTALLED COMPONENTS REQUIRED.)

POWER METER LOW VOLTAGE WIRING DETAIL

(BACNET MS/TP COMMUNICATION AND PHASE LOSS MONITORING INCLUDED IN PHASE 4 SCOPE)
(TYPICAL FOR ONE (1) METER IN THIS AREA)



*COMM Board is Optional
**H8160 Series only

ELECTRICAL UTILITY POWER MONITORING: TELECOMMUNICATIONS CONTRACTOR SHALL HOME RUN AN ETHERNET CABLE FROM THE SWITCHGEAR POWER METER TO THE NEAREST IDF NETWORK SWITCH WITH AN AVAILABLE PORT AS COORDINATED WITH THE SCHOOL INFORMATION SYSTEMS GROUP. TCC SHALL CONFIGURE POWER METER WEBPAGE FOR ADMIN AND USER ACCOUNTS TO MANUALLY MONITOR POWER METER DATA VIA BUILT-IN WEBPAGE.

BILL OF MATERIAL

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
PM1	Pwr Mon (EBO)	N/A	Power Monitor (by others)	1	Others	Field

POWER MONITORING FIELD DEVICES

Delta Controls
Temperature Control Services
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CONTRACT NO:

SHEET
JEL-95
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

BAS ALARM MONITORING



BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
BZR1	Panel Buzzer	ECX2070-24	Buzzer, 25mA, 24Vac/dc, 80dB	1	Automation Direct	Field
PLG1-22	AP8M122-G	499694	AP8M122-G PILOT LIGHT MINIATURE 8MM FLAT LE	22	Kele	Field
PLR1-27	AP8M122-R	499695	AP8M122-R PILOT LIGHT MINIATURE 8MM FLAT LE	27	Kele	Field
SW1-2	ABW111	499915	ABW111 PUSH BUTTON 1NO 1NC MOMENTARY FL	2	Kele	Field
V1	HW Valve	See Schedule	See Valve Sch for Details	1	Belimo	Field

BAS ALARM ANNUNCIATOR PANEL LAYOUT

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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JEL-96
JOB NUMBER:
J-2312002

Spec. Section: 230900.99

BUILDING MANAGEMENT SYSTEM ANNUNCIATOR PANEL

IT IS THE INTENTION OF THIS DESIGN TO INCLUDE A WALL MOUNTED ANNUNCIATOR PANEL THAT PROVIDES NORMAL AND ALARM CONDITION FEEDBACK OF THE MAJOR MECHANICAL EQUIPMENT IN THE BUILDING TO ASSIST THE OWNER WITH RESPONSE TIME TO EQUIPMENT ISSUES. CHILLERS, BOILERS, AIR HANDLERS, PUMPS, AND OTHER CRITICAL EQUIPMENT SHALL BE MONITORED FOR A NORMAL OR ALARM CONDITION. A GRAPHIC REPRESENTING AN EXACT REPLICA OF THE WALL MOUNTED PANEL SHALL BE PROVIDED BY TCC FOR REMOTE MONITORING OF BUILDING CONDITIONS. TCC SHALL PROVIDE ALL PROGRAMMING, MATERIALS, ALARMS, LIGHT CONTROL, AND INTEGRATIONS REQUIRED FOR A COMPLETE REPRESENTATION OF ALL BUILDING AUTOMATION EQUIPMENT CONDITION FEEDBACK. TCC RESPONSIBLE TO PROVIDE SUBMITTAL OF PROPOSED DESIGN TO THE ENGINEER AND OWNER FOR APPROVAL PRIOR TO PROJECT COMPLETION. INCLUDE DETAILS IN SUBMITTAL IDENTIFYING NORMAL/ALARM DEDICATED SYSTEM LIGHTS AND NEGOTIATED USER-DEFINED LOGIC INCLUDING A PANEL LAYOUT AND ALARM CONDITION MATRIX. THE GRAPHIC SHALL INCLUDE THE ADDITIONAL FUNCTIONALITY TO DISPLAY WHAT CONDITIONS MUST BE CORRECTED AND/OR ACTIONS TAKEN TO CLEAR AN ACTIVE ALARM.

REMOTE ANNUNCIATOR PANEL: TCC SHALL INSTALL THE ANNUNCIATOR PANEL IN THE BUILDING ENGINEERS OFFICE IN A HIGHLY VISIBLE LOCATION. TCC SHALL PROVIDE AN ETHERNET LEVEL CONTROLLER AND ALL REQUIRED PANEL AND FIELD DEVICES FOR A COMPREHENSIVE SOLUTION SPECIFIC TO THE EQUIPMENT IN THE BUILDING. IN ADDITION TO EQUIPMENT FEEDBACK, THE PANEL SHALL ALSO INCLUDE LOCAL HORN/STROBE, SILENCE BUTTON, AND TEST BUTTON. THE PANEL SHALL INCLUDE A TOTAL OF (5) SPARE USER-DEFINABLE ALARM LIGHTS THAT THE OWNER CAN CUSTOMIZE AS NEEDED.

IDF/ MDF NETWORK CONNECTION: TCC SHALL FURNISH, ROUTE, AND INSTALL A NETWORK CONNECTION FROM THE ANNUNCIATOR PANEL TO THE NEAREST BUILDING NETWORK SWITCH. TCC RESPONSIBLE TO COORDINATE WITH THE OWNER FOR SWITCH UTILIZATION, ROUTING APPROVAL, FINAL CONNECTIONS, AND PORT PROVISIONING ON THE NETWORK. FIRE CAULKING WHERE REQUIRED IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR AND SHALL BE IDENTIFIED AND COORDINATED BY TCC.

120VAC POWER REQUIREMENT: THE ELECTRICAL CONTRACTOR SHALL FURNISH POWER TO THE ANNUNCIATOR PANEL AND COORDINATE WITH TCC FOR TERMINAL STRIP TERMINATION REQUIREMENTS. ALL INSTALLATION AND MATERIAL, INCLUDING BUT NOT LIMITED TO, POWER LINE FILTERING TO THE ANNUNCIATOR PANEL IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

THIRD-PARTY BACnet CONSIDERATION: NORMAL AND ALARM CONDITIONS THAT ORIGINATE FROM NON-DELTA CONTROLLERS SHALL UTILIZE THE BACnet POINTS MADE AVAILABLE BY THE MANUFACTURER TO DETERMINE ANNUNCIATOR FEEDBACK.

NORMAL AND ALARM EQUIPMENT CONDITIONS: TCC SHALL MONITOR EQUIPMENT RUN COMMANDS AND STATUS FEEDBACK ON EQUIPMENT CONTROLLED BY DELTA CONTROLLERS TO DETERMINE AN ALARM (RED) OR NORMAL (GREEN) CONDITION. EQUIPMENT IN HAND OR NOT REFLECTIVE OF COMMAND SHALL VISIBLY (RED LIGHT) AND AUDIBLY (LOCAL HORN/STROBE) INDICATE ALARM CONDITION. BACnet INTEGRATIONS THAT INCLUDE RUN COMMAND AND STATUS FEEDBACK POINTS SHALL ALSO HAVE DEDICATED ALARM/NORMAL (RED/GREEN) INDICATION. LOSS OF COMMUNICATION SHALL RESULT IN A EQUIPMENT SPECIFIC ALARM (RED) CONDITION. ADDITIONAL LOGIC CONSIDERATION OF: DISCHARGE AIR AND WATER TEMPERATURES OUTSIDE OF A +/- 10 F (ADJ) DEADBAND OR ANY SYSTEM SAFETY TRIP, INCLUDING BUT NOT LIMITED TO: LOW LIMIT, SMOKE DETECTION, LOW/HIGH STATIC, OR LOW/HIGH HUMIDITY SHALL RESULT IN AN ALARM (RED LIGHT) CONDITION.

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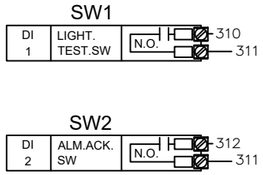
REVISIONS	
DATE	REMARKS

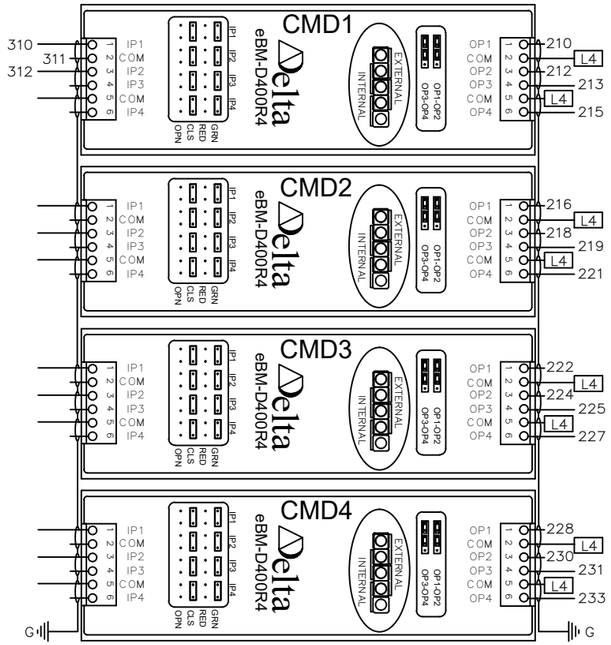
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–97
JOB NUMBER:
J–2312002

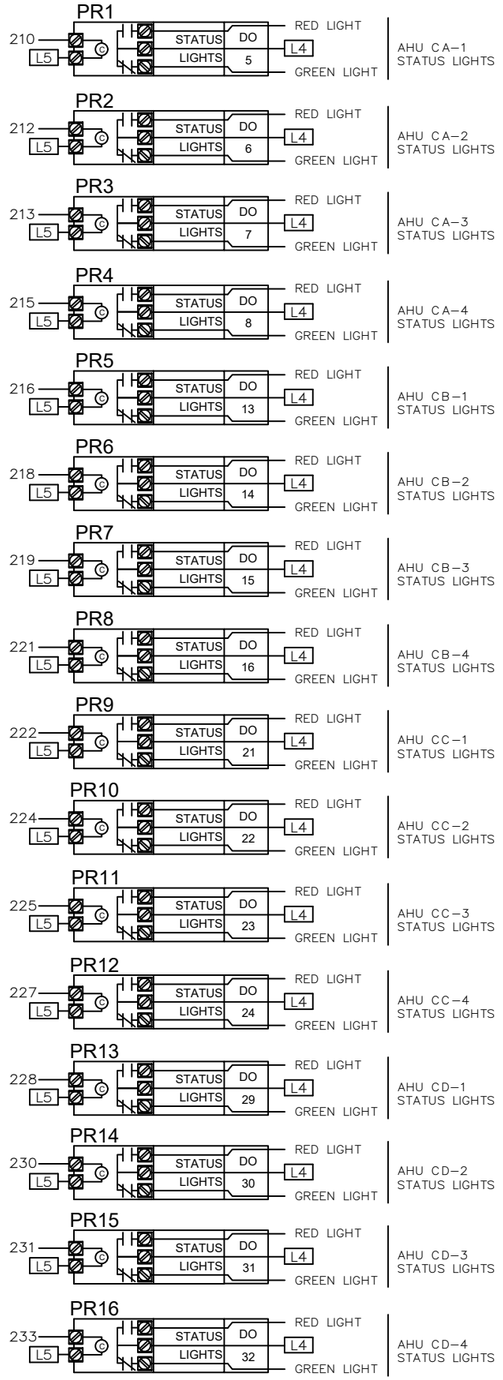
Spec. Section: 230900.99





	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
CMD1 eBM-D400R — INPUTS	1	1	15600.1101	SW1	LIGHT TEST	1805
	2	2	15600.1102	SW2	ALARM ACKNOWLEDGE	1805
	3	3	15600.1103			
	4	4	15600.1104			
CMD1 eBM-D400R — OUTPUTS	5	1	15600.1101	PR1	AHU CA-1 STATUS LTS	3010
	6	2	15600.1102	PR2	AHU CA-2 STATUS LTS	3010
	7	3	15600.1103	PR3	AHU CA-3 STATUS LTS	3010
	8	4	15600.1104	PR4	AHU CA-4 STATUS LTS	3010
	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
CMD2 eBM-D400R — INPUTS	9	1	15600.1201			
	10	2	15600.1202			
	11	3	15600.1203			
	12	4	15600.1204			
CMD2 eBM-D400R — OUTPUTS	13	1	15600.1201	PR5	AHU CB-1 STATUS LTS	3010
	14	2	15600.1202	PR6	AHU CB-2 STATUS LTS	3010
	15	3	15600.1203	PR7	AHU CB-3 STATUS LTS	3010
	16	4	15600.1204	PR8	AHU CB-4 STATUS LTS	3010
	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
CMD3 eBM-D400R — INPUTS	17	1	15600.1301			
	18	2	15600.1302			
	19	3	15600.1303			
	20	4	15600.1304			
CMD3 eBM-D400R — OUTPUTS	21	1	15600.1301	PR9	AHU CC-1 STATUS LTS	3010
	22	2	15600.1302	PR10	AHU CC-2 STATUS LTS	3010
	23	3	15600.1303	PR11	AHU CC-3 STATUS LTS	3010
	24	4	15600.1304	PR12	AHU CC-4 STATUS LTS	3010
	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET
CMD4 eBM-D400R — INPUTS	25	1	15600.1401			
	26	2	15600.1402			
	27	3	15600.1403			
	28	4	15600.1404			
CMD4 eBM-D400R — OUTPUTS	29	1	15600.1401	PR13	AHU CD-1 STATUS LTS	3010
	30	2	15600.1402	PR14	AHU CD-2 STATUS LTS	3010
	31	3	15600.1403	PR15	AHU CD-3 STATUS LTS	3010
	32	4	15600.1404	PR16	AHU CD-4 STATUS LTS	3010

eBM-D400R4 I/O MOD



Delta CONTROLS
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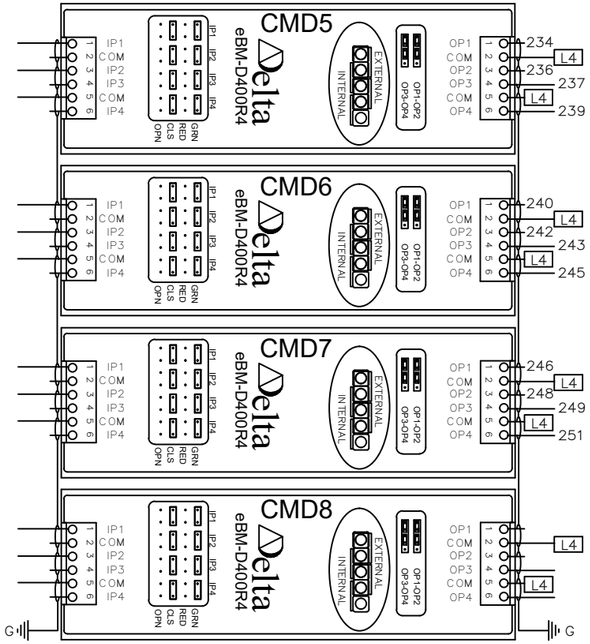
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DATE	REMARKS

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LOCATION: MSD Washington Township, Indianapolis, IN
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CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–98
JOB NUMBER:
J–2312002

Spec. Section: 230900.99



	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET	
INPUTS	33	1	15600.1501				eBM-D400R4 I/O MOD
	34	2	15600.1502				
	35	3	15600.1503				
	36	4	15600.1504				
OUTPUTS	37	1	15600.1501	PR17	AHU CD-5 STATUS LTS	3010	
	38	2	15600.1502	PR18	AHU CD-6 STATUS LTS	3010	
	39	3	15600.1503	PR19	AHU CD-10 STATUS LTS	3010	
	40	4	15600.1504	PR20	AHU CE-1 STATUS LTS	3010	

CMD5 eBM-D400R

	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET	
INPUTS	41	1	15600.1601				eBM-D400R4 I/O MOD
	42	2	15600.1602				
	43	3	15600.1603				
	44	4	15600.1604				
OUTPUTS	45	1	15600.1601	PR21	AHU CE-2 STATUS LTS	3010	
	46	2	15600.1602	PR22	FCU CA-1 STATUS LTS	3010	
	47	3	15600.1603	PLR22	BAS ALARM OPTION 1	3903	
	48	4	15600.1604	PLR23	BAS ALARM OPTION 2	3903	

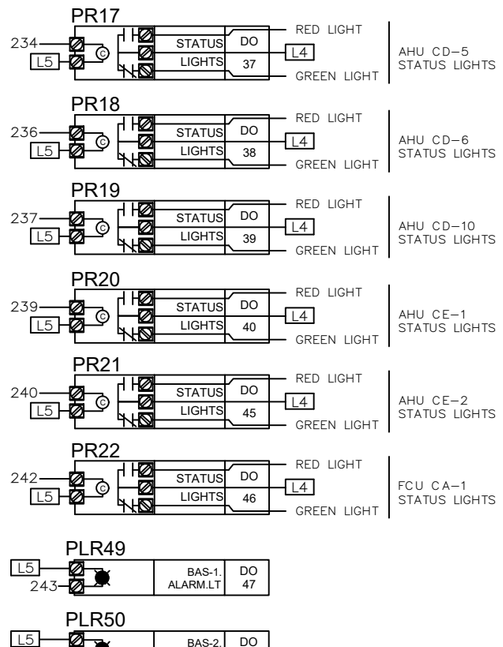
CMD6 eBM-D400R

	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET	
INPUTS	49	1	15600.1701				eBM-D400R4 I/O MOD
	50	2	15600.1702				
	51	3	15600.1703				
	52	4	15600.1704				
OUTPUTS	53	1	15600.1701	PLR24	BAS ALARM OPTION 3	3903	
	54	2	15600.1702	PLR25	BAS ALARM OPTION 4	3903	
	55	3	15600.1703	PLR26	BAS ALARM OPTION 5	3903	
	56	4	15600.1704	BZR1	ALM PANEL BUZZER	614	

CMD7 eBM-D400R

	ID.	CH.	BAC_ID	TAG	IN USE BY	DATA SHEET	
INPUTS	57	1	15600.1801				eBM-D400R4 I/O MOD
	58	2	15600.1802				
	59	3	15600.1803				
	60	4	15600.1804				
OUTPUTS	61	1	15600.1801				
	62	2	15600.1802				
	63	3	15600.1803				
	64	4	15600.1804				

CMD8 eBM-D400R



ANNUNCIATOR PANEL SYSTEM 56 CONTROL PANEL – I/O WIRING (2 OF 2)

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
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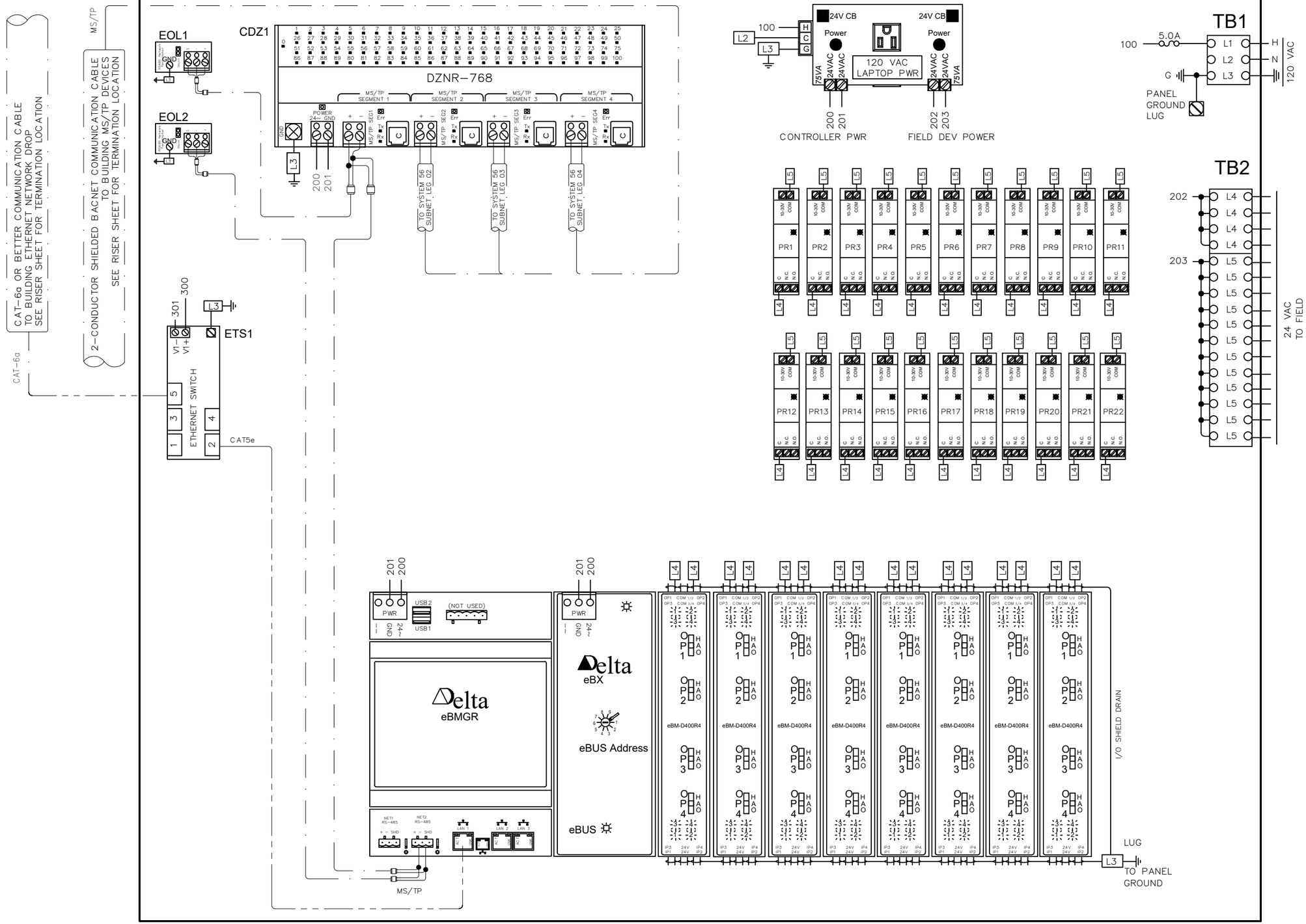
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SHEET
JEL–99
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

SYSTEM CONTROL PANEL 56



SEE RISER DIAGRAMS FOR LOCATION

ANNUNCIATOR PANEL SYSTEM 56 CONTROL PANEL – POWER & NETWORK WIRING

Delta Controls

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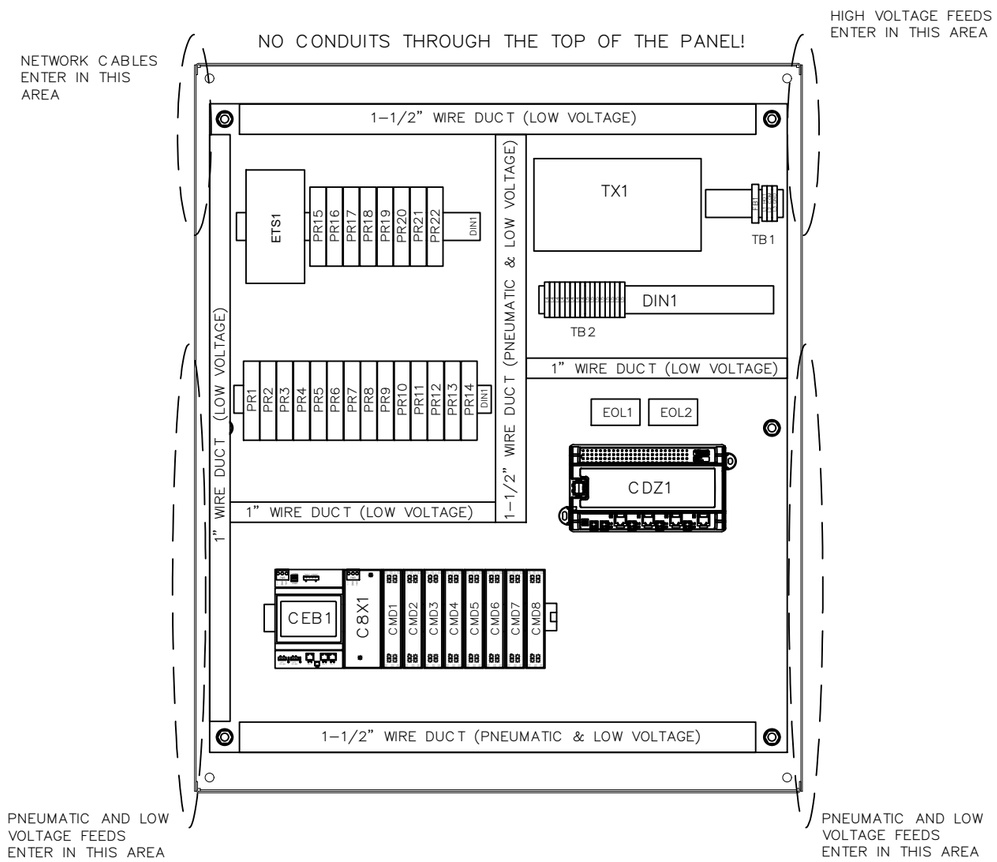
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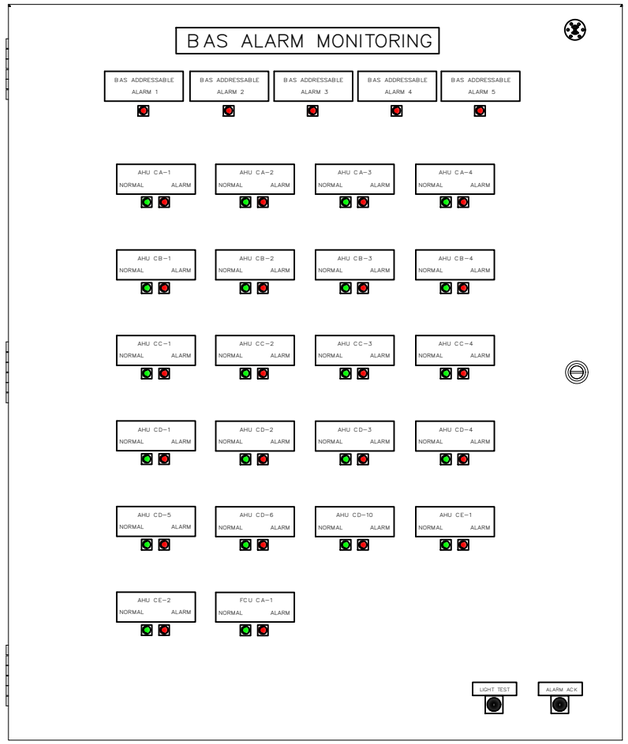
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JEL-100
JOB NUMBER:
J-2312002

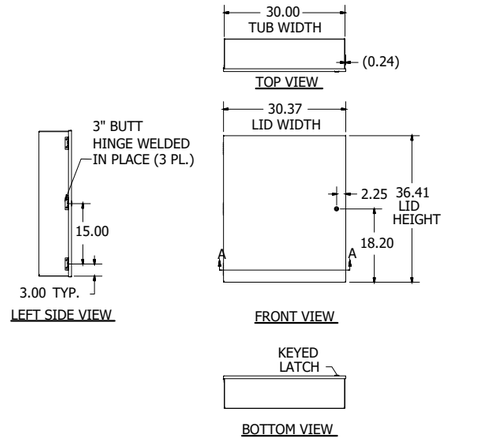
Spec. Section: 230900.99

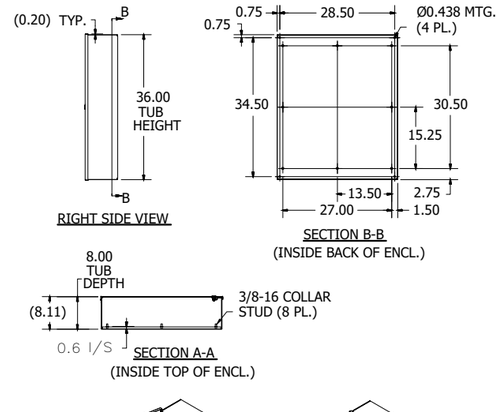
SYSTEM CONTROL PANEL 56 LAYOUT

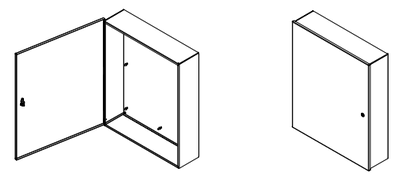




30" (W) x 36" (H) ENCLOSURE DIMENSIONS







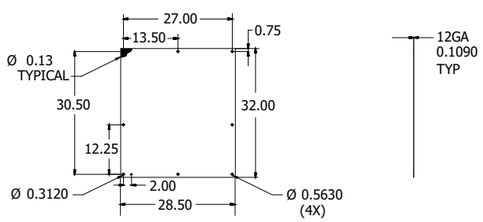
BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
C8X1	eBX-08	311602	eBX-08 enteliBUS Expander Backplane (8 slot)	1	Delta Contro	Panel
CBL1	eBB-CABLE	272600	eBB-CABLE Cable Kit for enteliBUS (CAN)	1	Delta Contro	Panel
CDZ1	DZNR-768	332460	DZNR-768 BACnet Network Repeater (4 Port MS/	1	Delta Contro	Panel
CEB1	eBMGR-2	301604	eBMGR-2 enteliBUS System Controller w/Ethern	1	Delta Contro	Panel
CMD1-8	eBM-D400R4	375610	eBM-D400R4 enteliBUS Module (4 BIs,4 Relay OF	8	Delta Contro	Panel
DR1	DIN-3F	499991	DIN-3F - STEEL DIN RAIL - 1 METER	1	Kele	Panel
EBP1	36 x 30 Perf Plate	N1P3036PP	Perf Backplate for 36"x30" Enc	1	Hubbell W.	Panel
ENC1	36 x 30 Enc	N1C303608LP	NEMA 1 36"x30"x8.63" Enc	1	Hubbell W.	Panel
EOL1-2	TRM768	151924	TRM768 Network Terminator (MS/TP)	2	Delta Contro	Panel
ETS1	DVS-005I00	507500	DVS-005I00 Unmanaged Industrial 5-Port Ethern	1	Delta Electro	Panel
FH1	M4/8SF	499975	M4/8SF - 8MM K-235 FUSEHOLDER	1	Kele	Panel
FHE1	FEM8S	499803	FEM8S END PLATE FOR M4/8SF GRAY	1	Kele	Panel
PAN1	Wire Duct 1.5 x 3	TY15X3WPW6C	1.5"x3"x6.5' Wire Duct, White	1	Kele	Panel
PAN2	Wire Duct 1 x 1.5	TY1X15WPW6C	1"x1.5"x6.5' Wire Duct, White	1	Kele	Panel
PB1	M4/6	499994	M4/6 - 6MM (.238IN) TERMINAL BLOCK	19	Kele	Panel

BILL OF MATERIALS

TAG	ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
PB2	M4/6.P	499974	M4/6.P -GROUNDING LUG GREEN YELLOW	1	Kele	Panel
PB3	BAM4	499352	BAM4 END STOP GRAY FOR M4/6	9	Kele	Panel
PB4	FEM6	499921	FEM6 - END PLATE FOR M4/6	3	Kele	Panel
PB5	SCF6	499333	SCF6 CIRCUIT SEPARATOR	2	Kele	Panel
PB6	BJS6-10	499313	BJS6-10 JUMPER BAR 10 POLES PER BAR	4	Kele	Panel
PB7	EV6	499726	EV6 JUMPER BAR SUB-ASY PKG20	1	Kele	Panel
PLK1	Keyed Lock	N1C14TKL	Cylinder Lock Kit	1	Hubbell W.	Panel
PNL1	PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel
PR22	RIBRL1C	403319	RIBRL1C DIN Mount Relay 10 Amp SPDT with 10-	22	Functional D	Panel
TRM1-2	eBB-TERM	272601	eBB-TERM Network Terminator for enteliBUS (C	2	Delta Contro	Panel
TX1	PSH75A75A	403205	PSH75A75A Enclosed Dual 75VA, Multi-tap 480/2	1	Functional D	Panel

PANEL DIMENSIONS



ANNUNCIATOR PANEL SYSTEM 56 CONTROL PANEL – DIMENSIONS & BOM

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
JEL–101
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

	From Project Specifications								Valve Type and Actuator Specifications																			Ordering Data					
																				2 WAY		3 WAY										
																				2VDC FAIL		2VDC FAIL										
Reference	Quantity	Building / Phase	Valve Tag	Flow (GPM)	TargetPressure Drop (PSI)	Target Cv Rating	Pipe Size (in.)	Required Close-off Pressure (PSI)	Valve Size (in.)	Valve Cv	Actual Pressure drop (PSI)	Ball	Globe	Butterfly	24 VAC	120 VAC	On-Off	Tri-State	Modulating	Spring Rtn .	Switches	OPEN	CLOSED	OPEN	CLOSED	B TO AB OPEN	A TO AB OPEN	B TO AB OPEN	A TO AB OPEN	Valve #	Actuator #	Clip Position	Data Sheet	Notes
1	1	4	UH CD-2 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
2	1	4	UH CD-3 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
3	1	4	UH CD-4 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
4	1	4	UH CD-5 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
5	1	4	UH CD-6 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
6	1	4	UH CD-7 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
7	1	4	UH CD-8 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
8	1	4	UH CD-9 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
9	1	4	UH CD-10 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
10	1	4	UH CD-11 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
11	1	4	UH CD-12 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
12	1	4	UH CD-13 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
13	1	4	UH CD-14 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
14	1	4	UH CE-1 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
15	1	4	UH CE-2 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
16	1	4	UH CE-3 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
17	1	4	UH CE-4 HWV	10.40	5.00	4.65	1.00	200.0	0.75	4.70	4.90	X				X	X			X		X								B217B	TFRB120-S	–	3410	
18	1	4	VAV-CC1 HWV	1.00	5.00	0.45	0.75	75.0	0.50	0.60	2.78	X			X				X				X							Z2050Q-F	CQB24-SR-R	5+	4305	
19	1	4	VAV-CC2 HWV	1.20	5.00	0.54	0.75	75.0	0.50	0.60	4.00	X			X				X				X							Z2050Q-F	CQB24-SR-R	5+	4305	
20	1	4	VAV-CC3 HWV	1.80	5.00	0.80	0.75	75.0	0.50	0.80	5.06	X			X				X				X							Z2050Q-F	CQB24-SR-R	6	4305	
21	1	4	VAV-CC4 HWV	1.00	5.00	0.45	0.75	75.0	0.50	0.60	2.78	X			X				X				X							Z2050Q-F	CQB24-SR-R	5+	4305	
22	1	4	VAV-CC5 HWV	1.80	5.00	0.80	0.75	75.0	0.50	0.80	5.06	X			X				X				X							Z2050Q-F	CQB24-SR-R	6	4305	
23	1	4	VAV-CC6 HWV	2.80	5.00	1.25	0.75	75.0	0.50	1.40	4.00	X			X				X				X							Z2050Q-F	CQB24-SR-R	NONE	4305	
24	1	4	VAV-CC7 HWV	1.80	5.00	0.80	0.75	75.0	0.50	0.80	5.06	X			X				X				X							Z2050Q-F	CQB24-SR-R	6	4305	
25	1	4	VAV-CC8 HWV	0.50	5.00	0.22	0.75	75.0	0.50	0.40	1.56	X			X				X				X							Z2050Q-F	CQB24-SR-R	4+	4305	
26	1	4	VAV-CC9 HWV	4.70	5.00	2.10	0.75	75.0	0.75	3.30	2.03	X			X				X				X							Z2075Q-K	CQB24-SR-R	5	4305	
27	1	4	VAV-CC10 HWV	4.70	5.00	2.10	0.75	75.0	0.50	3.30	2.03	X			X				X				X							Z2075Q-K	CQB24-SR-R	5	4305	
28	1	4	VAV-CC11 HWV	4.70	5.00	2.10	0.75	75.0	0.50	3.30	2.03	X			X				X				X							Z2075Q-K	CQB24-SR-R	5	4305	
29	1	4	VAV-CC12 HWV	0.70	5.00	0.31	0.75	75.0	0.50	0.40	3.06	X			X				X				X							Z2050Q-F	CQB24-SR-R	4+	4305	
30	1	4	VAV-CC13 HWV	4.70	5.00	2.10	0.75	75.0	0.50	3.30	2.03	X			X				X				X							Z2075Q-K	CQB24-SR-R	5	4305	
31	1	4	VAV-CC14 HWV	4.70	5.00	2.10	0.75	75.0	0.50	3.30	2.03	X			X				X				X							Z2075Q-K	CQB24-SR-R	5	4305	
32	1	4	FCU CA-1 HWV	1.10	5.00	0.49	1.00	200.0	0.50	0.80	1.89	X			X				X	X		X								B209B	TFRB24-SR	–	4313	
33	1	4	FCU CA-1 CWV	2.70	5.00	1.21	1.00	200.0	0.50	1.90	2.02	X			X				X	X		X								B211B	TFRB24-SR	–	4313	

Delta Controls

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DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
SCH–44
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

EXHAUST FAN SCHEDULE

IDENTITY DATA				FAN DATA					ELECTRICAL DATA			UNIT CONTROL	CONTROLLED FROM	NOTES
ITEM	MARK	MANUF	SERVICES	FAN TYPE	DRIVE TYPE	AIRFLOW (CFM)	RPM	HP	VOLTS (V)	PH	FREQ (HZ)			
1	EF A-1	LOREN COOK	G-341A	CENTRIFUGAL DOWNBLAST	DIRECT	200	1725	1/4	120	1	60	BAS	UH CE-4	1,9
2	EF A-2	LOREN COOK	A-300E	CENTRIFUGAL DOWNBLAST	DIRECT	250	1725	1/4	120	1	60	BAS	ECUH B-1	1,9
3	EF A-3	LOREN COOK	G-B-139	CENTRIFUGAL DOWNBLAST	DIRECT	310	1725	1/4	120	1	60	BAS	FCU CA-1	1, 8
4	EF A-4	LOREN COOK	A-301	CENTRIFUGAL DOWNBLAST	DIRECT	750	1725	1/2	120	1	60	BAS	ECUH B-1	1,9
5	EF A-5	LOREN COOK	A-306	CENTRIFUGAL DOWNBLAST	DIRECT	1700	1725	1/3	120	1	60	BAS	FCU CA-1	1,9
6	EF A-6	LOREN COOK	A-307	CENTRIFUGAL DOWNBLAST	DIRECT	400	1725	1/4	120	1	60	BAS	FCU CA-1	1,9
7	EF A-7	LOREN COOK	A-304	CENTRIFUGAL DOWNBLAST	DIRECT	1,000	1725	3/4	120	1	60	BAS	ECUH B-1	1,9
8	EF A-8	LOREN COOK	A-304A	CENTRIFUGAL DOWNBLAST	DIRECT	350	1725	1/4	120	1	60	BAS	ECUH B-1	1,9
9	EF A-9	LOREN COOK	A-119	CENTRIFUGAL DOWNBLAST	DIRECT	1,000	1725	3/4	120	1	60	BAS	ECUH A-1	1,9
10	EF A-10	LOREN COOK	A-411	CENTRIFUGAL DOWNBLAST	DIRECT	400	1725	1/4	120	1	60	BAS	ECUH E-2	1,9
11	EF A-11	LOREN COOK	H-F-101	CENTRIFUGAL DOWNBLAST	DIRECT	800	1725	1/8	120	1	60	BAS	ECUH E-2	1,9
12	EF A-12	LOREN COOK	H-F-101	CENTRIFUGAL DOWNBLAST	DIRECT	1,000	1725	3/4	120	1	60	BAS	ECUH A-1	1, 8
13	EF A-13	LOREN COOK	IDF-1	CENTRIFUGAL DOWNBLAST	DIRECT	500	1725	1/4	120	1	60	BAS	ECUH A-1	1, 8
14	EF A-14	LOREN COOK	G-338A	CENTRIFUGAL DOWNBLAST	DIRECT	200	1725	1/4	120	1	60	BAS	UH CE-4	1,9
15	EF B-1	LOREN COOK	A-C-121	CENTRIFUGAL DOWNBLAST	DIRECT	150	1725	1/6	120	1	60	BAS	VAV CC-11	1,9
16	EF B-2	LOREN COOK	B-127	CENTRIFUGAL DOWNBLAST	DIRECT	550	1725	1/4	120	1	60	BAS	ECUH B-2	1,9
17	EF B-3	LOREN COOK	A-403	CENTRIFUGAL DOWNBLAST	DIRECT	2260	1725	1/2	120	1	60	BAS	ECUH B-2	1,9
18	EF B-4	LOREN COOK	A-400C	CENTRIFUGAL DOWNBLAST	DIRECT	550	1725	1/4	120	1	60	BAS	ECUH B-2	1, 8
19	EF B-5	LOREN COOK	C-108	CENTRIFUGAL DOWNBLAST	DIRECT	250	1725	1/4	120	1	60	BAS	VAV CC-13	1,9
20	EF B-6	LOREN COOK	C-105	CENTRIFUGAL DOWNBLAST	DIRECT	1410	1725	1/4	120	1	60	BAS	VAV CC-3	1,9
21	EF B-7	LOREN COOK	A-410	CENTRIFUGAL DOWNBLAST	DIRECT	200	1725	1/4	120	1	60	BAS	VAV CC-12	1,9
22	EF B-8	LOREN COOK	A-C-115	CENTRIFUGAL DOWNBLAST	DIRECT	900	1725	1/6	120	1	60	BAS	ECUH B-3	1,9
23	EF B-9	LOREN COOK	C-126	CENTRIFUGAL DOWNBLAST	DIRECT	100	1725	1/6	120	1	60	BAS	VAV CC-10	1,9
24	EF B-10	LOREN COOK	A-C-124	CENTRIFUGAL DOWNBLAST	DIRECT	200	1725	1/4	120	1	60	BAS	VAV CC-9	1,9
25	EF B-11	LOREN COOK	C-132	CENTRIFUGAL DOWNBLAST	DIRECT	400	1725	1/4	120	1	60	BAS	ECUH B-2	1,9
26	EF C-1	LOREN COOK	G-F-103	CENTRIFUGAL DOWNBLAST	DIRECT	1300	1725	1/4	120	1	60	BAS	UH CE-4	1,9
27	EF C-2	LOREN COOK	B-C-137	CENTRIFUGAL DOWNBLAST	DIRECT	200	1725	1/4	120	1	60	BAS	VAV CC-6	1,9
28	EF C-3	LOREN COOK	G-B-135	CENTRIFUGAL DOWNBLAST	DIRECT	1,750	1725	1/3	120	1	60	BAS	VAV CC-1	1,9
29	EF C-4	LOREN COOK	B-134	CENTRIFUGAL DOWNBLAST	DIRECT	620	1725	1/4	120	1	60	BAS	VAV CC-4	1,9
30	EF C-5	LOREN COOK	H-F-124	CENTRIFUGAL DOWNBLAST	DIRECT	750	1725	1/2	120	1	60	BAS	ECUH E-2	1,9
31	EF C-9	LOREN COOK	F-C-104	CENTRIFUGAL DOWNBLAST	DIRECT	1,000	1725	3/4	120	1	60	BAS	ECUH C-2	1,9
32	EF CA-1	LOREN COOK	H-314	CENTRIFUGAL DOWNBLAST	DIRECT	520	1725	1/4	120	1	60	BAS	ECUH A-1	1,9
33	EF CC-1	LOREN COOK	F-419	CENTRIFUGAL DOWNBLAST	DIRECT	1,600	1725	1/4	120	1	60	BAS	ECUH C-1	1,9
34	EF CC-2	LOREN COOK	F-419	CENTRIFUGAL DOWNBLAST	DIRECT	1200	1725	1/6	120	1	60	BAS	VAV CC-8	1,9
35	EF CC-3	LOREN COOK	F-418A	CENTRIFUGAL DOWNBLAST	DIRECT	240	1725	1/4	120	1	60	BAS	VAV CC-7	1,9
36	EF CC-4	LOREN COOK	F-C-140	CENTRIFUGAL DOWNBLAST	DIRECT	60	1725	1/6	120	1	60	BAS	ECUH B-3	1, 8
37	EF CC-6	LOREN COOK	C-176	CENTRIFUGAL DOWNBLAST	DIRECT	150	1725	1/6	120	1	60	BAS	VAV CC-14	1,9
38	EF CD-1	LOREN COOK	D-109	CENTRIFUGAL DOWNBLAST	DIRECT	195	1725	1/6	120	1	60	BAS	ECUH C-2	1, 8
39	EF D-1	LOREN COOK	D-125	CENTRIFUGAL DOWNBLAST	DIRECT	750	1725	1/2	120	1	60	BAS	ECUH C-2	1,9
40	EF D-2	LOREN COOK	D-127	CENTRIFUGAL DOWNBLAST	DIRECT	1000	1725	3/4	120	1	60	BAS	ECUH C-2	1,9
41	EF D-3	LOREN COOK	D-345	CENTRIFUGAL DOWNBLAST	DIRECT	6000	1725	3	480	3	60	BAS	ECUH C-4	1, 2
42	EF D-4	LOREN COOK	G-D-129	CENTRIFUGAL DOWNBLAST	DIRECT	700	1725	1/2	120	1	60	BAS	UH CD-11	1, 2, 8
43	EF D-5	LOREN COOK	E-102	CENTRIFUGAL DOWNBLAST	DIRECT	1000	1725	3/4	120	1	60	BAS	ECUH D-1	1, 8
44	EF D-6	LOREN COOK	E-120	CENTRIFUGAL DOWNBLAST	DIRECT	750	1725	1/2	120	1	60	BAS	ECUH D-2	1,9
45	EF D-7	LOREN COOK	E-111	CENTRIFUGAL DOWNBLAST	DIRECT	800	1725	1/8	120	1	60	BAS	ECUH D-1	1,9
46	EF D-8	LOREN COOK	E-124	CENTRIFUGAL DOWNBLAST	DIRECT	750	1725	1/2	120	1	60	BAS	UH CD-6	1,9
47	EF D-9	LOREN COOK	E-354	CENTRIFUGAL DOWNBLAST	DIRECT	4000	1725	1-1/2	480	3	60	BAS	ECUH D-2	1,9
48	EF D-10	LOREN COOK	B-428B	CENTRIFUGAL DOWNBLAST	DIRECT	400	1725	1/4	120	1	60	BAS	VAV CC-2	1,9
49	EF D-11	LOREN COOK	F-420B	CENTRIFUGAL DOWNBLAST	DIRECT	400	1725	1/4	120	1	60	BAS	ECUH C-1	1,9
50	EF D-13	LOREN COOK	F-422	CENTRIFUGAL DOWNBLAST	DIRECT	700	1725	1/2	120	1	60	BAS	ECUH C-1	1,9
51	EF D-14	LOREN COOK	G-345	CENTRIFUGAL DOWNBLAST	DIRECT	3000	1725	5/8	120	1	60	BAS	ECUH C-4	1, 3
52	EF D-15	LOREN COOK	E-348	CENTRIFUGAL DOWNBLAST	DIRECT	5000	1725	2	480	3	60	BAS	UH CD-9	1,9
53	EF D-17	LOREN COOK	RR 33	CENTRIFUGAL DOWNBLAST	DIRECT	260	1725	1/4	120	1	60	BAS	ECUH D-1	1, 3
54	EF E-1	LOREN COOK	G-R-105	CENTRIFUGAL DOWNBLAST	DIRECT	450	1725	1/4	120	1	60	BAS	UH CE-1	1,9
55	EF E-2	LOREN COOK	B-424	CENTRIFUGAL DOWNBLAST	DIRECT	2000	1725	1/2	120	1	60	BAS	VAV CC-5	1,9
56	EF E-3	LOREN COOK	G-342	CENTRIFUGAL DOWNBLAST	DIRECT	3250	1725	3/4	120	1	60	BAS	UH CE-1	1,9
57	EF E-4	LOREN COOK	C-331	CENTRIFUGAL DOWNBLAST	DIRECT	1,250	1725	1/4	120	1	60	BAS	UH CE-4	1, 8
58	EF E-5	LOREN COOK	G-E-106	CENTRIFUGAL DOWNBLAST	DIRECT	550	1725	1/4	120	1	60	BAS	UH CE-1	1,9
59	EF E-6	LOREN COOK	H-328	CENTRIFUGAL DOWNBLAST	DIRECT	2000	1725	1/2	120	1	60	BAS	UH CE-3	1,9
60	EF E-7	LOREN COOK	G-345	CENTRIFUGAL DOWNBLAST	DIRECT	4000	1725	1-1/2	480	3	60	BAS	UH CD-11	1
61	EF E-8	LOREN COOK	H-F-127	CENTRIFUGAL DOWNBLAST	DIRECT	320	1725	1/4	120	1	60	BAS	ECUH E-2	1,9

*1 - FAN SPEED DIAL CONTROLLER FOR BALANCING.
*2 - EXHAUST FAN D-3 AND D-4 SHALL BE ASSOCIATED WITH THE OPERATION OF CD-5.
*3 - EXHASUT FAN D-14 AND E-7 SHALL BE ASSOICATED WITH THE OPERATION OF CD-10.
*4 - EXHAUST FAN TO HAVE TEMPERATURE SENSOR BAS CONTROL.
*5 - EXHAUST FAN TO HAVE BAS DAY/NIGHT CONTROL.

EXHAUST FAN SCHEDULE – PHASE 4

Delta Controls
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REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

CONTRACT NO:

SHEET
SCH–45
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

HYDRONIC PROP UNIT HEATER SCHEDULE

IDENTITY DATA				HEATING DATA	VALVE	FAN DATA				ELECTRICAL DATA			CONTROLLED FROM	NOTES
MARK	MANUF	MODEL	LOCATION	FLOW (GPM)		AIRFLOW (CFM)	FAN TYPE	HP	RPM	VOLTS (V)	PH	FREQ (HZ)		
UH CD-2	TRANE	S-144	E-348 SOUTHEAST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-9	1
UH CD-3	TRANE	S-144	E-348 SOUTHW EST	10.4	2 WAY	2,200	PROP	1/3	1,140	115	1	60	UH CD-9	1
UH CD-4	TRANE	S-144	E-123 SOUTHEAST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-4	1
UH CD-5	TRANE	S-144	E-123 SOUTH	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-4	1
UH CD-6	TRANE	S-144	E-123 SOUTHW EST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-6	1
UH CD-7	TRANE	S-144	E-123 NORTHWEST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-6	1
UH CD-8	TRANE	S-144	E-123 NORTH	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	ECUH D-2	1
UH CD-9	TRANE	S-144	E-348 NORTHEAST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-9	1
UH CD-10	TRANE	S-144	E-348 NORTHEAST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-9	1
UH CD-11	TRANE	S-144	G-345 NORTHEAST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CD-11	1
UH CD-12	TRANE	S-144	G-345 SOUTHEAST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	ECUH D-1	1
UH CD-13	TRANE	S-144	E-124 NORTH	10.4	2 WAY	2,200	PROP	1/3	1,140	115	1	60	UH CD-6	1
UH CD-14	TRANE	S-144	E-124 SOUTH	10.4	2 WAY	2,200	PROP	1/3	1,140	115	1	60	UH CD-6	1
UH CE-1	TRANE	S-144	G-344 SOUTHWEST	10.4	2 WAY	2,200	PROP	1/3	1,140	115	1	60	UH CE-1	1
UH CE-2	TRANE	S-144	H-328 SOUTHEAST	10.4	2 WAY	2,200	PROP	1/3	1,140	115	1	60	UH CE-3	1
UH CE-3	TRANE	S-144	H328 SOUTH	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CE-3	1
UH CE-4	TRANE	S-144	C-329 SOUTHWEST	10.4	2 WAY	2200	PROP	1/3	1,140	115	1	60	UH CE-4	1

1 - Use line voltage valve actuators (120 VAC). BAS will only enable system via field relay.

ELECTRIC CABINET UNIT HEATER SCHEDULE

IDENTITY DATA					HEATING DATA		VALVE	FAN DATA	ELECTRICAL DATA				CONTROLLED FROM	NOTES
MARK	MANUF	MODEL	LOCATION	ENCLOSURE MODEL	CAPACITY (BTUH)	STAGES		AIRFLOW (CFM)	VOLTS (V)	PH	FREQ (HZ)	FLA (A)		
ECUH-A1	MARLEY	CUS94510483FFW D	CORRIDOR A-101 NW	SEMI-RECESSED	10	2.0	2 WAY	500	480	3	60	12	ECUH A-1	1
ECUH-B1	MARLEY	CUS94510483FFW D	VESTIBULE A-B-101 W EST	SEMI-RECESSED	10	2.0	2 WAY	500	480	3	60	12.0	ECUH B-1	1
ECUH-B2	MARLEY	CUS94510483FFW D	VESTIBULE A-B-101 EAST	SEMI-RECESSED	10	2.0	2 WAY	500	480	3	60	12.0	ECUH B-2	1
ECUH-B3	MARLEY	CUS94510483FFW D	CORRIDOR F-C-103 SOUTH	SEMI-RECESSED	10	2.0	2 WAY	500	480	3	60	12.0	ECUH B-3	1
ECUH-C1	MARLEY	CUS94510483FFW D	CORRIDOR D-103 SOUTH	SEMI-RECESSED	10	2.0	2 WAY	500	480	3	60	12.0	ECUH C-1	1
ECUH-D1	MARLEY	CUS94510483FFW D	CORRIDOR Z E-102 EAST	RECESSED	10	2.0	2 WAY	500	480	3	60	12.0	ECUH D-1	1
ECUH-D2	MARLEY	CUS94510483FFW D	CORRIDOR Z E-102 WEST	RECESSED	10	2.0	2 WAY	500	480	3	60	12.0	ECUH D-2	1
ECUH-E2	MARLEY	CUS94510483FFW D	CORRIDOR T H-F-101 SOUTH	SEMI-RECESSED	10	2.0	2 WAY	500	480	3	60	12.0	ECUH E-2	1
ECUH-C3	MARLEY	CW H1157DSF	SINGLE RR 29	RECESSED	2	2.0	2 WAY	65	277	1	60	5.4	ECUH C-2	1
ECUH-C2	MARLEY	CW H1157DSF	SINGLE RR 30	RECESSED	2	2.0	2 WAY	65	277	1	60	5.4	ECUH E-2	1
ECUH-C4	MARLEY	CW H1157DSF	SINGLE RR 115	RECESSED	2	2.0	2 WAY	65	277	1	60	5.4	ECUH C-4	1
ECUH-C5	MARLEY	CW H1157DSF	SINGLE RR 116	RECESSED	2	2.0	2 WAY	65	277	1	60	5.4	ECUH C-4	1

1 - BAS will only monitor space temperature. There is no BAS control of these units.

CABINET AND PROPELLER UNIT HEATER SCHEDULES – PHASE 4

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES

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SCH–46
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Spec. Section: 230900.99

CONSOLIDATED BILL OF MATERIAL

ITEM NAME	VENDOR P/N	DESCRIPTION	QTY	MANUF	LOC
BA/10K-3-D-4"	400160	BA/10K-3-D-4 Duct Temp Sensor, 4 Stainless Steel Probe, Steel J-Box Enclosure	14	BAPI	Field
BA/10K-3-H210-O-BB2	402205	BA/10K-3-H210-O-BB2 Outside Air Temp/Humidity Sensor	1	BAPI	Field
BA/10K-3-RPP-5'	400411	BA/10K-3-RPP-5' Remote Temp Probe, 5' Lead, Plenum Rated Cable	2	BAPI	Field
BA/10K-3-SP	400006	BA/10K-3-SP Wall Plate Temp Sensor, Plain, Stainless Steel, Single Gang	34	BAPI	Field
BA/WSK	400224	BA/WSK Weather Shade	1	BAPI	Field
CW Valve	See Schedule	See Valve Sch for Details	2	Belimo	Field
HW Valve	See Schedule	See Valve Sch for Details	18	Belimo	Field
RH Valve	See Schedule	See Valve Sch for Details	14	Belimo	Field
eZNS-T100CHM-ND-SC-000-WWG	337370	eZNS-T100CHM-ND-SC-000-WWG enteliZONE Network Sensor (No Display, Temp, CO2, Hum, Motion, Surface C)	15	Delta Controls	Field
eZVP-440-AB	333010	eZVP-440-AB enteliZONE VAV Controller (Belimo, Programmable, MS/TP, DP sensor, 4UI, 4UO)	14	Delta Controls	Field
TRM768	151924	TRM768 Network Terminator (MS/TP)	3	Delta Controls	Field
869STR-R-AQ	869STR-R-AQ	Indoor Flush Mt Horn/Strobe, Red, 24VAC	2	Edwards Signaling - Kele	Field
PSH500A	403195	PSH500A Enclosed 500VA Power Supply with (5) 100VA Class 2 Outputs, 480/277/240/120 Vac to 24 Vac	1	Functional Devices	Field
Pwr Mon (EBO)	N/A	Power Monitor (by others)	1	Others	Field
RIB2401SBC	403273	RIB2401SBC Enclosed Relay 20 Amp SPDT + Override with 24 Vac/dc/120 Vac Coil	62	Functional Devices	Field
RIBU1C	403455	RIBU1C Enclosed Pilot Relay 10 Amp SPDT with 10-30 Vac/dc/120 Vac Coil	17	Functional Devices	Field
RIBXKTA	403501	RIBXKTA Solid Core, Adjustable Current Switch, 0.50-150 Amp, Terminal	62	Functional Devices	Field
TR50VA015	403590	TR50VA015 Transformer 50VA, 480/277/240/208/120 to 24 Vac, Circuit Breaker, Foot & Single Threaded	4	Functional Devices	Field
BVA-5-PW2	499705	BVA-5-PW2 5 VALVE BYPASS FOR VERIS PW2	2	Kele	Field
500EP	500EP	Safe-T-Switch Water Detector	1	Rectorseal	Field
TGM-BCN-A	TGM-BCN-A	CO / NO2 Dual Gas Sensor, Metal Case, no temp	2	Senva - Kele	Field
PWLX04S	435030	PWLX04S Wet Media Pressure Transducer, LCD, 0-100psig	2	Veris	Field
eW2500	345711	eW2500 enteliWEB 2500 IO Point Software (Up to 2500 I/O)	2	Delta Controls	Office
eW2500-EV	345800	eW2500-EV enteliVIZ Add-on Software (Add for eW2500 version)	2	Delta Controls	Office
eW2500-VLT	346024	eW2500-VLT enteliVAULT Add-on Software (Add for eW2500 version)	2	Delta Controls	Office
PNL-App	PNL-App	TCS Panel Build - Medium Size Application Panel	18	TCS	Panel
PNL-eBM	PNL-eBM	TCS Panel Build - eBMGR Style	1	TCS	Panel

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Spec. Section: 230900.99

LABEL LIST

Vendor P/N:	Height (In.):	Width (In.):	Field Color:	Text Color:	Dbl-Side Tape?	Hole Size:	# of Holes:	Text Height (In.):	Text to Engrave Line 1:	Text to Engrave Line 2:	Text to Engrave Line 3:	Special Instructions:
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH-A1	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH-B1	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH-B2	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH-B3	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH-C1	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH-C2	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH-C4	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH D-1	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH D-2	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	ECUH E-2	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	UH CD-4	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	UH CD-6	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	UH CD-9	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	UH CD-11	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	UH CE-1	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	UH CE-3	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	UH CE-4	CONTROL	PANEL	
23ST	2	3	Blue	White	Yes	N/A	0	0.25	FCU CA-1	CONTROL	PANEL	
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CA-1	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CA-2	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CA-3	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CA-4	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CB-1	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CB-2	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CB-3	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CB-4	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CC-1	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CC-2	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CC-3	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CC-4	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CD-1	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CD-2	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CD-3	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CD-4	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CD-5	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CD-6	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CD-10	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CE-1	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	AHU CE-2	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.53.5ST	1.5	3.5	Blue	White	Yes	N/A	0	0.2	FCU CA-1	NORMAL ALARM		Left Justify "NORMAL" and right justify "ALARM"
1.54ST	1.5	4	Blue	White	Yes	N/A	0	0.2	BAS ADDRESSABLE	ALARM 1		
1.54ST	1.5	4	Blue	White	Yes	N/A	0	0.2	BAS ADDRESSABLE	ALARM 2		
1.54ST	1.5	4	Blue	White	Yes	N/A	0	0.2	BAS ADDRESSABLE	ALARM 3		
1.54ST	1.5	4	Blue	White	Yes	N/A	0	0.2	BAS ADDRESSABLE	ALARM 4		
1.54ST	1.5	4	Blue	White	Yes	N/A	0	0.2	BAS ADDRESSABLE	ALARM 5		
13ST	1	3	Blue	White	Yes	N/A	0	0.25	LIGHT TEST			
13ST	1	3	Blue	White	Yes	N/A	0	0.25	ALARM ACK			
1.510ST	1.5	16	Blue	White	Yes	N/A	0	0.75	BAS ALARM MONITORING			

Delta Controls

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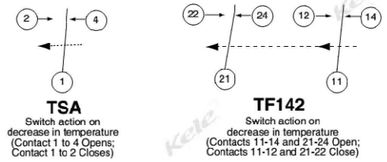
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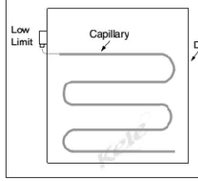
SHEET
SCH–48
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

WIRING

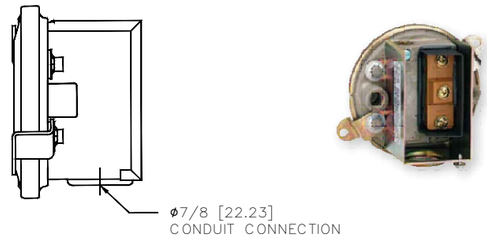


INSTALLATION

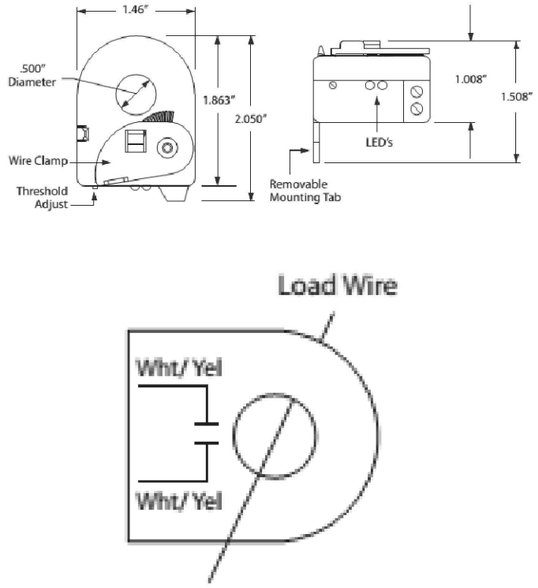


Install capillary element in a horizontal serpentine pattern across the duct on the downstream side of the coil so it is exposed to areas where low temperatures will occur. Do not kink or apply excessive force to the capillary element.

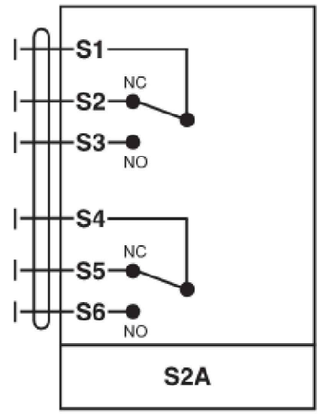
1000 TEMPERATURE, LOW LIMIT



1200 PRESSURE, DUCT HIGH LIMIT

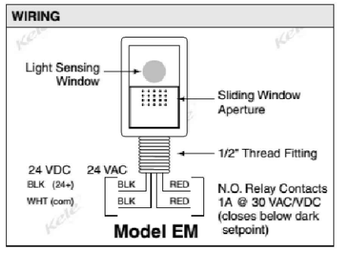


1400 CURRENT SWITCH, RIBXK SERIES

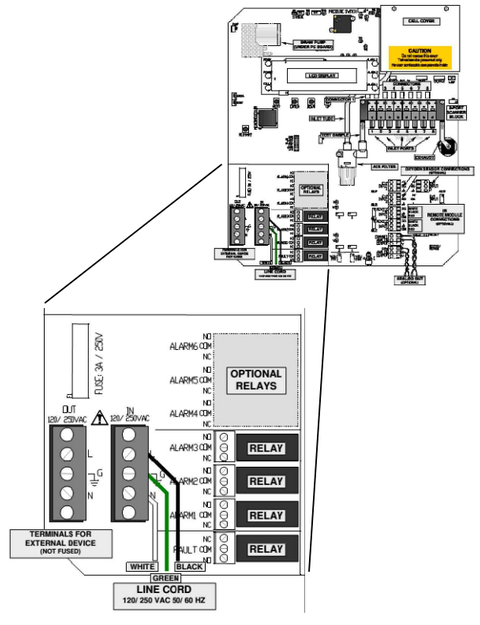


1801 AUXILIARY END SWITCH, BELIMO S2A

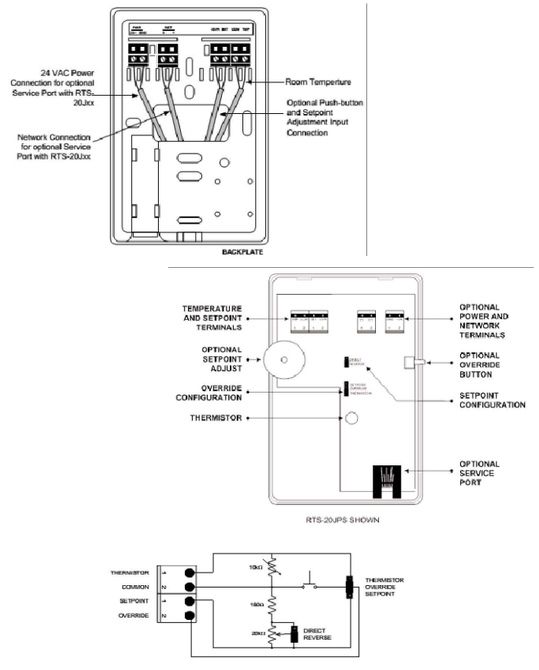
WIRING



1900 PHOTOCELL, OUTDOOR, EM SERIES



1901 REFRIGERANT MONITOR, HALOGUARD



2000 TEMPERATURE, WALL MT, DELTA RTS-20

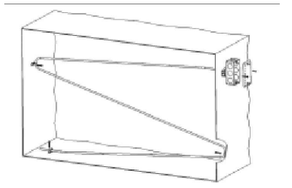


Fig 8: Flexible Sensor Horizontal Mount (Best for Vertical Stratification)

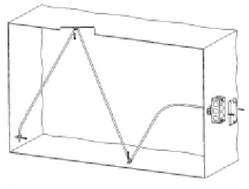


Fig 9: Flexible Sensor Vertical Mount (Best for Horizontal Stratification)

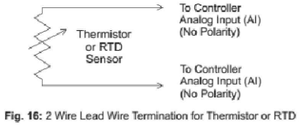


Fig. 16: 2 Wire Lead Wire Termination for Thermistor or RTD

2001 TEMPERATURE, DUCT AVERAGING

Delta Controls
Temperature Control Services
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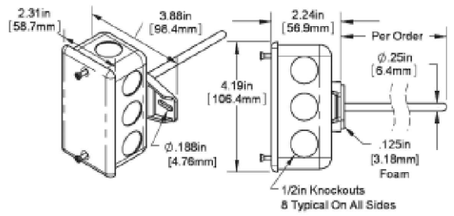


Fig 2: Duct Unit with J-Box (Standard)

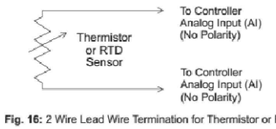


Fig. 16: 2 Wire Lead Wire Termination for Thermistor or RTD

2002 TEMPERATURE, DUCT PROBE

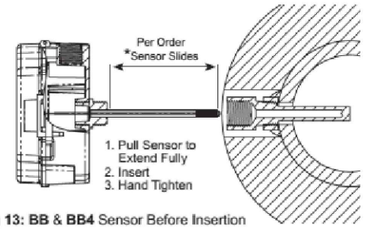


Fig 13: BB & BB4 Sensor Before Insertion

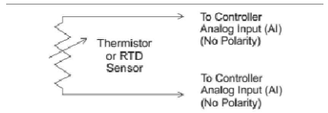


Fig. 16: 2 Wire Lead Wire Termination for Thermistor or RTD

2003 TEMPERATURE, IMMERSION

Table 3: Temperature Sensor Lead Wire Colors			
Thermistors		**Platinum RTDs - 2 Wire**	
1.8KΩ	Orange/Red	100Ω	Red/Red
2.2KΩ	Brown/White	1KΩ	Orange/Orange
3KΩ	Yellow/Black	**Nickel RTD**	
3.25KΩ	Brown/Green	1KΩ	Green/Green
3.3KΩ	Yellow/Brown	**Silicon RTD**	
10K-2Ω	Yellow/Yellow	2KΩ	Brown/Blue
10K-3Ω	Yellow/Red	**Platinum RTDs - 3 Wire**	
10K-3(11K)Ω	Yellow/Blue	100Ω	Red/Red/Black*
20KΩ	White/White	1KΩ	Orange/Orange/Black*
47KΩ	Yellow/Orange	*In the 3-Wire RTD sensors listed above, the two wires of similar color are connected together.	
50KΩ	White/Blue		
100KΩ	Yellow/White		

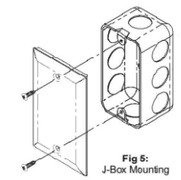


Fig 5:
J-Box Mounting

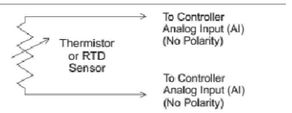


Fig. 16: 2 Wire Lead Wire Termination for Thermistor or RTD

2004 TEMPERATURE, WALL PLATE

Table 1: Humidity Transmitter with 0 to 10VDC Output		
Wire Color	**Purpose**	**Note**
Green	Humidity Output	0 to 10VDC, To Analog Input of Controller
Black	GND (Common)	Ground for Power and Humidity Output
Red	Power	15 to 35VDC or 15 to 27VAC

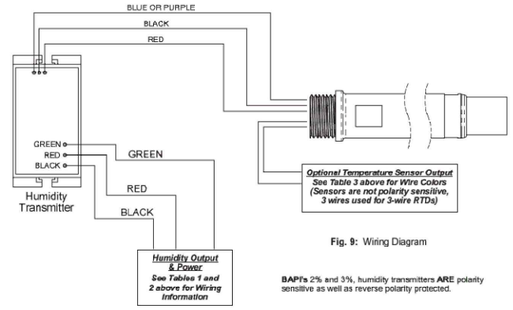


Fig. 9: Wiring Diagram

BAPI's 2% and 3%, humidity transmitters **ARE** polarity sensitive as well as reverse polarity protected.

2100 HUMIDITY / TEMPERATURE, OUTSIDE AIR

Table 1: Humidity Transmitter with 0 to 10VDC Output		
Wire Color	**Purpose**	**Note**
Green	Humidity Output	0 to 10VDC, To Analog Input of Controller
Black	GND (Common)	Ground for Power and Humidity Output
Red	Power	15 to 35VDC or 15 to 27VAC

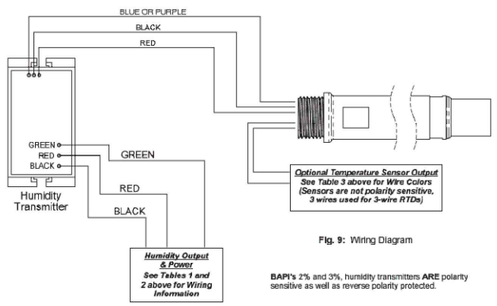


Fig. 9: Wiring Diagram

BAPI's 2% and 3%, humidity transmitters **ARE** polarity sensitive as well as reverse polarity protected.

2101 HUMIDITY / TEMPERATURE, DUCT

Table 1: EZ Pressure Sensor Termination	
Output Signal	**Power Terminal**
4 to 20 mA	7 to 40 VDC
0 to 5 VDC	7 to 40 VDC or 18 to 28 VAC
0 to 10 VDC	13 to 40 VDC or 18 to 28 VAC

Gnd/4-20mA Terminal	Voltage Output Terminal
4 to 20 mA Signal To Controller Analog Input	Not Used
To Controller Ground	0 to 5 VDC Signal To Controller Analog Input
To Controller Ground	0 to 10 VDC Signal To Controller Analog Inpu

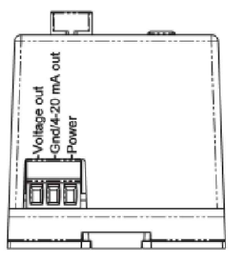
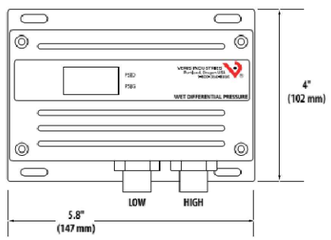
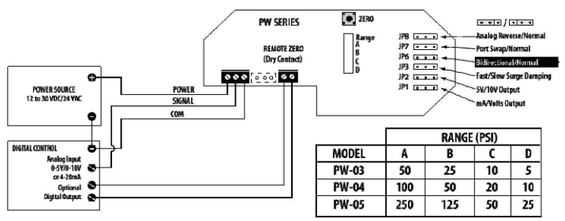


Fig. 7: Wiring terminations

2200 PRESSURE, ZPS DP STD RANGE
2201 PRESSURE, ZPS DP LOW RANGE





	RANGE (PSI)			
MODEL	A	B	C	D
PW-03	50	25	10	5
PW-04	100	50	20	10
PW-05	250	125	50	25

2202 PRESSURE, VERIS WET DP

Electrical connections to the Series 605 Transmitter are made to the two-screw terminal strip on the rear of the case. Polarity is indicated by + and – signs stamped on side. The schematic diagram of the Series 605 transmitter is illustrated in Figure B.

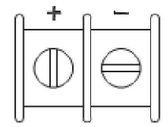


Figure A

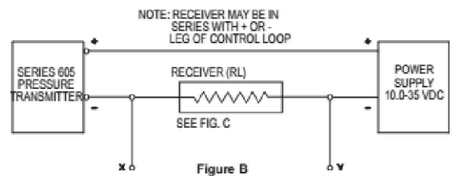


Figure B

2203 PRESSURE, DUCT DP, DWYER 605 SERIES

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

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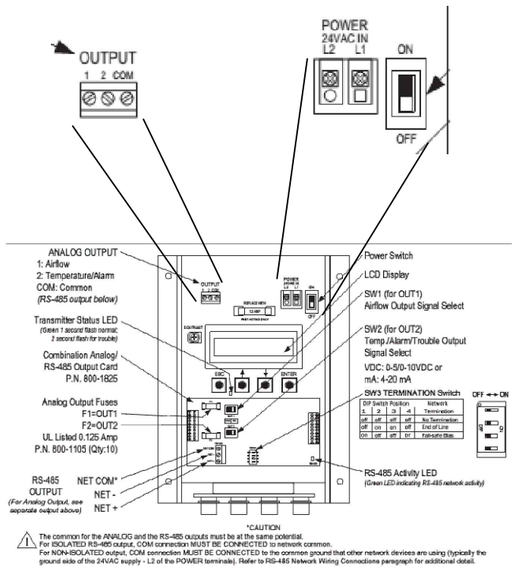
REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
INST–02
JOB NUMBER:
J–2312002

Spec. Section: 230900.99



2300 FLOW, AFMS, EBTRON GOLD

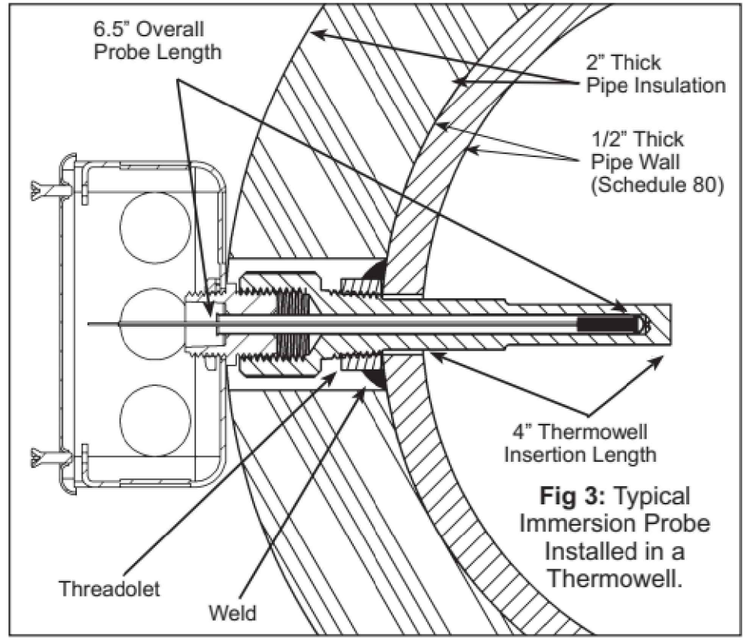


Fig 3: Typical Immersion Probe Installed in a Thermowell.

907 BAPI IMMERSION TEMPERATURE THERMOWELL

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DATE	REMARKS
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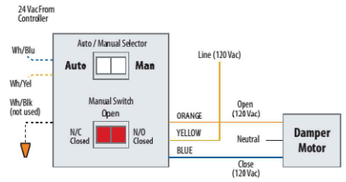
REVISIONS	
DATE	REMARKS

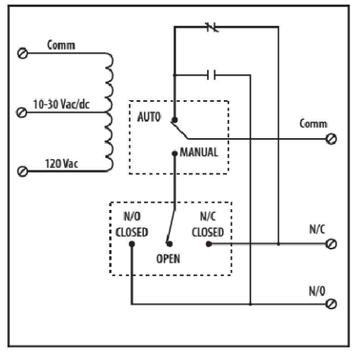
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
INST–03
JOB NUMBER:
J–2312002

Spec. Section: 230900.99



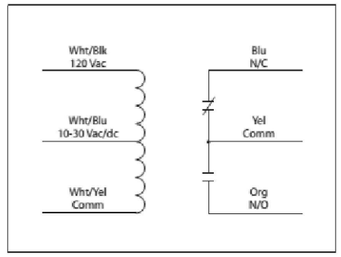


3000 RELAY, RIB PANEL–MOUNT MU1SC

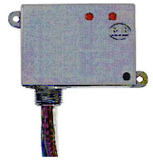


Coil Voltage Input:
10-30 Vac/dc ; 120 Vac ; 50-60 Hz (RIBU1C)
10-30 Vac/dc ; 208-277 Vac ; 50-60 Hz (RIBH1C)
Drop Out = 2.1 Vac / 2.8 Vdc
Pull In = 9 Vac / 10 Vdc

Contact Ratings:
10 Amp Resistive @ 277 Vac
10 Amp Resistive @ 28 Vdc
480 VA Pilot Duty @ 240-277 Vac
480 VA Ballast @ 277 Vac
Not rated for Electronic Ballast
600 Watt Tungsten @ 120 Vac (N/O)
240 Watt Tungsten @ 120 Vac (N/C)
1/3 HP @ 120-240 Vac (N/O)
1/6 HP @ 120-240 Vac (N/C)
1/4 HP @ 277 Vac (N/O)
1/8 HP @ 277 Vac (N/C)

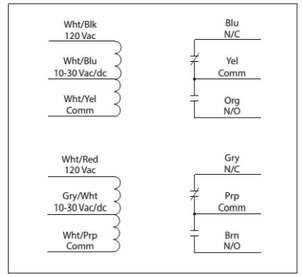


3001 RELAY, RIB FIELD–MOUNT RIBU1C

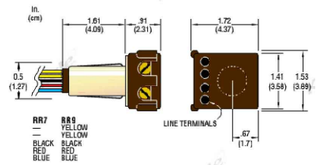


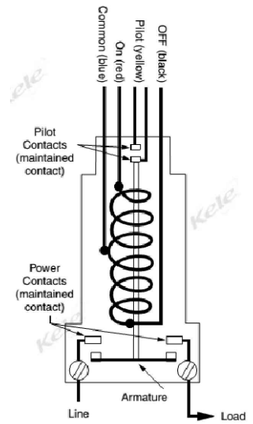
Coil Voltage Input:
10-30 Vac/dc ; 120 Vac ; 50-60 Hz (RIBU1C)
10-30 Vac/dc ; 208-277 Vac ; 50-60 Hz (RIBH1C)
Drop Out = 2.1 Vac / 2.8 Vdc
Pull In = 9 Vac / 10 Vdc

Contact Ratings:
10 Amp Resistive @ 277 Vac
10 Amp Resistive @ 28 Vdc
480 VA Pilot Duty @ 240-277 Vac
480 VA Ballast @ 277 Vac
Not rated for Electronic Ballast
600 Watt Tungsten @ 120 Vac (N/O)
240 Watt Tungsten @ 120 Vac (N/C)
1/3 HP @ 120-240 Vac (N/O)
1/6 HP @ 120-240 Vac (N/C)
1/4 HP @ 277 Vac (N/O)
1/8 HP @ 277 Vac (N/C)



3002 RELAY, RIB FIELD–MOUNT RIBU2C

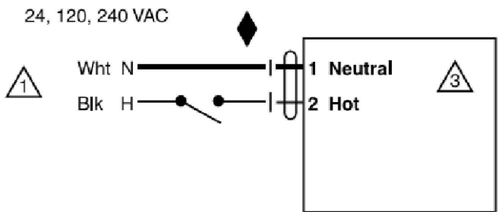




RR-9

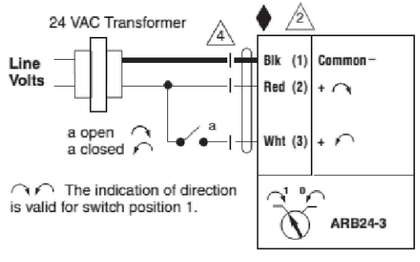
3100 RELAY, LIGHTING, LATCHING RR–9

1. Provide overload protection and disconnect as required.
2. ***CAUTION** Equipment Damage!*
   Actuators may be connected in parallel.
   Power consumption and input impedance must be observed.
3. No ground connection is required.



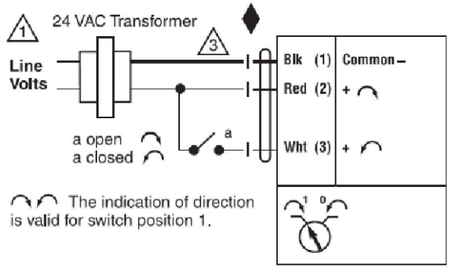
3200 BELIMO NFBUP–R ACT (ON–OFF)

2. ***CAUTION** Equipment damage!*
   Actuators may be connected in parallel.
   Power consumption and input impedance must be observed.
   For end position indication, interlock control, etc.,
4. Actuators may also be powered by 24 VDC.



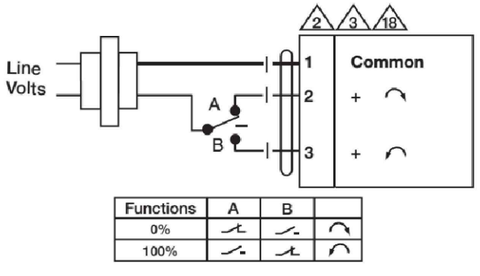
3201 BELIMO ARX24–3 ACT (ON–OFF, TS)

1. Provide overload protection and disconnect as required.
3. Actuators may also be powered by 24 VDC.



3202 BELIMO GRX24–3 ACT (ON–OFF, TS)

2. Actuators may be connected in parallel. Power consumption and input impedance must be observed.
3. Actuators may also be powered by 24 VDC.
18. Actuators with plenum rated cable do not have numbers on wires; use color codes instead.



Functions	A	B	
0%			
100%			

3203 BELIMO CQB24–3 ACT (TS)

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Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

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DATE	REMARKS

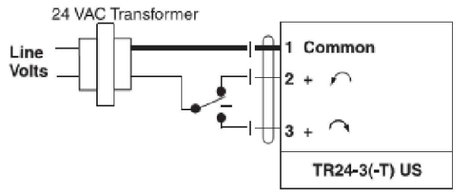
JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

CONTRACT NO:

SHEET
INST–04
JOB NUMBER:
J–2312002

Spec. Section: 230900.99

NOTE: TR24-3(-T) US cannot be wired in parallel with themselves or any other actuator.



3204 BELIMO TR24–3 ACT (ON–OFF, TS)

◆ Meets cULus requirements without the need of an electrical ground connection.

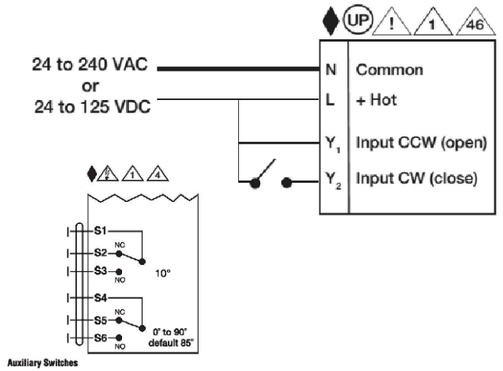
UP Universal Power Supply (UP) models can be supplied with 24 VAC up to 240 VAC, or 24 VDC up to 125 VDC.

⚠ Disconnect power.

1 Provide overload protection and disconnect as required.

4 Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.

46 Actuators may be controlled in parallel. Current draw and input impedance must be observed.

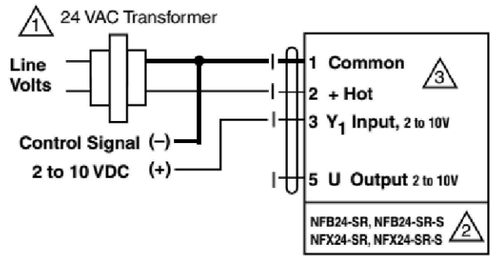


3205 BELIMO PRBUP–3–T ACT (ON–OFF, TS)

1 Provide overload protection and disconnect as required.

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.

3 Actuator may also be powered by 24 VDC.

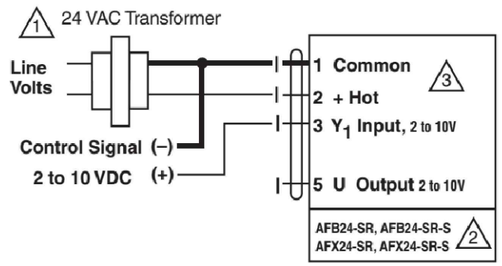


4200 BELIMO NFB24–SR ACT (2–10 VDC)

1 Provide overload protection and disconnect as required.

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.

3 Actuator may also be powered by 24 VDC.

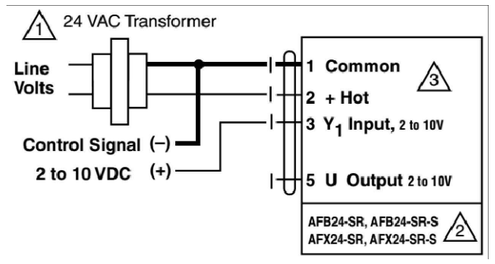


4201 BELIMO AFRB24–SR ACT (2–10 VDC)

1 Provide overload protection and disconnect as required.

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.

3 Actuator may also be powered by 24 VDC.

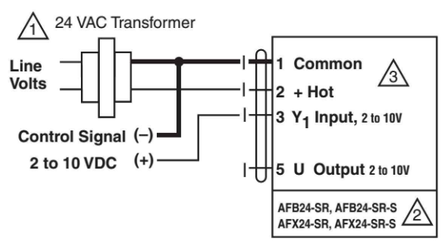


4202 BELIMO AFB24–SR ACT (2–10 VDC)

1 Provide overload protection and disconnect as required.

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.

3 Actuator may also be powered by 24 VDC.



4203 BELIMO AFRB24–SR ACT (2–10 VDC)
BELIMO AFRX24–SR ACT (2–10 VDC)

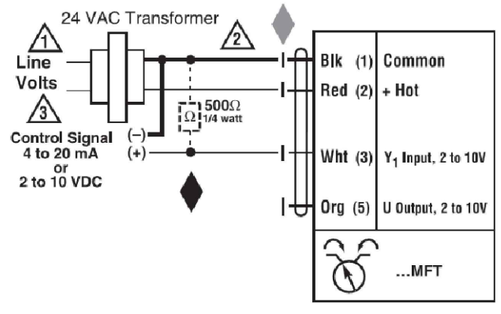
1 Provide overload protection and disconnect as required.

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.

3 Actuator may also be powered by 24 VDC.

◆ Meets UL requirements without the need of an electrical ground connection.

◆ The ZG-R01 500 Ω resistor may be used.



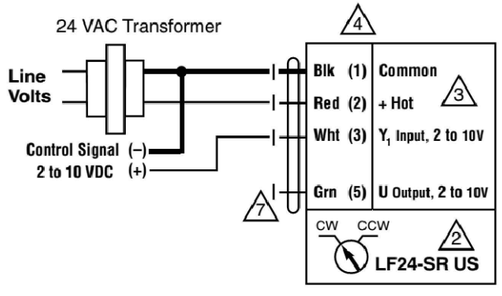
4204 BELIMO GKRX24–MFT ACT (2–10 VDC)

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.

3 Actuator may also be powered by 24 VDC.

4 Actuators with plenum rated cable do not have numbers on wires; use color codes instead.

7 The LF24-SR-S US wire 5 is white.



4205 BELIMO LF24–SR ACT (2–10 VDC)

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
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E-MAIL: NATHAN@TCSBAS.COM

UPDATES

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REVISIONS

DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ___ DRAWN BY: BSS

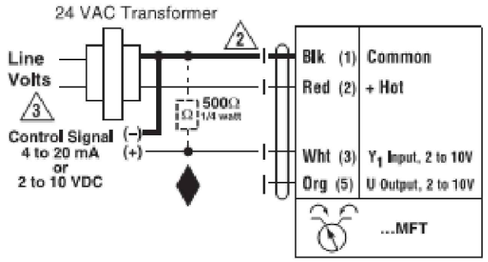
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SHEET
INST–05
JOB NUMBER:
J–2312002

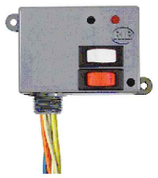
Spec. Section: 230900.99

CAUTION *Equipment damage!*
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.

Actuators may also be powered by 24 VDC.

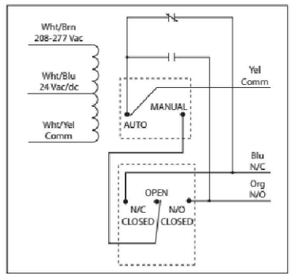


4206 BELIMO ARB24–MFT ACT (2–10 VDC)



Coil Voltage Input:
24 Vac/dc ; 120 Vac ; 50-60 Hz (RIB2401SBC)
24 Vac/dc ; 208-277 Vac ; 50-60 Hz (RIB2402SBC)
Drop Out = 2.1 Vac / 3.8 Vdc
Pull In = 18 Vac / 22 Vdc

Contact Ratings:
20 Amp Resistive @ 277 Vac
20 Amp Ballast @ 277 Vac (N/O)
10 Amp Ballast @ 277 Vac (N/C)
Not rated for Electronic Ballast
10 Amp Tungsten @ 120 Vac (N/O)
770 VA Pilot Duty @ 120 Vac
1,110 VA Pilot Duty @ 277 Vac
2 HP @ 277 Vac
1 HP @ 120 Vac



3104 RELAY, RIB FIELD–MOUNT RIB2401SBC

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

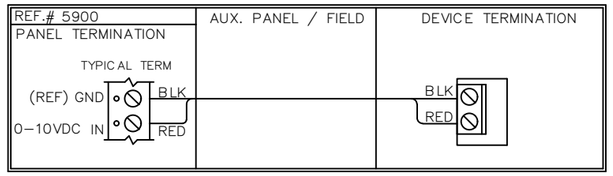
REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY: ____ DRAWN BY: BSS

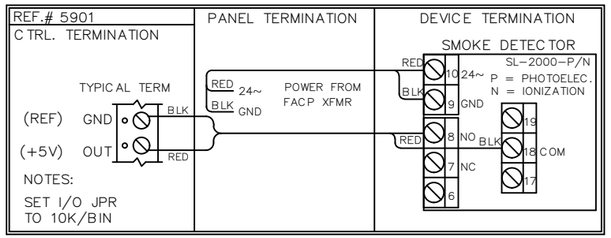
CONTRACT NO:

SHEET
INST–06
JOB NUMBER:
J–2312002

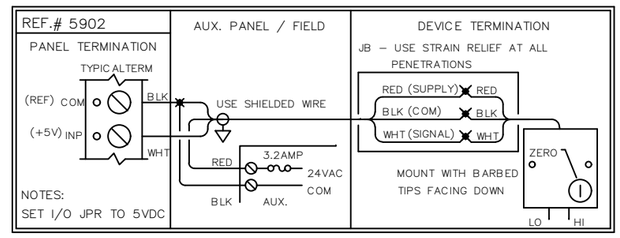
Spec. Section: 230900.99



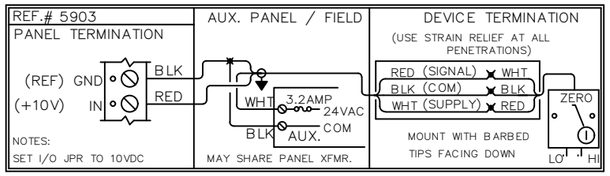
5900 DRY CONTACT INPUT (TO BAS)



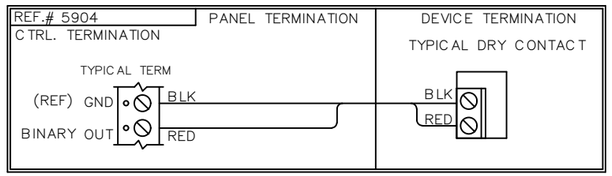
5901 SMOKE DETECTOR INPUT



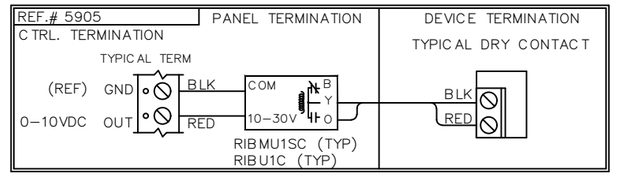
5902 0–5 VDC TRANSDUCER INPUT (TO BAS)



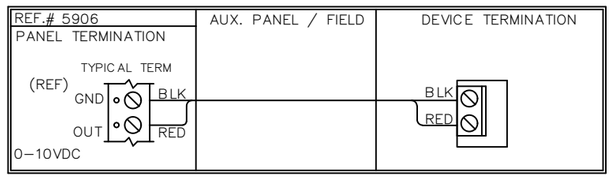
5903 0–10 VDC TRANSDUCER INPUT (TO BAS)



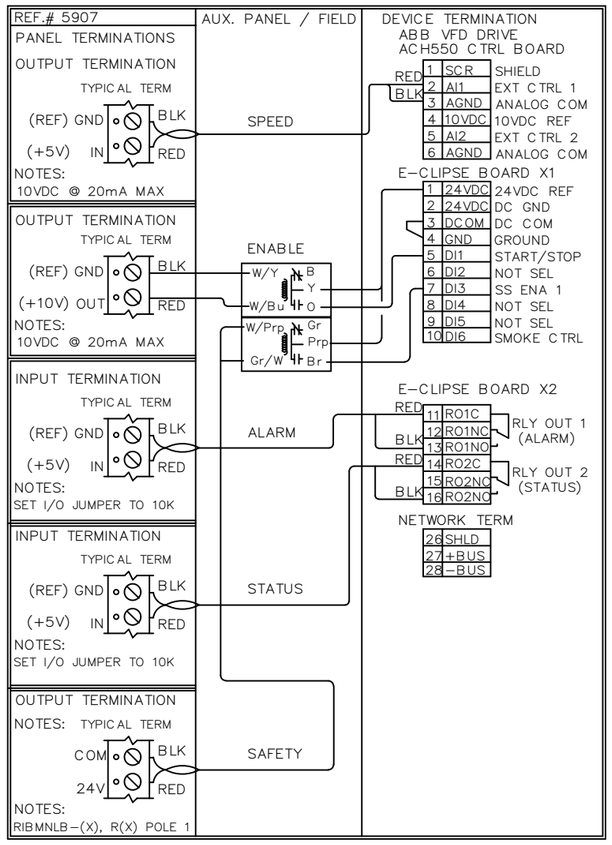
5904 PUMP / FAN ENABLE / DRY CONTACT (W/ BINARY OUT)



5905 PUMP / FAN ENABLE / DRY CONTACT (W/2–10VDC OUT)



5906 ANALOG OUTPUT (LEVEL / SPEED, ETC.)



5907 VFD CONNECTIONS, ABB ACH–550 DRIVE

NOTE:
– THE DETAILS ON THIS PAGE ARE PROVIDED AS GENERAL REPRESENTATIONS OF TYPICAL APPLICATIONS ONLY!
– WHENEVER POSSIBLE, ALWAYS FOLLOW THE ACTUAL MANUFACTURER'S INSTALLATION DETAILS.
– ACTUAL TERMINATIONS MAY DIFFER SUBSTANTIALLY FROM THESE DETAILS – USE WITH CAUTION!

INSTALLATION STANDARDS – TYPICAL THIRD–PARTY CONNECTIONS

Delta Controls
Temperature Control Services
108 N MAIN, PO BOX 95
ADVANCE, IN 46102
PHONE: 765.481.8510
E-MAIL: NATHAN@TCSBAS.COM

UPDATES	
DATE	REMARKS
2/1/2024	ADDENDUM #1

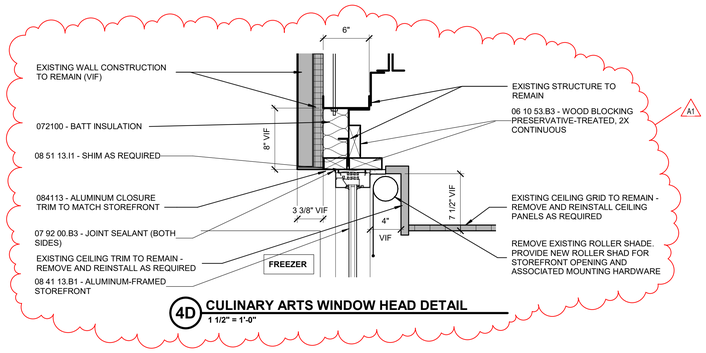
REVISIONS	
DATE	REMARKS

JOB TITLE: J. Everett Light Career Center
LOCATION: MSD Washington Township, Indianapolis, IN
ENGINEER: Temperature Control Services, LLC
CONTRACT WITH: MSD Washington Township
DATE: 1/25/2024 CHK. BY:____ DRAWN BY: BSS

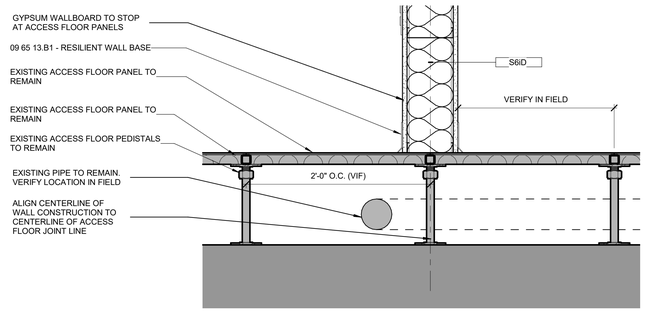
CONTRACT NO:

SHEET
INST–07
JOB NUMBER:
J–2312002

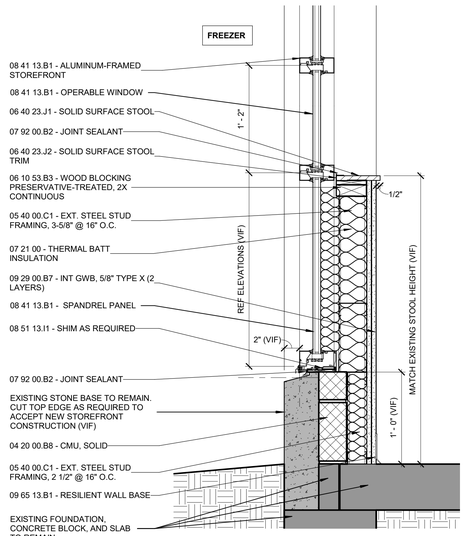
Spec. Section: 230900.99



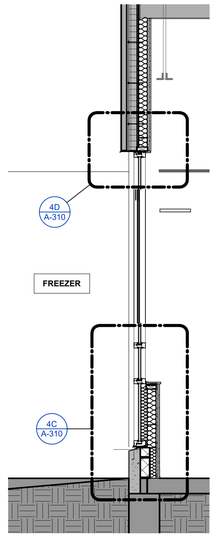
4D CULINARY ARTS WINDOW HEAD DETAIL
1 1/2" = 1'-0"



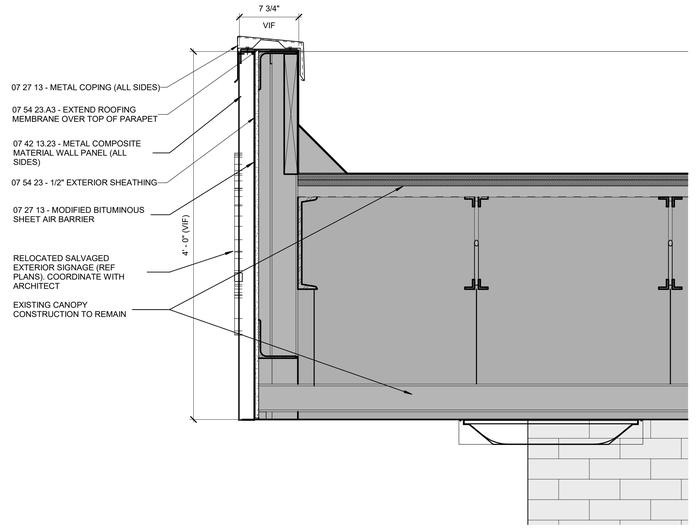
1E BASE DETAIL
1 1/2" = 1'-0"



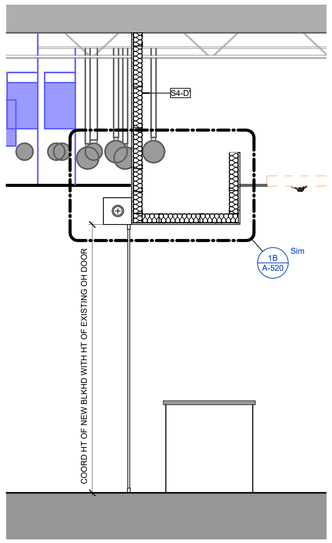
4C CULINARY ARTS WINDOW SILL DETAIL
1 1/2" = 1'-0"



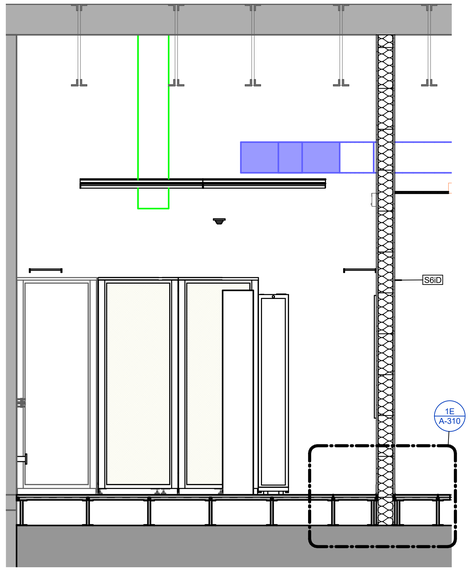
3C CULINARY ARTS WALL SECTION
1/2" = 1'-0"



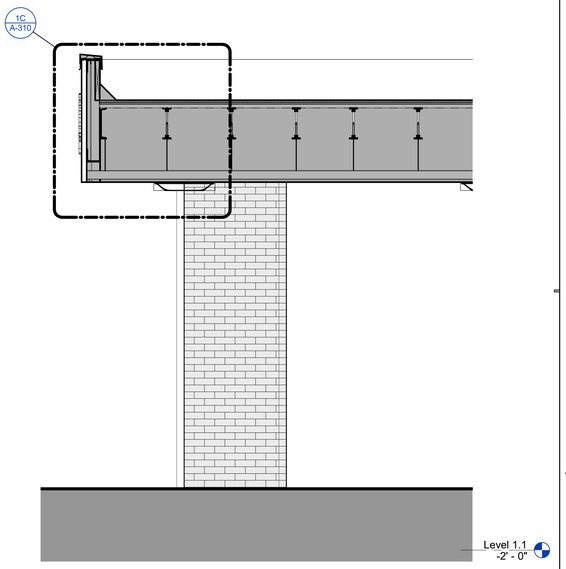
1C SOFFIT DETAIL
1 1/2" = 1'-0"



4A OVERHEAD DOOR SECTION
1/2" = 1'-0"



3A DROP PANEL FLOOR WALL SECTION
1/2" = 1'-0"



1A MAIN ENTRY CANOPY WALL SECTION
1/2" = 1'-0"

SCHMIDT
ASSOCIATES
415 Massachusetts Avenue
Indianapolis, IN 46204
www.schmidt-arch.com

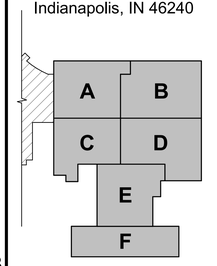
Project No. 2019-067.JEL
Project Date 12.08.2023
Produced SLS DJK

SARAH KATHLEEN HEMPSTEAD REGISTERED No. AR10400134 STATE OF INDIANA ARCHITECT

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#	Revision	Date
A1	Addendum #1	2/1/24

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

WALL SECTIONS

A-310

A-310_WALL SECTIONS
2019-067.JEL M.S.D. of Washington Township_Renovation_
C:\Users\sarah.hempstead\Documents\2019-067.JEL_Burgett_A_central_sarah.hempstead.rvt
11/30/2023 2:07:08 PM

EXISTING DOOR & FRAME SCHEDULE

MARK	DOOR PANEL (VIF) TYPE	QTY	MATL	GLAZ	SIZE H	W	TH	FRAME (VIF) MARK	MATL	LABEL	HDWR SET	NOTES	MARK
A-101.1	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	F1	HM	90 MIN		1	A-101.1
A-101.2	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	F1	HM	90 MIN		1	A-101.2
A-301	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	04	1	A-301
A-304	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	07	1	A-304
A-307.2	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	41	1	A-307.2
A-309	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	10	1	A-309
A-311	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--		1	A-311
A-312	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--		1	A-312
A-401.1	F	1	HM	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	35	1	A-401.1
A-401.2	F	1	HM	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	35	1	A-401.2
A-401.3	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	90 MIN	36	1	A-401.3
A-405	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	A-405
A-405A	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--		1	A-405A
A-406	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	A-406
A-408.1	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	A-408.1
A-408.2	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	A-408.2
A-410.1	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	A-410.1
A-410.2	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	A-410.2
A-B-118	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	04	1	A-B-118
B-424	NV	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	B-424
B-426	NV	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	38	1	B-426
B-428	NV	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	38	1	B-428
C-146	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	90 MIN	10	1	C-146
D-429.1	NV	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	D-429.1
D-430	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	D-430
D-435	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	D-435
D-436.1	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	D-436.1
E-348	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	E-348
E-351	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	40	1	E-351
E-353	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	E-353
E-354	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	E-354
F419.1	NVL	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F1	HM	--		1	F419.1
F419.2	NVL	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	F1	HM	--		1	F419.2
F-413	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	F-413
F-414	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	F-414
F-415	F	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	F-415
F-416	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	F-416
F-420B.1	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	F-420B.1
F-421	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	F-421
F-422	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	F-422
G-333	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-333
G-334	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-334
G-335.1	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	35	1	G-335.1
G-335.2	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	35	1	G-335.2
G-336	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-336
G-338	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-338
G-338A	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-338A
G-340	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-340
G-341	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-341
G-341A	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-341A
G-342	NV	1	HM	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-342
G-342A	NV	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	G-342A
G-344	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	F1	HM	--	11	1	G-344
G-345.1	NV	1	HM	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-345.1
G-345.2	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	F1	HM	--	11	1	G-345.2
G-346	NV	2	HM	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	F1	HM	--	11	1	G-346
G-436.2	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	G-436.2
H-315	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	H-315
H-317	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	H-317
H-318	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	H-318
H-320.1	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	H-320.1
H-320.2	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	41	1	H-320.2
H-321	NV	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	H-321
H-322	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	H-322
H-323	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	H-323
H-324	NV	1	WD	(VIF)	7' - 0"	3' - 0"	0' - 1 3/4"	(VIF)	HM	--	10	1	H-324
H-327	NV	2	WD	(VIF)	7' - 0"	6' - 0"	0' - 1 3/4"	(VIF)	HM	--	11	1	H-327

NEW DOOR & FRAME SCHEDULE

MARK	DOOR PANEL TYPE	QTY	MATL	GLAZ	SIZE H	W	TH	FRAME MARK	MATL	GLAZ	LABEL	HDWR SET	NOTES	MARK	Phase Created
A-101.3	DG	2	AL	TG	7' - 0"	6' - 0"	0' - 1 3/4"	REF. ELEV.	AL	TG	--	26	2	A-101.3	Phase 1
A-101.4	DG	1	AL	TG	7' - 0"	3' - 0"	0' - 1 3/4"	REF. ELEV.	AL	TG	--	31	2	A-101.4	Phase 1
A-119A.1	NV	1	WD	TG	7' - 0"	4' - 0"	0' - 1 3/4"	F1	HM	--	--	18	2	A-119A.1	Phase 1
A-119A.2	G	2	WD	--	7' - 0"	6' - 0"	0' - 1 3/4"	F1 (VIF)	EXISTING	TG	--		7	A-119A.2	Phase 1
A-122	NV	1	WD	TG	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	90 MIN	09	2, 6	A-122	Phase 1
A-300.1	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F1	HM	--	--	08	2	A-300.1	Phase 1
A-300.2	DG	1	AL	TG	7' - 0"	3' - 0"	0' - 1 3/4"	REF. ELEV.	AL	TG	--	24	2	A-300.2	Phase 1
A-300B	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F3	HM	TG	--	05	2	A-300B	Phase 1
A-304	NV	1	WD	TG	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--		2	A-304	Phase 1
A-307.1	OH	1	HM	--	8' - 0"	9' - 0"	0' - 1 3/4"	--	--	--	--	42	4	A-307.1	Phase 1
A-313	F2	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	06	2	A-313	Phase 1
A-B-101.1	DG	1	AL	TG	7' - 0"	3' - 0"	0' - 1 3/4"	REF. ELEV.	AL	TG	--	16	2	A-B-101.1	Phase 1
A-B-101.2	DG	2	AL	TG	7' - 0"	6' - 0"	0' - 1 3/4"	REF. ELEV.	AL	TG	--	25	2	A-B-101.2	Phase 1
A-B-101.3	DG	2	AL	TG	7' - 0"	6' - 0"	0' - 1 3/4"	REF. ELEV.	AL	TG	--	27	2	A-B-101.3	Phase 1
C-329	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	90 MIN	20	2	C-329	Phase 1
C-332	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	90 MIN	21	2	C-332	Phase 1
C-332A	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	90 MIN	34	2	C-332A	Phase 1
D-1A	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F1	HM	--	--	14	2	D-1A	Phase 1
D-1B	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F1	HM	--	--	13	2	D-1B	Phase 1
D-2A	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F1	HM	--	--	13	2	D-2A	Phase 1
D-2B	F	1	WD	--	7' - 0"	3' - 0"	0' - 1 3/4"	F1	HM	--	--	14	2	D-2B	Phase 1
D-125	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	02	2	D-125	Phase 1
D-125A	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	15	2	D-125A	Phase 1
D-127	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	02	2	D-127	Phase 1
D-429.2	F	2	HM	--	7' - 0"	6' - 0"	0' - 1 3/4"	F1 (VIF)	HM	--	--	23	2	D-429.2	Phase 1
D-434	F	2	HM	--	7' - 0"	6' - 0"	0' - 1 3/4"	F2	HM	--	--	22	2	D-434	Phase 1
E-102	DG	2	AL	IG	7' - 0"	6' - 0"	0' - 1 3/4"	REF. ELEV.	AL	IG	--	32	2	E-102	Phase 1
E-111	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	01	2	E-111	Phase 1
E-111A	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	13	2	E-111A	Phase 1
E-111B	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	13	2	E-111B	Phase 1
E-111C	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	02	2	E-111C	Phase 1
E-115DA	F	1	WD	--	7' - 0"	2' - 8"	0' - 1 3/4"	F2	HM	--	--	15	2	E-115DA	Phase 1
E-115EA	F	1	WD	--	7' - 0"	2' - 8"	0' - 1 3/4"	F2	HM	--	--		2	E-115EA	Phase 1
E-120	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	03	2	E-120	Phase 1
E-121	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	03	2	E-121	Phase 1
E-121A	F	1	HM	--	7' - 0"	3' - 0"	0' - 1 3/4"	F2	HM	--	--	12	2	E-121A	Phase 1

GENERAL NOTES

A. This Door Schedule(s) is furnished for whatever assistance it may afford the Contractor. Do not consider it as entirely inclusive. Carefully examine the Drawings (especially the Floor Plans) and the Specifications to determine the extent of door and frame quantities required (including interior borrowed lite or sidelite openings). Should any particular door, frame, or interior borrowed lite or sidelite shown on the Drawings be inadvertently omitted from this Schedule, supply same as required for similar openings.

B. The "QTY" column designates the number of leaves in the opening. The "Door Width" column designates the total width of all leaves. In multiple leaf conditions, the leaves shall equally divide the "Door Width" unless noted otherwise; however, the active leaf shall not be less than 3'-0" wide.

C. Door Type "X" denotes a frame with no door such as a borrowed lite, reference Frame Elevations.

D. An asterisk (*) in a dimension denotes a width that varies, reference plans, elevations, details and schedules.

E. Verify locksets with the Owner during submittals.

F. Tooth-in new masonry construction for new doors/frames into existing masonry wall construction where applicable.

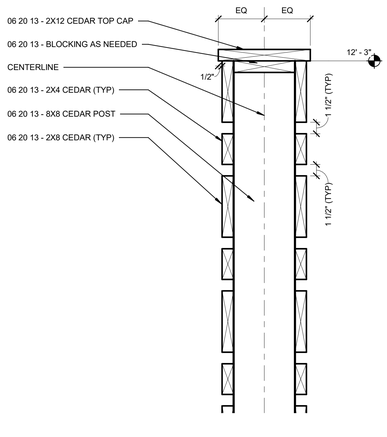
ABBREVIATIONS

AL	Aluminum
HM	Hollow Metal
ST	Steel
WD	Wood
TG	Tempered Glazing
IG	Insulated Glazing

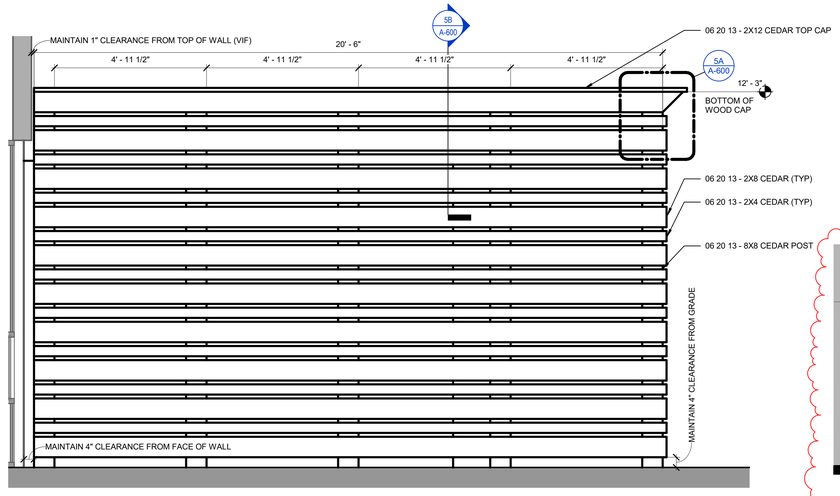
DOOR & FRAME SCHEDULE NOTES

See Door Schedule

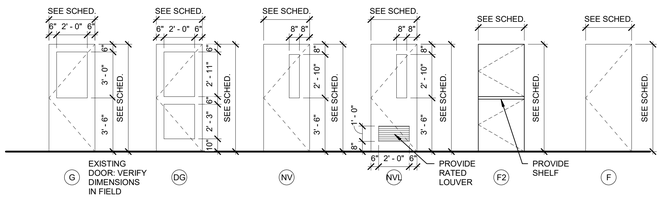
1. Existing door and frame to remain. New hardware only (08 71 00). Field verify all existing door and frame information as required for installation of new hardware.
2. New door/frame.
3. Set door in frame to allow for 180° door swing.
4. Existing overhead door in new infill wall construction.
5. Door to receive fire-rated glazing.
6. Existing relocated door in new construction. Reference demo plans

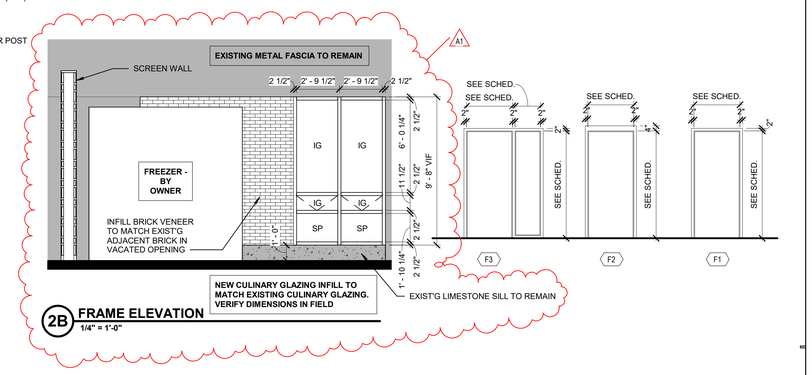


5B SCREEN WALL SECTION DETAIL
1 1/2" = 1'-0"

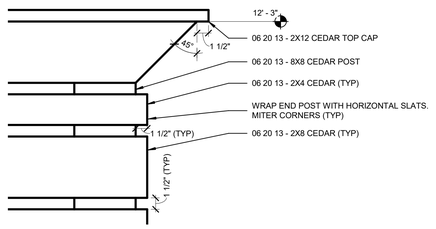


3B SCREEN WALL ELEVATION
1/2" = 1'-0"

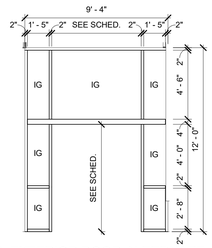




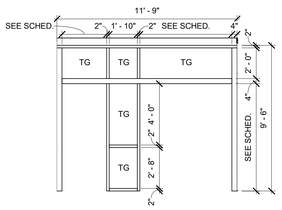
2B FRAME ELEVATION
1/4" = 1'-0"



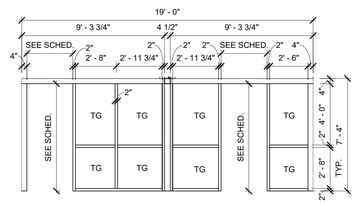
5A SCREEN WALL CORNER DETAIL
1 1/2" = 1'-0"



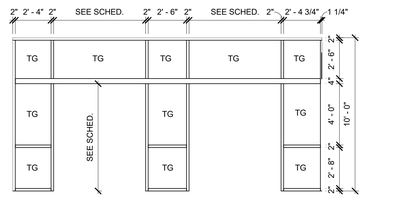
4A EXTERIOR DOOR ALTERNATE
1/4" = 1'-0"



3A FRAME ELEVATION
1/4" = 1'-0"



2A FRAME ELEVATION
1/4" = 1'-0"



1A FRAME ELEVATION
1/4" = 1'-0"

SCHMIDT
ASSOCIATES
415 Massachusetts Avenue
Indianapolis, IN 46204
www.schmidt-arch.com

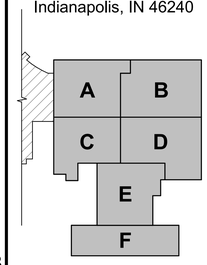
Project No. 2019-067.JEL
Project Date 12.08.2023
Produced SLS DJK

SARAH KATHLEEN HEMPSTEAD
REGISTERED
NO.
AR10400134
STATE OF
INDIANA
ARCHITECT

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#	Revision	Date
A1	Addendum #1	2/1/24

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN

M.S.D. of Washington Township

J. EVERETT LIGHT CAREER CENTER

J. Everett Light Career Center - Renovation

DOOR AND FRAME SCHEDULE

A-600

A-600_DOOR AND FRAME SCHEDULE
2019-067.JEL_8/13/ 8" Washington Township Renovation_
Plotted: 8/13/2024 10:47:47 AM By: JEL_Budget1_A_8/2019/A&P Jobs_Budget1_A_2021_acmeacme.ctb
C:\Users\ssls\Desktop\A-600

AHU SCHEDULE

MARK	MANUFACTURER	MODEL	TYPE	MULTIZONE DATA: NUMBER OF ZONES	MULTIZONE DATA: NUMBER OF DECKS	LOCATION	ROOF LOCATION	OPERATINGWEIGHT (LBS)	DIMENSIONS (IN): L	W	H	SUPPLY FAN DATA: AIRFLOW (CFM)	ESP (IN-WG)	TSP (IN-WC)	RPM	MOTOR: QTY	BHP EACH	MHP EACH
AHU CA-1	INNOVENT	CAHU-9400-HW-CW-MZ-460	MULTIZONE	7	2	ROOF	UNIT C	9,000	282	102	94.5	9,400	1.00	2.57	1,435	1	5.5	7.5
AHU CA-2	INNOVENT	CAHU-8600-HW-CW-MZ-460	MULTIZONE	9	2	ROOF	UNIT A	8,800	283	103	86.5	8,600	1.00	2.59	1,370	1	4.9	7.5
AHU CA-3	INNOVENT	CAHU-9800-HW-CW-MZ-460	MULTIZONE	8	2	ROOF	UNIT A	9,200	283	104	94.5	9,800	1.00	2.58	1,472	1	5.9	7.5
AHU CA-4	INNOVENT	CAHU-9200-HW-CW-MZ-460	MULTIZONE	7	2	ROOF	UNIT A/B/C/D	8,900	282	102	90.5	9,200	1.00	2.55	1,416	1	5.3	7.5
AHU CB-1	INNOVENT	CAHU-6500-HW-CW-MZ-460	MULTIZONE	2	2	ROOF	UNIT B/D	7,800	282	103	72.5	6,500	1.00	2.60	1,933	1	4.1	5.0
AHU CB-2	INNOVENT	CAHU-7600-HW-CW-MZ-460	MULTIZONE	11	2	ROOF	UNIT A/B	7,800	282	103	72.5	7,600	1.00	2.58	1,643	1	4.6	7.5
AHU CB-3	INNOVENT	CAHU-10200-HW-CW-MZ-460	MULTIZONE	6	2	ROOF	UNIT B	9,200	283	103	96.5	10,250	1.00	2.58	1,514	1	6.3	7.5
AHU CB-4	INNOVENT	CAHU-16600-HW-CW-460	VAV RTU	-	-	ROOF	UNIT B/D	8,800	249	110	82.5	16,600	1.00	2.83	1,375	2	5.1	7.5
AHU CC-1	INNOVENT	CAHU-9500-HW-CW-MZ-460	MULTIZONE	4	2	ROOF	UNIT D	9,100	283	103	94.5	9,500	1.00	2.58	1,445	1	5.6	7.5
AHU CC-2	INNOVENT	CAHU-7100-HW-CW-MZ-460	MULTIZONE	5	2	ROOF	UNIT D/E	8,200	282	103	80.5	7,100	1.00	2.54	1,575	1	4.2	5.0
AHU CC-3	INNOVENT	CAHU-9900-HW-CW-MZ-460	MULTIZONE	5	2	ROOF	UNIT D	9,100	282	103	95.5	9,900	1.00	2.58	1,481	1	6.0	7.5
AHU CC-4	INNOVENT	CAHU-9400-HW-CW-MZ-460	MULTIZONE	6	2	ROOF	UNIT B	9,000	282	102	94.5	9,400	1.00	2.57	1,435	1	5.5	7.5
AHU CD-1	INNOVENT	CAHU-13800-HW-CW-460	SINGLE ZONE	-	-	ROOF	UNIT F	7,900	285	92	81.0	13,800	1.00	2.85	1,593	2	4.4	5.0
AHU CD-2	INNOVENT	CAHU-5400-HW-CW-460	SINGLE ZONE	-	-	ROOF	UNIT F	5,400	266	80	58.0	5,400	1.00	2.82	1,771	1	3.4	5.0
AHU CD-3	INNOVENT	CAHU-13800-HW-CW-460	SINGLE ZONE	-	-	ROOF	UNIT F	7,900	285	98	81.0	13,800	1.00	2.85	1,593	2	4.4	5.0
AHU CD-4	INNOVENT	CAHU-4000-HW-CW-MZ-460	MULTIZONE	3	2	ROOF	UNIT F	6,200	250	90	62.0	4,000	1.00	2.61	1,891	1	2.4	3.0
AHU CD-5	INNOVENT	CAHU-13800-HW-CW-460	SINGLE ZONE	-	-	ROOF	UNT E	10,300	357	92	93.0	13,800	1.00	3.85	1,733	2	5.9	7.5
AHU CD-6	INNOVENT	CAHU-4800-HW-CW-MZ-460	MULTIZONE	5	2	ROOF	UNIT E	6,500	250	92	70.0	4,800	1.00	2.61	1,645	1	2.8	5.0
AHU CD-10	INNOVENT	CAHU-7500-IB-HW-CW-CW-460	MAKEUP AIR	-	-	ROOF	UNIT E	9,100	279	90	96.0	7,500	2.00	4.15	1,834	1	7.0	10.0
AHU CE-1	INNOVENT	CAHU-9200-HW-CW-MZ-460	MULTIZONE	5	2	ROOF	UNIT B	9,000	282	103	92.5	9,200	1.00	2.55	1,416	1	5.3	7.5
AHU CE-2	INNOVENT	CAHU-10000-HW-CW-460	SINGLE ZONE	-	-	ROOF	UNIT E	7,100	285	92	66.0	10,000	1.00	2.84	1,519	1	6.5	7.5

A1

MARK	SUPPLY FAN SOUND POWER (OUTLET) OCTAVE BAND: 1	2	3	4	5	6	7	8	dBA	OUTSIDE FILTER: TYPE	MIN OA%	FACE VEL. FPM	MERV	QTY	DEPTH (IN)	WIDTH (IN)	HEIGHT (IN)	CLEAN PD	TOTAL PD	SUPPLY FAN ELECTRICAL DATA: VOLTS (V)	PH	FREQ (HZ)	FLA (A)	MCA (A)	MOCP (A)
AHU CA-1	81	88	92	94	90	89	87	76	85	PLEATED	25	314	8	9	2	24	20	0.24	0.62	460	3	60	11	15.5	25
AHU CA-2	80	88	91	92	89	88	83	75	83	PLEATED	25	359	8	6	2	24	24	0.24	0.62	460	3	60	11	15.5	25
AHU CA-3	82	88	93	94	91	90	88	77	86	PLEATED	25	314	8	9	2	25	20	0.24	0.62	460	3	60	11	15.5	25
AHU CA-4	81	88	92	93	90	89	86	76	84	PLEATED	25	332	8	8	2	20	25	0.24	0.62	460	3	60	11	15.5	25
AHU CB-1	82	83	89	91	90	82	83	75	82	PLEATED	25	325	8	6	2	24	20	0.24	0.62	460	3	60	7	10.1	15
AHU CB-2	84	85	93	92	88	85	80	74	82	PLEATED	25	317	8	6	2	24	24	0.24	0.62	460	3	60	11	15.5	25
AHU CB-3	83	89	94	95	92	91	89	78	86	PLEATED	25	285	8	9	2	24	24	0.24	0.62	460	3	60	11	15.5	25
AHU CB-4	84	91	94	95	92	90	89	78	89	PLEATED	25	498	8	10	2	20	24	0.24	0.62	460	3	60	11x2	26.5	35
AHU CC-1	82	88	92	94	91	89	87	76	85	PLEATED	25	264	8	9	2	24	24	0.24	0.62	460	3	60	11	15.5	25
AHU CC-2	83	84	91	90	86	82	77	72	80	PLEATED	25	296	8	6	2	24	24	0.24	0.62	460	3	60	7	10.1	15
AHU CC-3	83	88	93	95	91	90	88	77	86	PLEATED	25	275	8	9	2	24	24	0.24	0.62	460	3	60	11	15.5	25
AHU CC-4	81	88	92	94	90	89	87	76	85	PLEATED	25	314	8	9	2	24	20	0.24	0.62	460	3	60	11	15.5	25
AHU CD-1	86	88	94	93	89	85	80	75	86	PLEATED	25	460	8	9	2	24	20	0.24	0.62	460	3	60	6.7x2	16.8	20
AHU CD-2	82	84	86	89	86	78	76	71	79	PLEATED	25	450	8	3	2	24	24	0.24	0.62	460	3	60	7	10.1	15
AHU CD-3	86	88	94	93	89	85	80	75	86	PLEATED	25	460	8	9	2	24	20	0.24	0.62	460	3	60	6.7x2	16.8	20
AHU CD-4	82	80	85	85	84	78	75	70	76	PLEATED	25	288	8	4	2	20	25	0.24	0.62	460	3	60	4	7.0	10
AHU CD-5	89	90	95	95	91	86	82	77	88	PLEATED	25	384	8	9	2	24	24	0.24	0.62	460	3	60	9.5x2	31.9	40
AHU CD-6	80	84	84	86	83	76	73	68	76	PLEATED	25	240	8	6	2	24	20	0.24	0.62	460	3	60	7	10.1	15
AHU CD-10	86	86	94	94	91	86	82	76	84	PLEATED	100	250	8	9	2	24	20	0.24	0.62	460	3	60	12	17.0	25
AHU CE-1	81	88	92	93	90	89	86	76	84	PLEATED	25	307	8	9	2	24	20	0.24	0.62	460	3	60	11	15.5	25
AHU CE-2	83	88	93	95	92	90	88	77	86	PLEATED	25	417	8	6	2	24	24	0.24	0.62	460	3	60	11	15.5	25

AHU SCHEDULE (CONTINUED)

MARK	HEATING COIL DATA: AIRFLOW (CFM)	CAPACITY (MBH)	FLOW (GPM)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WPD (FT-WG)	FACE VEL. (FPM)	APD (IN-WG)	ROWS	FINS PER IN	FLUID TYPE
AHU CA-1	9,400	472	47.7	50.0	96.3	140	120	6.9	664	0.49	3	9	WATER
AHU CA-2	8,600	431	43.7	50.0	96.3	140	120	6.9	663	0.49	3	9	WATER
AHU CA-3	9,800	492	49.8	50.0	96.3	140	120	7.7	667	0.50	3	9	WATER
AHU CA-4	9,200	453	45.9	50.0	95.5	140	120	6.4	690	0.52	3	9	WATER
AHU CB-1	6,500	327	33.1	50.0	96.4	140	120	6.7	650	0.48	3	9	WATER
AHU CB-2	7,600	383	38.8	50.0	96.5	140	120	6.3	651	0.48	3	9	WATER
AHU CB-3	10,250	508	51.5	50.0	95.7	140	120	7.1	683	0.52	3	9	WATER
AHU CB-4	16,600	819	82.9	50.0	95.0	140	120	7.8	498	0.26	2	11	WATER
AHU CC-1	9,500	475	48.1	50.0	96.1	140	120	7	671	0.50	3	9	WATER
AHU CC-2	7,100	360	36.4	50.0	96.7	140	120	1.5	655	0.55	3	10	WATER
AHU CC-3	9,900	495	50.2	50.0	96.2	140	120	7.8	674	0.50	3	9	WATER
AHU CC-4	9,400	472	47.7	50.0	96.3	140	120	6.9	664	0.49	3	9	WATER
AHU CD-1	13,800	673	68.1	50.0	95.0	140	120	6.9	500	0.26	2	11	WATER
AHU CD-2	5,400	268	27.2	50.0	95.8	140	120	9.4	497	0.26	2	11	WATER
AHU CD-3	13,800	673	68.1	50.0	95.0	140	120	6.9	500	0.26	2	11	WATER
AHU CD-4	4,000	196	19.8	50.0	95.1	140	120	5	686	0.52	3	9	WATER
AHU CD-5	13,800	677	68.6	50.0	95.3	140	120	7.6	497	0.26	2	11	WATER
AHU CD-6	4,800	241	24.3	50.0	96.2	140	120	1.4	640	0.53	3	10	WATER
AHU CD-10	7,500	135	13.7	55.0	71.6	140	120	4.7	500	0.09	1	7	WATER
AHU CE-1	9,200	453	45.9	50.0	95.5	140	120	6.4	690	0.52	3	9	WATER
AHU CE-2	10,000	491	49.7	50.0	95.3	140	120	5.6	490	0.27	2	11	WATER

MARK	AIRFLOW (CFM)	TOTAL CAP. (MBH)	SENSIBLE CAP. (MBH)	FLOW (GPM)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	EWT (°F)	LWT (°F)	WPD (FT-WG)	FACE VEL. (FPM)	APD (IN-WG)	ROWS	FINS PER IN	FLUID TYPE	NOTES
AHU CA-1	9,400	346.8	259.9	57.6	80.0	66.2	54.8	54.1	42	54	10.8	490	0.65	4	11	WATER	1-4
AHU CA-2	8,600	318.0	237.9	52.8	80.0	66.2	54.8	54.1	42	54	11.8	497	0.67	4	11	WATER	1-4
AHU CA-3	9,800	363.5	271.7	60.3	80.0	66.2	54.7	54.1	42	54	12.1	493	0.66	4	11	WATER	1-4
AHU CA-4	9,200	342.6	255.8	56.9	80.0	66.2	54.7	54.0	42	54	10.6	480	0.63	4	11	WATER	1-4
AHU CB-1	6,500	224.7	174.7	37.3	80.0	66.2	55.5	55.0	42	54	4.8	488	0.68	3	9	WATER	1-4
AHU CB-2	7,600	264.4	205.0	43.9	80.0	66.2	55.4	54.9	42	54	3.5	480	0.66	4	12	WATER	1-4
AHU CB-3	10,250	379.2	283.8	63.0	80.0	66.2	54.8	54.1	42	54	11.6	492	0.66	4	11	WATER	1-4
AHU CB-4	16,600	609.4	457.4	101.2	80.0	66.2	54.9	54.2	42	54	11.6	498	0.65	4	11	WATER	1-4
AHU CC-1	9,500	349.0	261.9	57.9	80.0	66.2	54.9	54.2	42	54	11.0	496	0.66	4	11	WATER	1-4
AHU CC-2	7,100	264.7	197.6	43.9	80.0	66.2	54.6	54.0	42	54	9.4	473	0.62	4	11	WATER	1-4
AHU CC-3	9,900	362.5	272.5	60.2	80.0	66.2	54.9	54.2	42	54	10.7	495	0.66	4	11	WATER	1-4
AHU CC-4	9,400	346.8	259.9	57.6	80.0	66.2	54.8	54.1	42	54	10.8	490	0.65	4	11	WATER	1-4
AHU CD-1	13,800	504.9	381.9	83.8	80.0	66.2	54.8	54.2	42	54	7.4	500	0.67	4	12	WATER	1-4
AHU CD-2	5,400	196.1	147.9	32.5	80.0	66.2	55.0	54.4	42	54	10.0	497	0.64	4	11	WATER	1-4
AHU CD-3	13,800	504.9	381.9	83.8	80.0	66.2	54.8	54.2	42	54	7.4	500	0.67	4	12	WATER	1-4
AHU CD-4	4,000	149.0	111.8	24.7	80.0	66.2	54.5	54.0	42	54	9.1	499	0.70	4	12	WATER	1-4
AHU CD-5	13,800	510.2	384.2	84.7	80.0	66.2	54.6	54.1	42	54	8.1	498	0.67	4	12	WATER	1-7
AHU CD-6	4,800	159.0	126.2	26.4	80.0	66.2	56.0	55.5	42	54	2.9	492	0.69	4	12	WATER	1-4
AHU CD-10	7,500	562.4	331.6	93.4	95.0	76.2	54.9	54.6	42	54	11.6	500	0.96	6	10	WATER	1-4
AHU CE-1	9,200	342.6	255.8	56.9	80.0	66.2	54.7	54.0	42	54	10.6	480	0.63	4	11	WATER	1-4
AHU CE-2	10,000	360.2	272.9	59.8	80.0	66.2	55.1	54.4	42	54	8.2	490	0.65	4	11	WATER	1-4

A1

AIR HANDLING UNIT SCHEDULE NOTES

1. OUTISDE AIR INLET WITH WEATHER HOOD AND ALUMINUM BIRD SCREEN.
2. SCCR 65 Ka.
3. BACnet MS/TP.
4. MAJOR ELECTRICAL COMPONENTS UL LISTED.
5. EXHAUST AIR OUTLET WITH WEATHER HOOD AND ALUMINUM BIRD SCREEN.
6. HEATING COIL IN REHEAT POSITON.
7. UNIT REQUIRES A NEW MANUFACTURER PROVIDED ROOF CURB. A1

AHU EXHAUST FAN SCHEDULE

MARK	EXHAUST FAN DATA: QTY	AIRFLOW (CFM)	ESP (IN-WG)	RPM	MOTOR: QTY	BHP EACH	MHP EACH	EXHAUST FAN SOUND POWER (OUTLET) OCTAVE BAND: 1	2	3	4	5	6	7	8	dBA	EXHAUST FAN ELECTRICAL DATA: VOLTS (V)	PH	FREQ (HZ)	FLA (A)
AHU CD-5	4	3,623	1.00	1,532	4	1.2	1.5	84	86	87	87	85	81	77	70	84	460	3	60	2.2x4

INTEGRAL FACE/BYPASS HOT WATER COIL DATA

MARK	AIRFLOW (CFM)	ORIG.CAP. (MBH)	FLOW (GPM)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WPD (FT-WG)	FACE VEL. (FPM)	APD (IN-WG)	ROWS	FINS PER IN	FLUID TYPE
AHU CD-10	7,500	655	100	-10.0	70.5	140	126.8	0.6	300	0.18	3	12	WATER

VAV BOX WITH HOT WATER REHEAT SCHEDULE - 23 36 00

MARK	IDENTITY DATA: MANUFACTURER	MODEL	INLET DIAMETER	AIRFLOW DATA: COOLING MAX (CFM)	HEATING MAX (CFM)	OCCUPIED MINIMUM (CFM)	STATIC INLET (IN-WG)	NOISE DATA: MAX DISCH.	MAX RAD.	REHEAT COIL DATA: CAPACITY (BTUH)	EAT (°F)	LAT (°F)	APD (IN-WG)	FLOW (GPM)	EWT (°F)	LWT (°F)	WPD (FT-WG)	ROWS	VALVE TYPE	NOTES
VAV-CC1	PRICE	SDV	8"	460	270	140	1.5	-	-	10,000	55	89	0.2	1.0	140	120	5.0	2	2-WAY	
VAV-CC2	PRICE	SDV	8"	540	320	160	1.5	21	-	12,000	55	90	0.3	1.2	140	120	5.0	2	2-WAY	
VAV-CC3	PRICE	SDV	10"	830	500	250	1.5	-	-	18,000	55	88	0.3	1.8	140	120	5.0	2	2-WAY	
VAV-CC4	PRICE	SDV	8"	455	270	135	1.5	-	-	10,000	55	89	0.2	1.0	140	120	5.0	2	2-WAY	
VAV-CC5	PRICE	SDV	10"	840	500	250	1.5	-	-	18,000	55	88	0.3	1.8	140	120	5.0	2	2-WAY	
VAV-CC6	PRICE	SDV	12"	1,305	780	390	1.5	-	-	28,000	55	88	0.4	2.8	140	120	5.0	2	2-WAY	
VAV-CC7	PRICE	SDV	10"	810	485	240	1.5	-	-	18,000	55	89	0.3	1.8	140	120	5.0	2	2-WAY	
VAV-CC8	PRICE	SDV	6"	200	120	60	1.5	22	-	5,000	55	94	0.1	0.5	140	120	5.0	2	2-WAY	
VAV-CC9	PRICE	SDV	14"	2,160	1,300	650	1.5	-	-	47,000	55	88	0.4	4.7	140	120	5.0	2	2-WAY	
VAV-CC10	PRICE	SDV	14"	2,160	1,300	650	1.5	-	-	47,000	55	88	0.4	4.7	140	120	5.0	2	2-WAY	
VAV-CC11	PRICE	SDV	14"	2,160	1,300	650	1.5	-	-	47,000	55	88	0.4	4.7	140	120	5.0	2	2-WAY	
VAV-CC12	PRICE	SDV	8"	340	200	100	1.5	22	-	7,000	55	87	0.2	0.7	140	120	5.0	2	2-WAY	
VAV-CC13	PRICE	SDV	14"	2,160	1,300	650	1.5	-	-	47,000	55	88	0.4	4.7	140	120	5.0	2	2-WAY	
VAV-CC14	PRICE	SDV	14"	2,160	1,300	650	1.5	-	-	47,000	55	88	0.4	4.7	140	120	5.0	2	2-WAY	

VAV BOX WITH HOT WATER REHEAT SCHEDULE NOTES:

1. COORDINATE LOCATION OF BOX A BOVE CEILING WITH LIGHT FIXTURES, FIRE PROTECTION, HEATING AND COOLING SYSTEM PIPING, PLUMBING SYSTEMS, AND WIRE TRAYS.
2. SEE M-700 SERIES DRAWINGS FOR TEMPERATURE CONTROLS INFORMATION.
3. INSULATED BOTTOM ACCESS DOOR UPSTREAM OF COIL WITH SNAP LATCH FASTENERS.

MULTIZONE UNIT CC-1 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CC-1-1	F-420B	1960	18"x18"	1
CC-1-2	F-421/422	2620	18"x18"	1
CC-1-3	F-420B	1960	18"x18"	1
CC-1-4	D-429	2080	18"x18"	1

MULTIZONE UNIT CC-2 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CC-2-1	D-112	105	6"x18"	1
CC-2-2	D-109	105	6"x18"	1
CC-2-3	D-430	2840	30"x18"	1
CC-2-4	D-435	2840	30"x18"	1
CC-2-5	D-103	600	6"x18"	1

MULTIZONE UNIT CC-3 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CC-3-1	D-436	1820	12"x18"	1
CC-3-2	G-340	2190	18"x18"	1
CC-3-3	B-428	2010	18"x18"	1
CC-3-4	B-426	1800	12"x18"	1
CC-3-5	B-424	2090	12"x18"	1

MULTIZONE UNIT CC-4 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CC-4-1	F-416	2000	12"x18"	1
CC-4-2	F-419	1500	12"x18"	1
CC-4-3	F-413	1500	12"x18"	1
CC-4-4	F-419	2600	12"x18"	1
CC-4-5	F-414	335	6"x18"	1
CC-4-6	F-C-103	800	6"x18"	1

MULTIZONE UNIT CD-4 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CD-4-1	E-113	660	12"x18"	1
CD-4-2	E-353	1550	24"x18"	1
CD-4-3	G-346	1550	36"x18"	1

MULTIZONE UNIT CD-6 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CD-6-1	G-342A	1150	24"x18"	1
CD-6-2	G-F-113	980	6"x18"	1
CD-6-3	D-434	980	12"x18"	1
CD-6-4	D-126	490	6"x18"	1
CD-6-5	G-343A	1300	24"x18"	1

MULTIZONE UNIT CB-2 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CB-2-1	A300A	480	6"x18"	1
CB-2-2	A-B-101	1000	6"x18"	1
CB-2-3	A-B-118	835	6"x18"	1
CB-2-4	A-300A	1100	12"x18"	1
CB-2-5	A400A/B	680	6"x18"	1
CB-2-6	A300B	410	6"x18"	1
CB-2-7	A-C-127	490	6"x18"	1
CB-2-8	A300C	500	6"x18"	1
CB-2-9	A-406	260	6"x18"	1
CB-2-10	A300E	430	6"x18"	1
CB-2-11	A-301	800	6"x18"	1

MULTIZONE UNIT CB-3 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CB-3-1	A-408	2660	12"x18"	1
CB-3-2	A-410	2900	12"x18"	1
CB-3-3	A-405A	1425	12"x18"	1
CB-3-4	A-C-115	935	12"x18"	1
CB-3-5	A-405A	1060	12"x18"	1
CB-3-6	A-411	1270	12"x18"	1

MULTIZONE UNIT CA-3 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CA-3-1	A-312	1540	12"x18"	1
CA-3-2	A-101/A-B-303	465	6"x12"	1
CA-3-3	A-101	600	6"x18"	1
CA-3-4	A-305	460	6"x18"	1
CA-3-5	A-313	840	6"x18"	1
CA-3-6	A-304	1900	12"x18"	1
CA-3-7	A-311	1390	12"x18"	1
CA-3-8	A-309	1960	12"x18"	1

MULTIZONE UNIT CA-4 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CA-4-1	G-333	1600	12"x18"	1
CA-4-2	G-338A	460	6"x18"	1
CA-4-3	G-B-139	310	6"x18"	1
CA-4-4	G-341	1410	12"x18"	1
CA-4-5	G-334	1550	12"x18"	1
CA-4-6	G-338	1410	12"x18"	1
CA-4-7	G-336	1600	12"x18"	1

MULTIZONE UNIT CB-1 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CB-1-1	G-335	2400	30"x18"	1
CB-1-2	A-401	3535	48"x18"	1

MULTIZONE UNIT CA-1 ZONE DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CA-1-1	H-325	420	6"x18"	1
CA-1-2	H-315	1950	12"x18"	1
CA-1-3	H-322	420	6"x18"	1
CA-1-4	H-317	1550	12"x18"	1
CA-1-5	H-324	1250	12"x18"	1
CA-1-6	H-320	1600	12"x18"	1
CA-1-7	H-323	1250	12"x18"	1

MULTIZONE UNIT CA-2 DAMPER SCHEDULE

ZONE NUMBER	AREA SERVED	CFM	DAMPER SIZE	NOTES
CA-2-1	H-314	600	6"x18"	1
CA-2-2	H-318	1150	12"x18"	1
CA-2-3	A-122	275	6"x18"	1
CA-2-4	H-318	490	6"x18"	1
CA-2-5	H-316	750	6"x18"	1
CA-2-6	H-A-127	500	6"X18"	1
CA-2-7	A-314	525	6"x18"	1
CA-2-8	A-119	500	6"x18"	1
CA-2-9	A-119	3000	18"x18"	1

MULTIZONE UNIT DAMPER SCHEDULE NOTES:

1. FIELD VERIFY DAMPER SIZES. SELECTED FROM EXISTING DRAWINGS.

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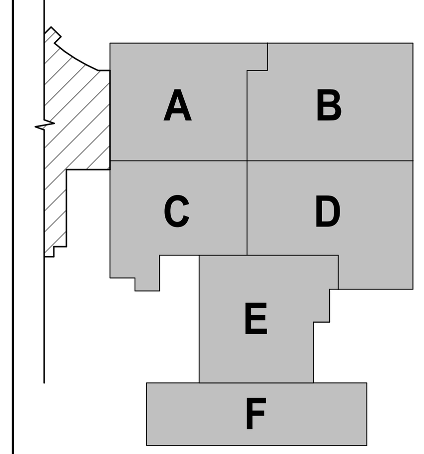
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SARAH KATHLEEN HEMPSTEAD REGISTERED NO. AR10400134 STATE OF INDIANA ARCHITECT

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN

M.S.D. of Washington Township

J. EVERETT LIGHT CAREER CENTER

J. Everett Light Career Center - Renovation

MECHANICAL SCHEDULES

M-601

HYDRONIC PROP UNIT HEATER SCHEDULE - 23 82 39.16

IDENTITY DATA					HEATING DATA						FAN DATA			ELECTRICAL DATA			
MARK	MANUFACTURER	MODEL	LOCATION	ARRANGEMENT	CAPACITY (MBH)	EWT (°F)	LWT (°F)	WPD (FT-WG)	FLOW (GPM)	LAT (°F)	AIRFLOW (CFM)	HP	RPM	VOLTS (V)	PH	FREQ (HZ)	NOTES
UH CD-2	TRANE	S-144	E-348 SOUTHEAST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-3	TRANE	S-144	E-348 SOUTHWEST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-4	TRANE	S-144	E-123 SOUTHEAST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-5	TRANE	S-144	E-123 SOUTH	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-6	TRANE	S-144	E-123 SOUTHWEST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-7	TRANE	S-144	E-123 NORTHWEST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-8	TRANE	S-144	E-123 NORTH	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-9	TRANE	S-144	E-348 NORTHEAST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-10	TRANE	S-144	E-348 NORTHEAST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-11	TRANE	S-144	G-345 NORTHEAST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-12	TRANE	S-144	G-345 SOUTHEAST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-13	TRANE	S-144	E-124 NORTH	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CD-14	TRANE	S-144	E-124 SOUTH	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CE-1	TRANE	S-144	G-344 SOUTHWEST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CE-2	TRANE	S-144	H-328 SOUTHEAST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CE-3	TRANE	S-144	H328 SOUTH	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1
UH CE-4	TRANE	S-144	C-329 SOUTHWEST	HORIZONTAL	104	140	120	0.4	10.4	104	2,200	1/3	1,140	115	1	60	1

HYDRONIC PROP UNIT HEATER SCHEDULE NOTES:

1. DISCONNECT BY MANUFACTURER.

ELECTRIC CABINET UNIT HEATER SCHEDULE - 23 82 39

IDENTITY DATA					HEATING DATA			FAN DATA	ELECTRICAL DATA					
MARK	MANUFACTURER	MODEL	LOCATION	TYPE	WEIGHT (LBS)	CAPACITY (KW)	STAGES	AIRFLOW (CFM)	VOLTS (V)	PH	FREQ (HZ)	FLA (A)	MOCP (A)	NOTES
ECUH-A1	MARLEY	CUS94510483FFWD	CORRIDOR A-101 NW	SEMI-RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-B1	MARLEY	CUS94510483FFWD	VESTIBULE A-B-101 WEST	SEMI-RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-B2	MARLEY	CUS94510483FFWD	VESTIBULE A-B-101 EAST	SEMI-RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-B3	MARLEY	CUS94510483FFWD	CORRIDOR F-C-103 SOUTH	SEMI-RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-C1	MARLEY	CUS94510483FFWD	CORRIDOR D-103 SOUTH	SEMI-RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-D1	MARLEY	CUS94510483FFWD	CORRIDOR Z E-102 EAST	RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-D2	MARLEY	CUS94510483FFWD	CORRIDOR Z E-102 WEST	RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-E2	MARLEY	CUS94510483FFWD	CORRIDOR T H-F-101 SOUTH	SEMI-RECESSED	120	10.0	2	500	480	3	60	12.0	15.0	1
ECUH-C3	MARLEY	CWH1157DSF	SINGLE RR 29	RECESSED	12	1.5	2	65	277	1	60	5.4	10.0	1
ECUH-C2	MARLEY	CWH1157DSF	SINGLE RR 30	RECESSED	12	1.5	2	65	277	1	60	5.4	10.0	1
ECUH-C4	MARLEY	CWH1157DSF	SINGLE RR 115	RECESSED	12	1.5	2	65	277	1	60	5.4	10.0	1
ECUH-C5	MARLEY	CWH1157DSF	SINGLE RR 116	RECESSED	12	1.5	2	65	277	1	60	5.4	10.0	1

ELECTRIC CABINET UNIT HEATER SCHEDULE NOTES:

1. DISCONNECT SWITCH BY MANUFACTURER. DISCONNECT SWITCH AND ALL INTERLOCK RELAYS TO BE INSTALLED WITHIN HEATER ENCLOSURE.

REHEAT COIL SCHEDULE

IDENTITY DATA			DIMENSIONS			REHEAT COIL DATA										
MARK	MANUFACTURER	MODEL	WIDTH	HEIGHT	CFM	CAPACITY (MBH)	EAT (°F)	LAT (°F)	APD (IN-WG)	FLOW (GPM)	EWT (°F)	LWT (°F)	WPD (FT-WG)	ROWS	VALVE TYPE	NOTES
RHC #1	GREENHECK	HW	16"	24"	1,500	57	55.0	90.0	0.23	5.8	140	120	5.0	2	2-WAY	1
RHC #2	GREENHECK	HW	14"	10"	500	20	55.0	91.5	0.20	2.0	140	120	5.0	2	2-WAY	1
RHC #3	GREENHECK	HW	16"	8"	450	18	55.0	91.4	0.19	1.8	140	120	5.0	2	2-WAY	1
RHC #4	GREENHECK	HW	36"	18"	2,250	90	55.0	91.9	0.19	9.1	140	120	5.0	2	2-WAY	1
RHC #5	GREENHECK	HW	14"	12"	550	23	55.0	93.2	0.17	2.3	140	120	5.0	2	2-WAY	1
RHC #6	GREENHECK	HW	50"	24"	4,300	175	55.0	92.5	0.20	17.7	140	120	5.0	2	2-WAY	1

A1 A1

REHEAT COIL SCHEDULE NOTES:

1. REFER TO DETAIL 3C/M-501.

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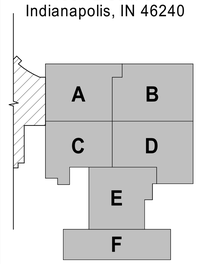
Project No. 2019-067.JEL
Project Date 12.08.2023
Produced PFS

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

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KEY PLAN

M.S.D. of Washington Township

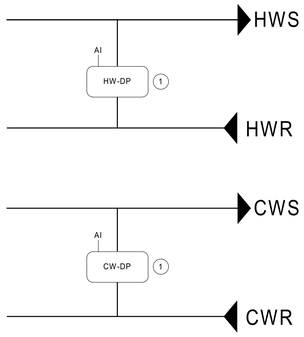
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MECHANICAL SCHEDULES

M-603

9/15/_ MECHANICAL SCHEDULES
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Point Name	Hardware Points AI	AO	BI	BO	Software Points AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
DIFFERENTIAL PRESSURE (HW-DP, CW-DP)	x								x		x



HOT WATER DIFFERENTIAL PRESSURE MONITORING:

TCC SHALL PROVIDE DIFFERENTIAL PRESSURE TRANSDUCER MOUNTED IN A PANEL WITH A 5-VALVE MANIFOLD TO CIC FOR INSTALLATION AND WIRING. MECHANICAL CONTRACTOR RESPONSIBLE TO TUBE FROM TRANSDUCER PANEL HIGH AND LOW PORTS BACK TO THE MAIN SUPPLY AND RETURN PIPING AS INDICATED WITHIN TCC DRAWINGS. TCC SHALL PLACE DIFFERENTIAL PRESSURE VALUE (HW-DP) ON MAIN GRAPHIC.

CHILLED WATER DIFFERENTIAL PRESSURE MONITORING:

TCC SHALL PROVIDE DIFFERENTIAL PRESSURE TRANSDUCER MOUNTED IN A PANEL WITH A 5-VALVE MANIFOLD TO CIC FOR INSTALLATION AND WIRING. MECHANICAL CONTRACTOR RESPONSIBLE TO TUBE FROM TRANSDUCER PANEL HIGH AND LOW PORTS BACK TO THE MAIN SUPPLY AND RETURN PIPING AS INDICATED WITHIN TCC DRAWINGS. TCC SHALL PLACE DIFFERENTIAL PRESSURE VALUE (CW-DP) ON MAIN GRAPHIC.

SCHEMATIC NOTES:

1. REFERENCE MP1F1 FOR WALL MOUNTED LOCATIONS ABOVE DROP CEILING

5C HOT AND CHILLED WATER DIFFERENTIAL PRESSURE
NOT TO SCALE

CONTROLS INSTALLATION CONTRACTOR (CIC) MISCELLANEOUS SEQUENCES AND INFORMATION:

IT IS THE INTENTION OF THIS PROJECT TO PROVIDE DELTA CONTROLS DEVICES FOR ALL NEW EQUIPMENT EXCEPT NOTED PACKAGED EQUIPMENT AND CAPABLE OF ACHIEVING THE SEQUENCE OF OPERATION UTILIZING BACnet IP AND MSTP COMMUNICATION. TEMPERATURE CONTROLS SERVICES (TCS) SHALL PROVIDE ALL REQUIRED CONTROLS EQUIPMENT PER THE DRAWINGS AND SPECIFICATIONS AND WILL FUNCTION AS THE TCC. THE MECHANICAL CONTRACTOR SHALL PERFORM THE CIC SCOPE OF WORK AS QUALIFIED OR SUBCONTRACT THE WORK AS NEEDED. TCS AS THE TCC SHALL IDENTIFY AND COMMUNICATE TO THE CONTROLS INSTALLATION CONTRACTOR (CIC) ANY INSTALLATION DISCREPANCIES OR ISSUES FOR RESOLUTION BY THE CIC. ALL COORDINATION AND COMMUNICATION WITH TCS SHALL INCLUDE BRIAN SHEPPERD - BRIAN@TCSBAS.COM

TCS SHALL PROVIDE A COMPREHENSIVE GRAPHIC PACKAGE TO INCLUDE ALL NEW EQUIPMENT CONTROLLED OR MONITORED BY THE BUILDING AUTOMATION SYSTEM AND SHALL PROVIDE EQUIPMENT POINT DATABASE, LICENSING, SCHEDULES, TRENDING, AND REPORTS.

TCS SHALL COORDINATE WITH THE CLIENT FOR: EMAIL ALARM INFORMATION, 1-YEAR TRENDING AND REPORTS, OCCUPIED AND HOLIDAY SCHEDULES, AND SPECIALTY EQUIPMENT PARAMETERS AND ALARMING.

CONTROL PANELS: TCC SHALL PROVIDE AND CIC SHALL INSTALL TEMPERATURE CONTROL PANELS THAT ARE HOFFMAN STYLE FOR ALL BAS CONTROLLED EQUIPMENT. THE TECHNOLOGY CONTRACTOR WILL PROVIDE ETHERNET DROPS FOR ALL PANELS AND THE DIVISION 26 CONTRACTOR SHALL PROVIDE 120 VAC CIRCUITS FOR ALL PANELS DEDICATED TO PANEL AND VAV POWER. CIC IS RESPONSIBLE TO DEMOLISH EXISTING CONTROL PANELS AND CONTENTS BY REMOVING THE BACKPLATE AND ALL CONTENTS INCLUDING CONDUIT, PNEUMATIC TUBING, AND WIRING OUTSIDE OF THE PANEL. CIC IS RESPONSIBLE TO INSTALL THE NEW PANELS WITH NEW CONTROLS PRE-MOUNTED AND PROVIDED BY TCC AND TERMINATE PER TCC DRAWINGS. CABLING SHALL BE INSTALLED BY THE CIC IN CONDUIT WITHIN MECHANICAL ROOMS. CLEARLY LABEL PANELS AS TO THE EQUIPMENT CONTROLLED AND INCLUDE A COPY OF THE CONTROL DRAWINGS IN A PROTECTIVE COVER AFFIXED ON THE INSIDE PANEL DOOR. SEPARATE CIRCUIT PROVIDED BY DIVISION 26 FOR VAV POWER PANELS. SEE MH1B1 AND MH1C1 FOR TEMPERATURE CONTROL PANEL LOCATIONS.

RECEIVING H-328 (SEE MP1C1)
PANEL 1 – TC ETHERNET LEVEL CONTROLLER PANEL - ETHERNET LEVEL CONTROLLER FOR FIELD LEVEL CONTROLLERS
-REQUIRES DEDICATED 120 VAC CIRCUIT
-REQUIRES ETHERNET DROP TO PANEL
PANEL 2 – TC BUILDING ANNUNCIATOR PANEL - REFERENCE DETAIL 1C
-REQUIRES DEDICATED 120 VAC CIRCUIT
-REQUIRES ETHERNET DROP TO PANEL

ELECTRICAL C-132 (SEE MP1B1)
PANEL 3 – TC VAV POWER PANEL (24VAC POWER FOR AHU-CB-4 VAV BOXES)
-REQUIRES DEDICATED 120 VAC CIRCUIT

BUILDING NETWORK ETHERNET INTERFACE: ALL REQUIRED DATA DROPS SHALL BE PROVIDED BY THE TELECOMMUNICATIONS CONTRACTOR FOR USE BY TCC IN THE SPECIFIED LOCATIONS TO EACH TEMPERATURE CONTROL PANEL. SEE TELECOMMUNICATIONS DRAWINGS FOR ADDITIONAL REQUIREMENTS.

ELECTRICAL UTILITY POWER MONITORING: TELECOMMUNICATIONS CONTRACTOR SHALL HOMERUN AN ETHERNET CABLE FROM THE SWITCHGEAR POWER METER TO THE NEAREST IDF NETWORK SWITCH WITH AN AVAILABLE PORT AS COORDINATED WITH THE SCHOOL INFORMATION SYSTEMS GROUP. TCC SHALL CONFIGURE POWER METER WEBPAGE FOR ADMIN AND USER ACCOUNTS TO MANUALLY MONITOR POWER METER DATA VIA BUILT-IN WEBPAGE.

ELECTRIC CABINET UNIT HEATERS ECUH-nn: TCC SHALL MONITOR EACH SPACE SERVED BY AN ELECTRIC CABINET UNIT HEATER. CIC SHALL WIRE FLAT PLATE SENSOR WIRING TO TCC CONTROLLER AS SPECIFIED IN THE TCC DRAWINGS. SEE MECHANICAL SCHEDULE AND MH DRAWINGS FOR REQUIREMENTS AND LOCATIONS. TCC SHALL GENERATE AN ALARM IF THE SPACE TEMPERATURE FALLS BELOW 49F (ADJ).

3C CIC MISCELLANEOUS SCOPE OF WORK
NOT TO SCALE

BUILDING MANAGEMENT SYSTEM ANNUNCIATOR PANEL - REFERENCE MP1C1 - RECEIVING H-328 AND DETAIL 3C

IT IS THE INTENTION OF THIS DESIGN TO INCLUDE A WALL MOUNTED ANNUNCIATOR PANEL THAT PROVIDES NORMAL AND ALARM CONDITION FEEDBACK OF THE MAJOR MECHANICAL EQUIPMENT IN THE BUILDING TO ASSIST THE OWNER WITH RESPONSE TIME TO EQUIPMENT ISSUES. CHILLERS, BOILERS, AIR HANDLERS, PUMPS, AND OTHER CRITICAL EQUIPMENT SHALL BE MONITORED FOR A NORMAL OR ALARM CONDITION. A GRAPHIC REPRESENTING AN EXACT REPLICA OF THE WALL MOUNTED PANEL SHALL BE PROVIDED BY TCC FOR REMOTE MONITORING OF BUILDING CONDITIONS. TCC SHALL PROVIDE ALL PROGRAMMING, MATERIALS, ALARMS, LIGHT CONTROL, AND INTEGRATIONS REQUIRED FOR A COMPLETE REPRESENTATION OF ALL BUILDING AUTOMATION EQUIPMENT CONDITION FEEDBACK. TCC RESPONSIBLE TO PROVIDE SUBMITTAL OF PROPOSED DESIGN TO THE ENGINEER AND OWNER FOR APPROVAL PRIOR TO PROJECT COMPLETION. INCLUDE DETAILS IN SUBMITTAL IDENTIFYING NORMAL/ALARM DEDICATED SYSTEM LIGHTS AND NEGOTIATED USER-DEFINED LOGIC INCLUDING A PANEL LAYOUT AND ALARM CONDITION MATRIX. THE GRAPHIC SHALL INCLUDE THE ADDITIONAL FUNCTIONALITY TO DISPLAY WHAT CONDITIONS MUST BE CORRECTED AND/OR ACTIONS TAKEN TO CLEAR AN ACTIVE ALARM.

REMOTE ANNUNCIATOR PANEL CIC SHALL INSTALL THE ANNUNCIATOR PANEL IN THE MAIN MECHANICAL ROOM IN A HIGHLY VISIBLE LOCATION. TCC SHALL PROVIDE AN ETHERNET LEVEL CONTROLLER AND ALL REQUIRED PANEL AND FIELD DEVICES FOR A COMPREHENSIVE SOLUTION SPECIFIC TO THE EQUIPMENT IN THE BUILDING. IN ADDITION TO EQUIPMENT FEEDBACK, THE PANEL SHALL ALSO INCLUDE LOCAL HORN/STROBE, SILENCE BUTTON, AND TEST BUTTON. THE PANEL SHALL INCLUDE A TOTAL OF (5) SPARE USER-DEFINABLE ALARM LIGHTS THAT THE OWNER CAN CUSTOMIZE AS NEEDED.

IDF/ MDF NETWORK CONNECTION: CIC SHALL FURNISH, ROUTE, AND INSTALL A NETWORK CONNECTION FROM THE ANNUNCIATOR PANEL TO THE NEAREST BUILDING NETWORK SWITCH. TCC RESPONSIBLE TO COORDINATE WITH THE OWNER FOR SWITCH UTILIZATION, ROUTING APPROVAL, FINAL CONNECTIONS, AND PORT PROVISIONING ON THE NETWORK. FIRE CAULKING WHERE REQUIRED IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR AND SHALL BE IDENTIFIED AND COORDINATED WITH TCC.

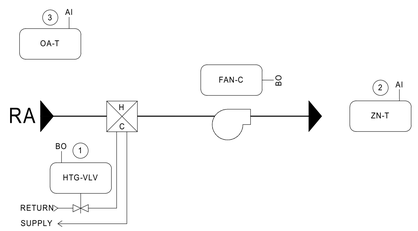
120VAC POWER REQUIREMENT: THE ELECTRICAL CONTRACTOR SHALL FURNISH POWER TO THE ANNUNCIATOR PANEL AND COORDINATE WITH TCC FOR TERMINAL STRIP TERMINATION REQUIREMENTS. ALL INSTALLATION AND MATERIAL, INCLUDING BUT NOT LIMITED TO, POWER LINE FILTERING TO THE ANNUNCIATOR PANEL IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

THIRD-PARTY BACnet CONSIDERATION: NORMAL AND ALARM CONDITIONS THAT ORIGINATE FROM NON-DELTA CONTROLLERS SHALL UTILIZE THE BACnet POINTS MADE AVAILABLE BY THE MANUFACTURER TO DETERMINE ANNUNCIATOR FEEDBACK.

NORMAL AND ALARM EQUIPMENT CONDITIONS: TCC SHALL MONITOR EQUIPMENT RUN COMMANDS AND STATUS FEEDBACK ON EQUIPMENT CONTROLLED BY DELTA CONTROLLERS TO DETERMINE AN ALARM (RED) OR NORMAL (GREEN) CONDITION. EQUIPMENT IN HAND OR NOT REFLECTIVE OF COMMAND SHALL VISIBLY (RED LIGHT) AND AUDIBLY (LOCAL HORN/STROBE) INDICATE ALARM CONDITION. BACnet INTEGRATIONS THAT INCLUDE RUN COMMAND AND STATUS FEEDBACK POINTS SHALL ALSO HAVE DEDICATED ALARM/NORMAL (RED/GREEN) INDICATION. LOSS OF COMMUNICATION SHALL RESULT IN A EQUIPMENT SPECIFIC ALARM (RED) CONDITION. ADDITIONAL LOGIC CONSIDERATION OF: DISCHARGE AIR AND WATER TEMPERATURES OUTSIDE OF A +/- 10 F (ADJ) DEADBAND OR ANY SYSTEM SAFETY TRIP, INCLUDING BUT NOT LIMITED TO: LOW LIMIT, SMOKE DETECTION, LOW/HIGH STATIC, OR LOW/HIGH HUMIDITY SHALL RESULT IN AN ALARM (RED LIGHT) CONDITION.

1C TCS BUILDING MANAGEMENT SYSTEM ANNUNCIATOR PANEL
NOT TO SCALE

Point Name	Hardware Points AI	AO	BI	BO	Software Points AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
OUTSIDE AIR TEMPERATURE (OA-T)	x								x		x
SPACE TEMPERATURE (ZN-T)	x								x		x
HEATING VALVE (HTG-VLV)				x					x		x
FAN START/STOP (FAN-C)				x					x		x



SCHEMATIC NOTES:

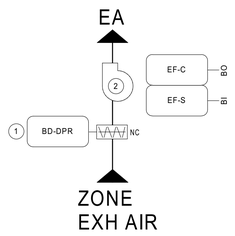
1. TCC SHALL PROVIDE CONTROL VALVES TO MECHANICAL CONTRACTOR FOR INSTALLATION. CIC SHALL INSTALL POWER AND CONTROL WIRING.
2. TCC SHALL PROVIDE AND CIC SHALL INSTALL WALL MOUNTED SPACE TEMPERATURE SENSOR.
3. LOGIC SHALL UTILIZE SHARED OUTSIDE AIR TEMPERATURE VALUE BY TCC.

UNIT HEATER SEQUENCE OF OPERATION:

ZONE TEMPERATURE CONTROL: THE THERMOSTAT (ZN-T) LOGIC WILL OPEN THE 2-POSITION HEATING VALVE (HTG-VLV) AND ENABLE THE CABINET HEATER FAN (FAN-C, HTG-VLV) TO MAINTAIN THE ZONE TEMPERATURE AT 70F (ADJ). THE BUILDING AUTOMATION SYSTEM SHALL DISABLE (FAN-C, HTG-VLV) HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE (OA-T) IS ABOVE 65F (ADJ) OR SPACE TEMPERATURE (ZN-T) IS ONE DEGREE ABOVE SETPOINT (ADJ).

5A UNIT HEATER UH Cx-n
A1
NOT TO SCALE

Point Name	Hardware Points AI	AO	BI	BO	Software Points AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
EXHAUST FAN STATUS (EF-S)			x						x		x
EXHAUST FAN START/STOP (EF-C)				x					x		x



SCHEMATIC NOTES:

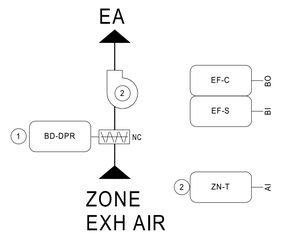
1. BACKDRAFT DAMPER REQUIRES NO CONTROLS.
2. REFERENCE MECHANICAL SCHEDULE ON M-602 FOR BAS CONTROLLED EXHAUST FANS AND ADDITIONAL REQUIREMENTS. TCC PROVIDED RELAY AND CURRENT TRANSFORMER SWITCH SHALL BE INSTALLED AND WIRED BY CIC. USE MANUFACTURER RECOMMENDATIONS FOR METHOD TO INTERRUPT POWER TO THE FAN MOTOR.

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN (EF-C) SHALL BE STARTED ACCORDING TO THE OWNER-DEFINED BAS SCHEDULE OR AS MANUALLY OPERATED VIA GRAPHICS. IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

3A POWER VENTILATOR - BAS CONTROLLED
NOT TO SCALE

Point Name	Hardware Points AI	AO	BI	BO	Software Points AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
ZONE TEMPERATURE (ZN-T)	x								x		x
EXHAUST FAN STATUS (EF-S)			x						x		x
EXHAUST FAN START/STOP (EF-C)				x					x		x



SCHEMATIC NOTES:

1. BACKDRAFT DAMPER REQUIRES NO TEMPERATURE CONTROLS.
2. REFERENCE MECHANICAL SCHEDULE ON M-602 AND DRAWINGS FOR THERMOSTAT CONTROLLED EXHAUST FAN AND ADDITIONAL REQUIREMENTS. TCC PROVIDED THERMOSTAT, RELAY, AND CURRENT TRANSFORMER SWITCH SHALL BE INSTALLED AND WIRED BY CIC. USE MANUFACTURER RECOMMENDATIONS FOR METHOD TO INTERRUPT POWER TO THE FAN MOTOR.

EXHAUST FAN SEQUENCE OF OPERATION:

THE EXHAUST FAN SHALL BE STARTED ACCORDING TO WALL MOUNTED BAS THERMOSTAT (ZN-T) TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (ADJ). IF THE EXHAUST FAN STATUS (EF-S) DOES NOT MATCH THE COMMANDED VALUE AFTER 180 SECONDS (ADJ), AN ALARM SHALL BE GENERATED. MANUAL EXHAUST FAN SPEED SHALL BE UTILIZED BY THE BALANCER.

1A POWERED VENTILATOR - THERMOSTAT CONTROLLED
NOT TO SCALE

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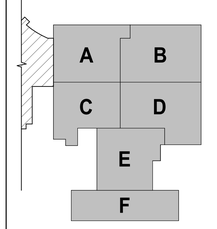
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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

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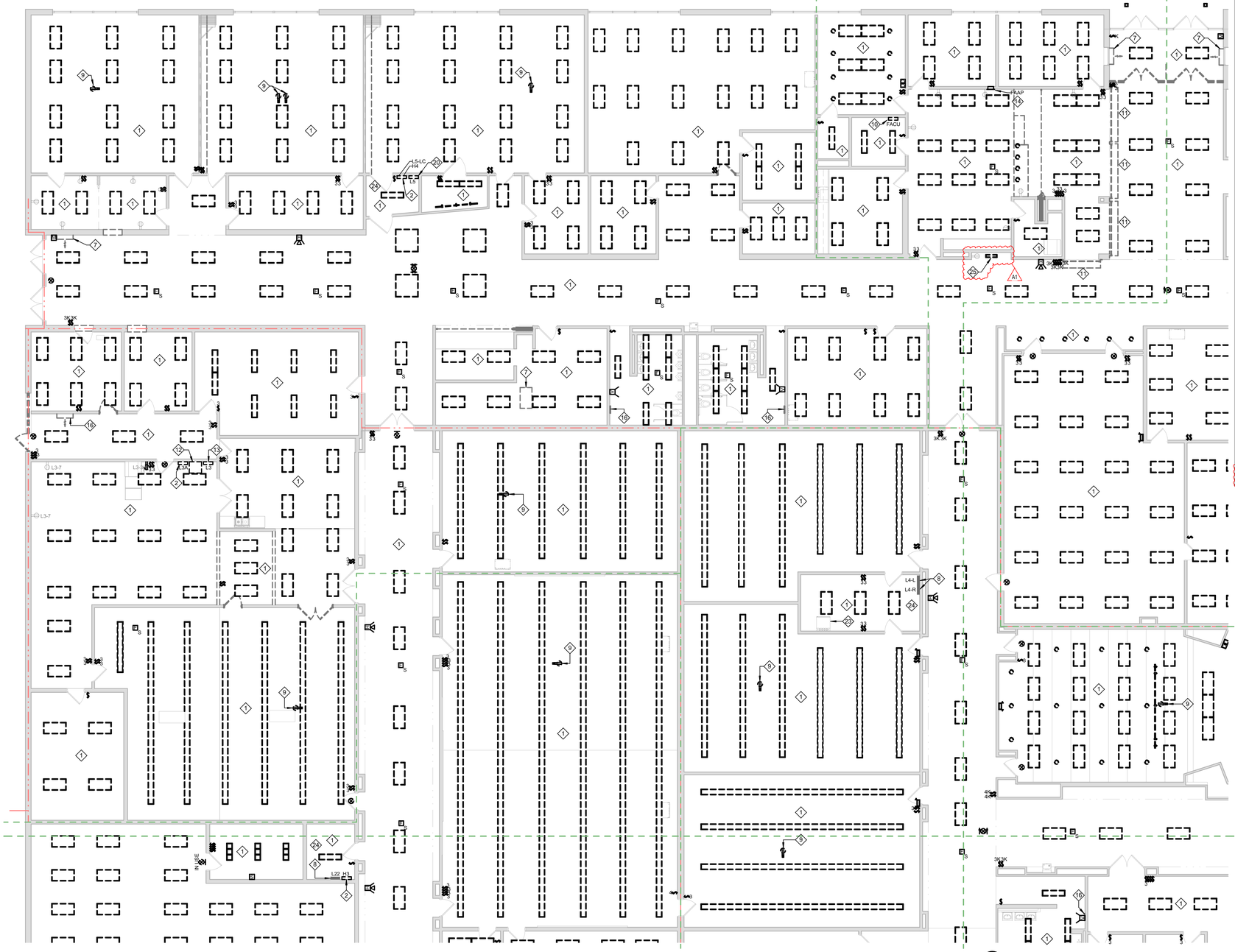
KEY PLAN N

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

TEMPERATURE CONTROLS SCHEMATICS

M-706



2A **FIRST FLOOR DEMOLITION PLAN UNIT A**
1/8" = 1'-0"

GENERAL DEMOLITION NOTES

#	NOTES
A	REFER TO SHEETS E-001 AND E-002 FOR ADDITIONAL INFORMATION.
B	THIS DRAWING REPRESENTS INFORMATION OBTAINED FROM ORIGINAL CONTRACT DRAWINGS AND FIELD SURVEY. VERIFY BY ON-SITE OBSERVATION THE EXTENT OF WORK PRIOR TO SUBMISSION OF BID.
C	CONTRACT DOCUMENTS CONSIST OF BOTH PROJECT MANUAL AND DRAWINGS AND ARE MEANT TO BE COMPLEMENTARY. ANYTHING APPEARING ON EITHER MUST BE EXECUTED THE SAME AS IF SHOWN ON BOTH.
D	THOROUGHLY EXAMINE THE WORK OF OTHER CONTRACTORS AND PROPERLY INSTALL ALL WORK REQUIRED FOR THE PROJECT.
E	THE OWNER HOLDS RIGHT OF FIRST REFUSAL FOR ALL DEMOLISHED ELECTRICAL EQUIPMENT.
F	ALL ELECTRICAL ITEMS SHOWN WITH LIGHT LINEWORK ARE EXISTING TO REMAIN.
G	REMOVE ALL ELECTRICAL ITEMS SHOWN WITH BOLD/DASHED LINEWORK COMPLETE.
H	COORDINATE AND DISCONNECT ALL CIVIL, ARCHITECTURAL, MECHANICAL, PLUMBING, AND TELECOMMUNICATION EQUIPMENT AS NOTED FOR REMOVAL BY OTHERS. REMOVE ALL ASSOCIATED ELECTRICAL EQUIPMENT, RACEWAYS, CONDUCTORS, ETC. SERVING THE EQUIPMENT.
I	PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR THE REMOVAL OF EXISTING ELECTRICAL EQUIPMENT. REFER TO SPECIFICATIONS.
J	PROVIDE A BLANK COVERPLATE FOR ALL EXISTING WALL OPENINGS WHERE ELECTRICAL EQUIPMENT HAS BEEN REMOVED AND NOT REPLACED. IN AREAS RECEIVING NEW WALL TREATMENTS, PATCH THE EXISTING OPENING.
K	REFER TO A, M, P, AND T-SERIES DRAWINGS FOR AREAS WITH ABOVE CEILING WORK AND/OR CEILING REMOVAL. TEMPORARILY SUPPORT ALL ELECTRICAL DEVICES, FIXTURES, ETC. AS REQUIRED. RE-INSTALL ELECTRICAL ITEMS FOLLOWING THE COMPLETION OF WORK IN THE NEW OR EXISTING CEILINGS.
L	REMOVE SYSTEMS AND EQUIPMENT MADE OBSOLETE BY THIS PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO, CONDUIT, RACEWAYS, WIREWAYS, CONDUCTORS, JUNCTION BOXES, WIRING DEVICES, LIGHT FIXTURES, PULL BOXES, DISCONNECTS, MOTOR STARTERS, CONTACTORS, ETC.
M	REMOVE ALL DEBRIS FROM SITE AND LEGALLY DISPOSE OF SAME.
N	REMOVE ALL EXISTING EQUIPMENT PADS MADE OBSOLETE. CUT OFF BELOW FLOOR SLAB AND FILL WITH CONCRETE ALL CONDUITS WHICH ARE ABANDONED IN OR BELOW THE FLOOR SLAB. PATCH FLOOR TO MATCH EXISTING CONDITIONS.

DEMOLITION PLAN NOTES

#	NOTES
1	DISCONNECT AND REMOVE EXISTING LIGHT FIXTURE(S) AND LIGHTING CONTROL DEVICE(S) COMPLETE IN THIS ROOM/AREA. NORMAL POWER LIGHTING CIRCUIT(S) TO REMAIN FOR RECONNECTION TO NEW LIGHT FIXTURE(S). REMOVE EMERGENCY LIGHTING POWER CIRCUIT(S) COMPLETE TO SOURCE.
2	DISCONNECT AND REMOVE EXISTING PANELBOARD. EXISTING FEEDER AND BRANCH CIRCUITS WILL REMAIN FOR RECONNECTION TO NEW PANELBOARD.
3	DISCONNECT AND REMOVE EXISTING POWER DISTRIBUTION PANELBOARD. EXISTING FEEDER AND POWER DISTRIBUTION CIRCUITS WILL REMAIN FOR RECONNECTION TO NEW PANELBOARD.
4	DISCONNECT AND REMOVE EXISTING TRANSFORMER. EXISTING CIRCUITS WILL REMAIN FOR RECONNECTION TO NEW TRANSFORMER.
5	DISCONNECT AND REMOVE EXISTING SWITCHBOARD. EXISTING CIRCUITS WILL REMAIN FOR RECONNECTION TO NEW SWITCHBOARD.
6	DISCONNECT AND REMOVE EXISTING GENERATOR COMPLETE. PATCH ALL WALL AND ROOF OPENINGS AS REQUIRED.
7	DISCONNECT EXISTING MECHANICAL EQUIPMENT. EXISTING CIRCUIT WILL REMAIN FOR CONNECTION TO NEW EQUIPMENT.
8	EXISTING PANELBOARD TO REMAIN.
9	DISCONNECT AND REMOVE EXISTING RECEPTACLE FOR PROJECTOR. CIRCUIT WILL REMAIN FOR EXTENSION.
10	DISCONNECT AND REMOVE EXISTING FIRE ALARM CONTROL UNIT. REMOVE PANEL AFTER THE NEW FIRE ALARM CONTROL UNIT HAS BEEN INSTALLED COMPLETELY AND IS OPERATIONAL.
11	DISCONNECT EXISTING COILING DOOR. REMOVE CIRCUIT COMPLETE TO SOURCE.
12	DISCONNECT AND REMOVE EXISTING LIEBERT MINI-CENTER UPS/PDU. REMOVE EXISTING FEEDER COMPLETE. BRANCH CIRCUITS WILL REMAIN FOR RECONNECTION TO NEW PANELBOARD.
13	DISCONNECT AND REMOVE EXISTING ABANDONED PANELBOARD. ANY EXISTING BRANCH CIRCUITS WILL REMAIN FOR EXTENSION/RECONNECTION TO NEW PANELBOARD.
14	DISCONNECT AND REMOVE EXISTING FIRE ALARM ANNUNCIATOR PANEL. REMOVE PANEL AFTER THE NEW FIRE ALARM SYSTEM HAS BEEN INSTALLED COMPLETELY AND IS OPERATIONAL.
15	DISCONNECT AND REMOVE EXISTING LIGHT FIXTURE AND WIRE COMPLETE. EXISTING CONDUIT MAY REMAIN AND BE REUSED.
16	DISCONNECT EXISTING MECHANICAL EQUIPMENT. REMOVE CONCUIT AND CONDUCTORS COMPLETE TO SOURCE.
17	DISCONNECT AND REMOVE EXISTING RECEPTACLE. REMOVE CONDUCTORS COMPLETE TO SOURCE. REUSE CONDUIT AND OUTLET BOX FOR NEW DEVICE. COORDINATE RECEPTACLE REPLACEMENT AND POWER SWITCHOVER WITH THE CONSTRUCTION MANAGER.
18	DISCONNECT AND REMOVE EXISTING AUTOMATIC TRANSFER SWITCH. REMOVE EXISTING FEEDERS COMPLETE.
19	DISCONNECT AND REMOVE EXISTING JUNCTION BOX FOR WJEL RADIO TRANSMITTER. REMOVE ALL CONDUIT, WIRING, ETC. COMPLETE TO SOURCE. DO NOT REMOVE UNTIL NEW POWER HAS BEEN INSTALLED FOR THE RADIO TRANSMITTER. COORDINATE POWER SWITCHOVER WITH THE CONSTRUCTION MANAGER.
20	DISCONNECT AND REMOVE EXISTING PANELBOARD. REMOVE EXISTING FEEDER CONDUCTORS AND CONDUIT. EXISTING BRANCH CIRCUITS WILL REMAIN FOR RECONNECTION TO NEW PANELBOARD.
21	DISCONNECT AND REMOVE EXISTING PANELBOARD. REMOVE EXISTING FEEDER AND BRANCH CIRCUITS COMPLETE.
22	DISCONNECT AND REMOVE EXISTING TRANSFORMER. REMOVE EXISTING CIRCUITS COMPLETE.
23	DISCONNECT AND REMOVE EXISTING RECEPTACLE FOR TELECOMMUNICATIONS RACK. REMOVE ALL CONDUCTORS TO SOURCE COMPLETE. EXISTING CONDUIT MAY REMAIN. REFER TO POWER SHEET FOR NEW CIRCUIT.
24	DISCONNECT AND REMOVE ALL EXISTING OBSOLETE/ABANDONED EQUIPMENT FROM OTHER TRADES. COORDINATE WITH DIVISIONS 22, 23 AND 27.
25	DISCONNECT AND REMOVE EXISTING DISPLAY CASE LIGHT FIXTURE(S) AND LIGHTING CONTROL DEVICE COMPLETE. LIGHTING CIRCUIT TO REMAIN FOR RECONNECTION TO NEW LIGHT FIXTURE(S).

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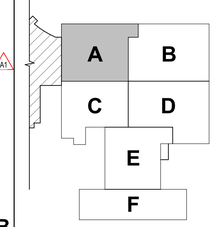
Project No. 2019-067.JEL
Project Date 12.08.2023
Produced JAR JNS

SARAH KATHLEEN HUMPSTEAD
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NO.
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ARCHITECT

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

DEMOLITION PLAN - UNIT A

ED1A1

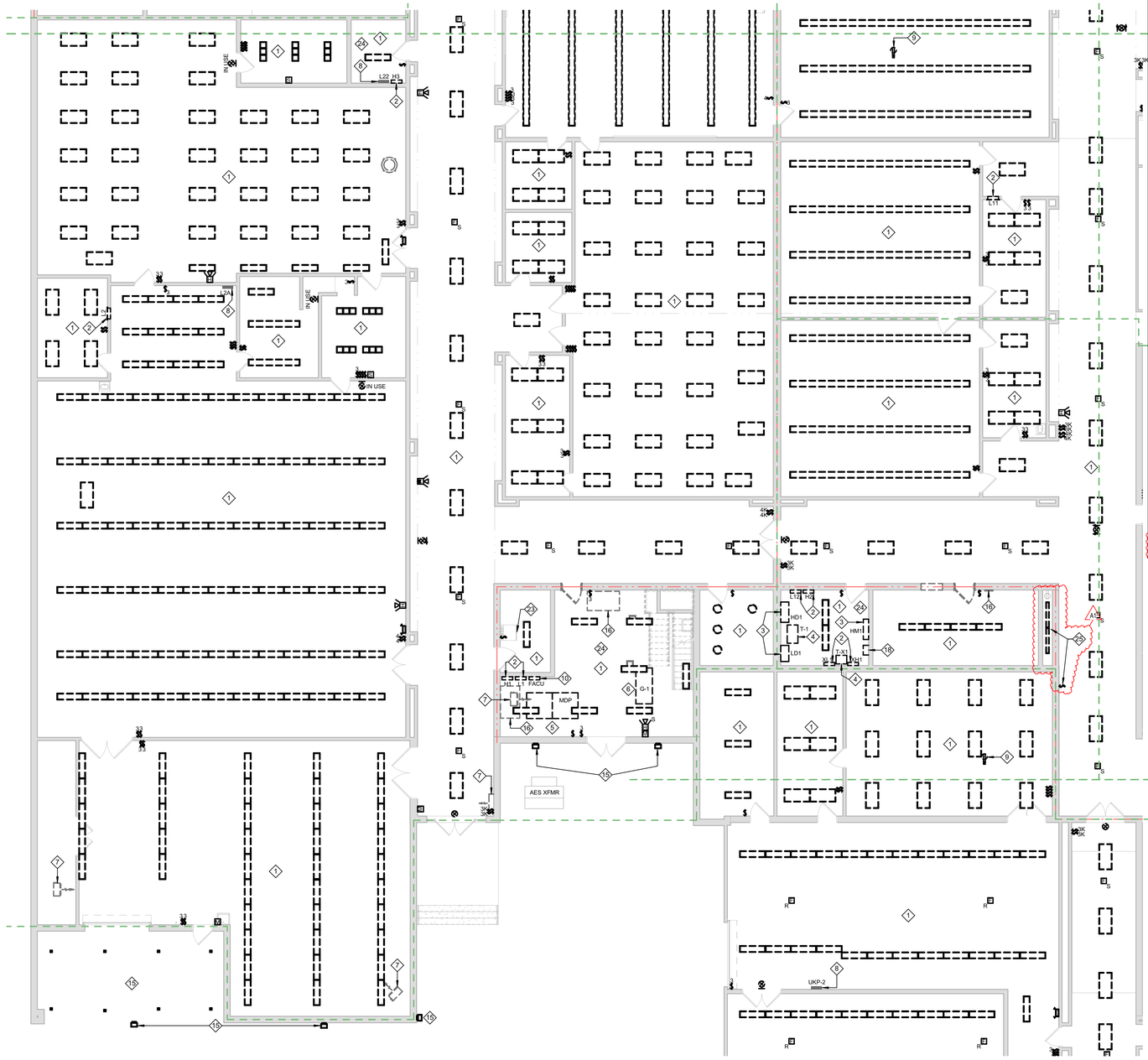
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Project: 2019-067.JEL J. Everett Light Career Center - Renovation
Central Plant Expansion and Renovation_detach_R_2022\20191067.JEL_detach_R_2022_jsmith.rvt
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GENERAL DEMOLITION NOTES

#	NOTES
A	REFER TO SHEETS E-001 AND E-002 FOR ADDITIONAL INFORMATION.
B	THIS DRAWING REPRESENTS INFORMATION OBTAINED FROM ORIGINAL CONTRACT DRAWINGS AND FIELD SURVEY. VERIFY BY ON-SITE OBSERVATION THE EXTENT OF WORK PRIOR TO SUBMISSION OF BID.
C	CONTRACT DOCUMENTS CONSIST OF BOTH PROJECT MANUAL AND DRAWINGS AND ARE MEANT TO BE COMPLEMENTARY; ANYTHING APPEARING ON EITHER MUST BE EXECUTED THE SAME AS IF SHOWN ON BOTH.
D	THOROUGHLY EXAMINE THE WORK OF OTHER CONTRACTORS AND PROPERLY INSTALL ALL WORK REQUIRED FOR THE PROJECT.
E	THE OWNER HOLDS RIGHT OF FIRST REFUSAL FOR ALL DEMOLISHED ELECTRICAL EQUIPMENT.
F	ALL ELECTRICAL ITEMS SHOWN WITH LIGHT LINEWORK ARE EXISTING TO REMAIN.
G	REMOVE ALL ELECTRICAL ITEMS SHOWN WITH BOLD/DASHED LINEWORK COMPLETE.
H	COORDINATE AND DISCONNECT ALL CIVIL, ARCHITECTURAL, MECHANICAL, PLUMBING, AND TELECOMMUNICATION EQUIPMENT AS NOTED FOR REMOVAL BY OTHERS. REMOVE ALL ASSOCIATED ELECTRICAL EQUIPMENT, RACEWAYS, CONDUCTORS, ETC. SERVING THE EQUIPMENT.
I	PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR THE REMOVAL OF EXISTING ELECTRICAL EQUIPMENT. REFER TO SPECIFICATIONS.
J	PROVIDE A BLANK COVERPLATE FOR ALL EXISTING WALL OPENINGS WHERE ELECTRICAL EQUIPMENT HAS BEEN REMOVED AND NOT REPLACED. IN AREAS RECEIVING NEW WALL TREATMENTS, PATCH THE EXISTING OPENING.
K	REFER TO A, M, P, AND T-SERIES DRAWINGS FOR AREAS WITH ABOVE CEILING WORK AND/OR CEILING REMOVAL. TEMPORARILY SUPPORT ALL ELECTRICAL DEVICES, FIXTURES, ETC. AS REQUIRED. RE-INSTALL ELECTRICAL ITEMS FOLLOWING THE COMPLETION OF WORK IN THE NEW OR EXISTING CEILINGS.
L	REMOVE SYSTEMS AND EQUIPMENT MADE OBSOLETE BY THIS PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO, CONDUIT, RACEWAYS, WIREWAYS, CONDUCTORS, JUNCTION BOXES, WIRING DEVICES, LIGHT FIXTURES, PULL BOXES, DISCONNECTS, MOTOR STARTERS, CONTACTORS, ETC.
M	REMOVE ALL DEBRIS FROM SITE AND LEGALLY DISPOSE OF SAME.
N	REMOVE ALL EXISTING EQUIPMENT PADS MADE OBSOLETE. CUT OFF BELOW FLOOR SLAB AND FILL WITH CONCRETE ALL CONDUITS WHICH ARE ABANDONED IN OR BELOW THE FLOOR SLAB. PATCH FLOOR TO MATCH EXISTING CONDITIONS.

DEMOLITION PLAN NOTES

#	NOTES
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23	DISCONNECT AND REMOVE EXISTING RECEPTACLE FOR TELECOMMUNICATIONS RACK. REMOVE ALL CONDUCTORS TO SOURCE COMPLETE. EXISTING CONDUIT MAY REMAIN. REFER TO POWER SHEET FOR NEW CIRCUIT.
24	DISCONNECT AND REMOVE ALL EXISTING OBSOLETE/ABANDONED EQUIPMENT FROM OTHER TRADES. COORDINATE WITH DIVISIONS 22, 23 AND 27.
25	DISCONNECT AND REMOVE EXISTING DISPLAY CASE LIGHT FIXTURE(S) AND LIGHTING CONTROL DEVICE COMPLETE. LIGHTING CIRCUIT TO REMAIN FOR RECONNECTION TO NEW LIGHT FIXTURE(S).



2A FIRST FLOOR DEMOLITION PLAN UNIT C
1/8" = 1'-0"

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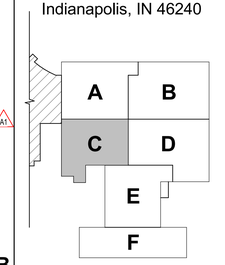
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KEY PLAN

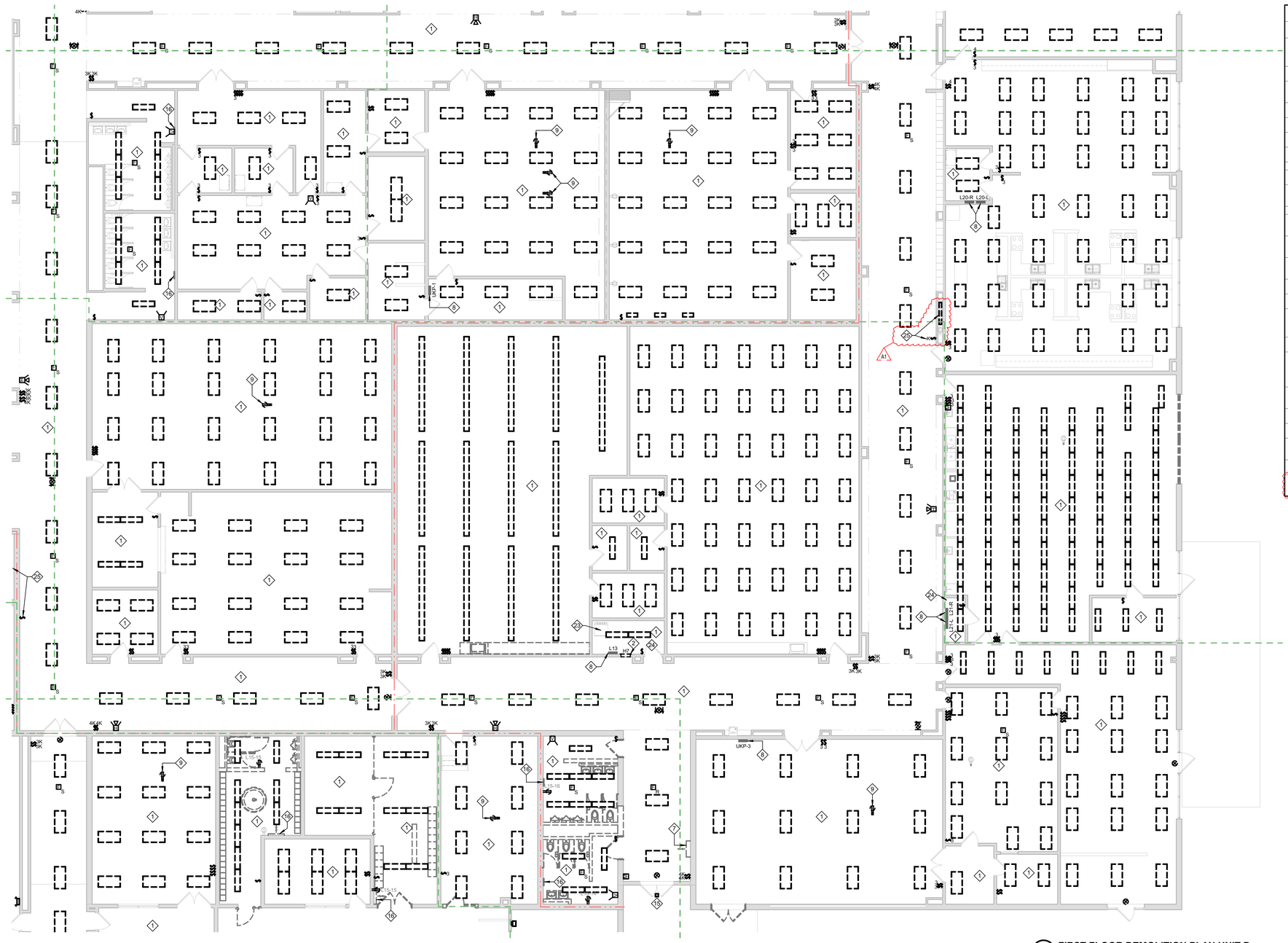
M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

DEMOLITION PLAN - UNIT C

ED1C1

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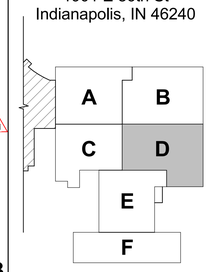
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KEY PLAN

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

DEMOLITION PLAN - UNIT D

ED1D1

EDDC_DEMOLITION PLAN - UNIT D
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GENERAL LIGHTING NOTES

#	NOTES
A	REFER TO SHEETS E-001 AND E-002 FOR ADDITIONAL INFORMATION.

LIGHTING PLAN NOTES

#	NOTES
1	CONNECT NEW NORMAL POWER LIGHT FIXTURES TO EXISTING LIGHTING CIRCUITS(S) SERVING THIS ROOM/AREA. MODIFY CIRCUITING AS REQUIRED FOR NEW CONTROLS. INSTALL NEW DEVICES IN EXISTING SWITCH BOXES UNLESS NOTED OTHERWISE. PROVIDE BLANK COVERPLATES FOR UNUSED SWITCH BOXES.
2	PROVIDE A UL 924, AUTOMATIC LOAD CONTROL RELAY, IN OUTLET BOX FLUSH-MOUNTED IN CEILING TO ZONE CONTROL EMERGENCY LIGHTING IN THIS ROOM/SPACE. CONNECT UL 924 DEVICE TO EXISTING NORMAL CIRCUIT(S) IN ROOM/SPACE AND NEW EMERGENCY CIRCUIT IN ROOM/SPACE. APPLIES TO ROOM/SPACE WITH EXISTING NORMAL CIRCUIT(S) AND NEW EMERGENCY CIRCUIT.
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4	PROVIDE A UL 924, AUTOMATIC LOAD CONTROL RELAY, IN OUTLET BOX SURFACE-MOUNTED ON ADJACENT WALL TO ZONE CONTROL EMERGENCY LIGHTING IN THIS ROOM/SPACE. CONNECT UL 924 DEVICE TO EXISTING NORMAL CIRCUIT(S) IN ROOM/SPACE AND NEW EMERGENCY CIRCUIT IN ROOM/SPACE. APPLIES TO ROOM/SPACE WITH EXISTING NORMAL CIRCUIT(S) AND NEW EMERGENCY CIRCUIT.
5	PROVIDE A UL 924, AUTOMATIC LOAD CONTROL RELAY, IN OUTLET BOX SURFACE-MOUNTED ON ADJACENT WALL TO ZONE CONTROL EMERGENCY LIGHTING IN THIS ROOM/SPACE. CONNECT UL 924 DEVICE TO EXISTING NORMAL CIRCUIT(S) IN ADJACENT ROOM/SPACE AND NEW EMERGENCY CIRCUIT IN ROOM/SPACE. APPLIES TO ROOMS/SPACES WITH ONLY EMERGENCY LIGHTING.
6	REFER TO CALLOUT PLAN FOR MEZZANINE LIGHTING PLAN.
7	SWITCH FOR MEZZANINE LIGHTING.
8	CONTROL FIXTURES FROM SWITCH LOCATED ON FIRST FLOOR.
9	JUNCTION BOX LOCATED ABOVE CEILING FOR FUTURE EXTERIOR BUILDING SIGNAGE. CONNECT COMPLETE TO A 20A-1P SPARE CIRCUIT INDICATED.
10	INSTALL FIXTURE(S) IN SAME LOCATION AS DEMOLISHED FIXTURES. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
11	CONNECT NEW FIXTURES TO CIRCUIT AND LIGHTING CONTACTOR INDICATED.
12	INSTALL FIXTURE(S) IN NEW LOCATION. MATCH MOUNTING HEIGHT WITH EXISTING FIXTURES HEIGHTS. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
13	INSTALL FIXTURE IN NEW LOCATION BELOW AWNING. MATCH MOUNTING HEIGHT WITH EXISTING FIXTURES HEIGHTS. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
14	INSTALL FIXTURES AT +7'-0" A.F.F. TO BOTTOM.
15	INSTALL FIXTURES AT +8'-0" A.F.F. TO BOTTOM.
16	INSTALL FIXTURES AT +9'-0" A.F.F. TO BOTTOM.
17	INSTALL FIXTURES AT +10'-0" A.F.F. TO BOTTOM.
18	INSTALL FIXTURES AT +11'-0" A.F.F. TO BOTTOM.
19	INSTALL FIXTURES AT +12'-0" A.F.F. TO BOTTOM.
20	INSTALL FIXTURES AT +12'-2" A.F.F. TO BOTTOM.
21	INSTALL FIXTURES AT +13'-0" A.F.F. TO BOTTOM.
22	CONNECT NEW DISPLAY CASE LIGHT FIXTURES TO EXISTING LIGHTING CIRCUITS. PROVIDE NEW DIMMER AND REQUIRED CONTROL WIRING. DISPLAY CASE LIGHTING FIXTURES WILL ALSO BE CONTROLLED BY THE ADJACENT CORRIDOR LIGHTING OCCUPANCY SENSORS. MODIFY THE DISPLAY CASE AS REQUIRED FOR A COMPLETE INSTALLATION.

A1

2A **FIRST FLOOR LIGHTING PLAN UNIT A**
1/8" = 1'-0"

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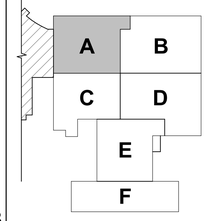
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KEY PLAN N

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

LIGHTING PLAN - UNIT A

EL1A1

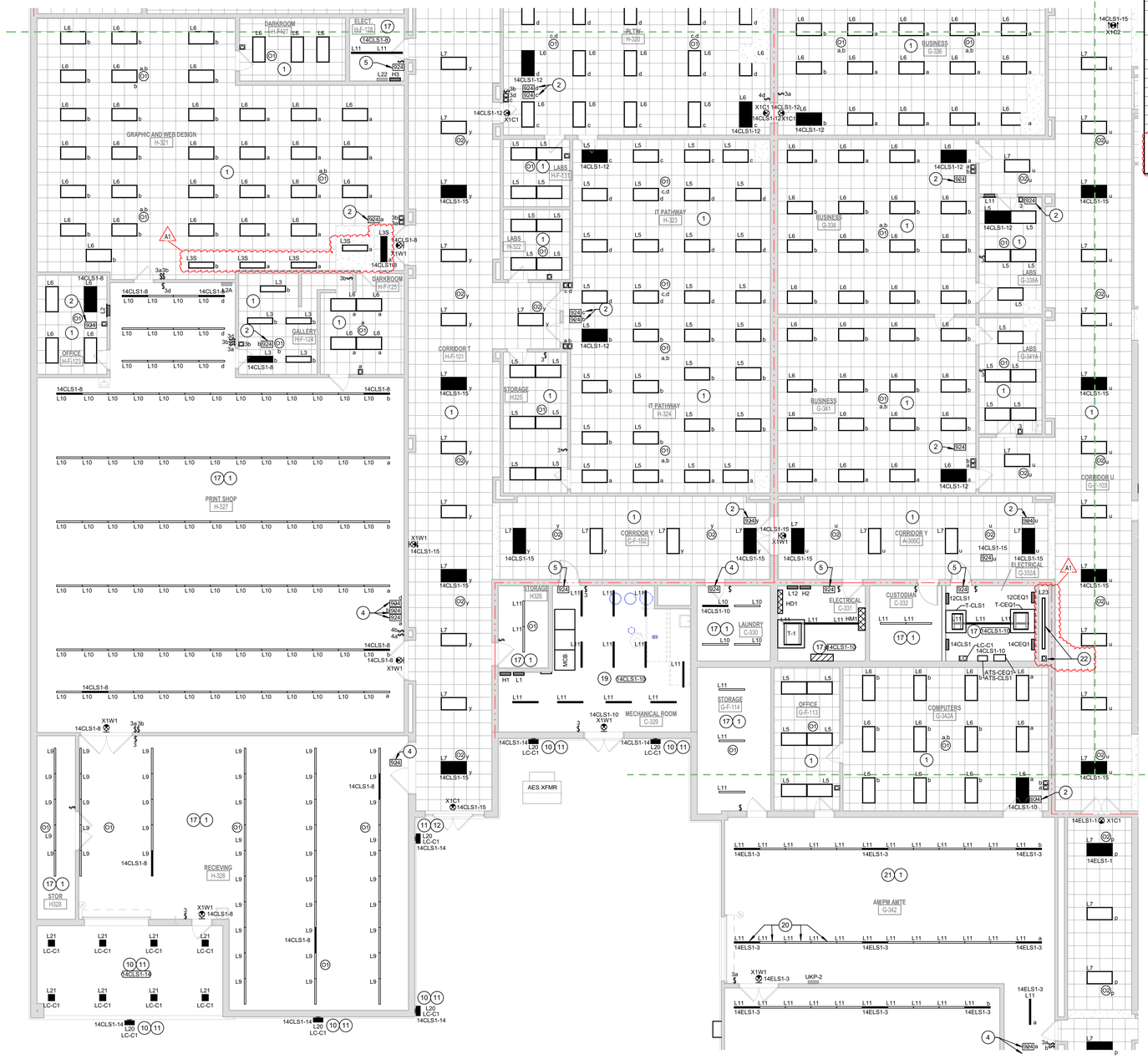
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7	SWITCH FOR MEZZANINE LIGHTING.
8	CONTROL FIXTURES FROM SWITCH LOCATED ON FIRST FLOOR.
9	JUNCTION BOX LOCATED ABOVE CEILING FOR FUTURE EXTERIOR BUILDING SIGNAGE. CONNECT COMPLETE TO A 20A-1P SPARE CIRCUIT INDICATED.
10	INSTALL FIXTURE(S) IN SAME LOCATION AS DEMOLISHED FIXTURES. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
11	CONNECT NEW FIXTURES TO CIRCUIT AND LIGHTING CONTACTOR INDICATED.
12	INSTALL FIXTURE(S) IN NEW LOCATION. MATCH MOUNTING HEIGHT WITH EXISTING FIXTURES HEIGHTS. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
13	INSTALL FIXTURE IN NEW LOCATION BELOW AWNING. MATCH MOUNTING HEIGHT WITH EXISTING FIXTURES HEIGHTS. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
14	INSTALL FIXTURES AT +7'-0" A.F.F. TO BOTTOM.
15	INSTALL FIXTURES AT +8'-0" A.F.F. TO BOTTOM.
16	INSTALL FIXTURES AT +9'-0" A.F.F. TO BOTTOM.
17	INSTALL FIXTURES AT +10'-0" A.F.F. TO BOTTOM.
18	INSTALL FIXTURES AT +11'-0" A.F.F. TO BOTTOM.
19	INSTALL FIXTURES AT +12'-0" A.F.F. TO BOTTOM.
20	INSTALL FIXTURES AT +12'-2" A.F.F. TO BOTTOM.
21	INSTALL FIXTURES AT +13'-0" A.F.F. TO BOTTOM.
22	CONNECT NEW DISPLAY CASE LIGHT FIXTURES TO EXISTING LIGHTING CIRCUITS. PROVIDE NEW DIMMER AND REQUIRED CONTROL WIRING. DISPLAY CASE LIGHTING FIXTURES WILL ALSO BE CONTROLLED BY THE ADJACENT CORRIDOR LIGHTING OCCUPANCY SENSORS. MODIFY THE DISPLAY CASE AS REQUIRED FOR A COMPLETE INSTALLATION.



2A **FIRST FLOOR LIGHTING PLAN UNIT C**
1/8" = 1'-0"

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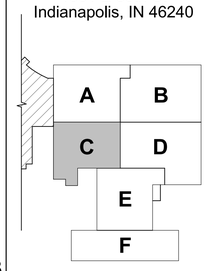
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Sarah K Humpstead

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

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KEY PLAN N

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

LIGHTING PLAN - UNIT C

EL1C1

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GENERAL LIGHTING NOTES

#	NOTES
A	REFER TO SHEETS E-001 AND E-002 FOR ADDITIONAL INFORMATION.

LIGHTING PLAN NOTES

#	NOTES
1	CONNECT NEW NORMAL POWER LIGHT FIXTURES TO EXISTING LIGHTING CIRCUITS(S) SERVING THIS ROOM/AREA. MODIFY CIRCUITING AS REQUIRED FOR NEW CONTROLS. INSTALL NEW DEVICES IN EXISTING SWITCH BOXES UNLESS NOTED OTHERWISE. PROVIDE BLANK COVERPLATES FOR UNUSED SWITCH BOXES.
2	PROVIDE A UL 924, AUTOMATIC LOAD CONTROL RELAY, IN OUTLET BOX FLUSH-MOUNTED IN CEILING TO ZONE CONTROL EMERGENCY LIGHTING IN THIS ROOM/SPACE. CONNECT UL 924 DEVICE TO EXISTING NORMAL CIRCUIT(S) IN ROOM/SPACE AND NEW EMERGENCY CIRCUIT IN ROOM/SPACE. APPLIES TO ROOM/SPACE WITH EXISTING NORMAL CIRCUIT(S) AND NEW EMERGENCY CIRCUIT.
3	PROVIDE A UL 924, AUTOMATIC LOAD CONTROL RELAY, IN OUTLET BOX FLUSH-MOUNTED IN CEILING TO ZONE CONTROL EMERGENCY LIGHTING IN THIS ROOM/SPACE. CONNECT UL 924 DEVICE TO EXISTING NORMAL CIRCUIT(S) IN ADJACENT ROOM/SPACE AND NEW EMERGENCY CIRCUIT IN ROOM/SPACE. APPLIES TO ROOMS/SPACES WITH ONLY EMERGENCY LIGHTING.
4	PROVIDE A UL 924, AUTOMATIC LOAD CONTROL RELAY, IN OUTLET BOX SURFACE-MOUNTED ON ADJACENT WALL TO ZONE CONTROL EMERGENCY LIGHTING IN THIS ROOM/SPACE. CONNECT UL 924 DEVICE TO EXISTING NORMAL CIRCUIT(S) IN ROOM/SPACE AND NEW EMERGENCY CIRCUIT IN ROOM/SPACE. APPLIES TO ROOM/SPACE WITH EXISTING NORMAL CIRCUIT(S) AND NEW EMERGENCY CIRCUIT.
5	PROVIDE A UL 924, AUTOMATIC LOAD CONTROL RELAY, IN OUTLET BOX SURFACE-MOUNTED ON ADJACENT WALL TO ZONE CONTROL EMERGENCY LIGHTING IN THIS ROOM/SPACE. CONNECT UL 924 DEVICE TO EXISTING NORMAL CIRCUIT(S) IN ADJACENT ROOM/SPACE AND NEW EMERGENCY CIRCUIT IN ROOM/SPACE. APPLIES TO ROOMS/SPACES WITH ONLY EMERGENCY LIGHTING.
6	REFER TO CALLOUT PLAN FOR MEZZANINE LIGHTING PLAN.
7	SWITCH FOR MEZZANINE LIGHTING.
8	CONTROL FIXTURES FROM SWITCH LOCATED ON FIRST FLOOR.
9	JUNCTION BOX LOCATED ABOVE CEILING FOR FUTURE EXTERIOR BUILDING SIGNAGE. CONNECT COMPLETE TO A 20A-1P SPARE CIRCUIT INDICATED.
10	INSTALL FIXTURE(S) IN SAME LOCATION AS DEMOLISHED FIXTURES. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
11	CONNECT NEW FIXTURES TO CIRCUIT AND LIGHTING CONTACTOR INDICATED.
12	INSTALL FIXTURE(S) IN NEW LOCATION. MATCH MOUNTING HEIGHT WITH EXISTING FIXTURES HEIGHTS. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
13	INSTALL FIXTURE IN NEW LOCATION BELOW AWNING. MATCH MOUNTING HEIGHT WITH EXISTING FIXTURES HEIGHTS. CUT AND PATCH AS REQUIRED FOR NEW INSTALLATION.
14	INSTALL FIXTURES AT +7'-0" A.F.F. TO BOTTOM.
15	INSTALL FIXTURES AT +8'-0" A.F.F. TO BOTTOM.
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18	INSTALL FIXTURES AT +11'-0" A.F.F. TO BOTTOM.
19	INSTALL FIXTURES AT +12'-0" A.F.F. TO BOTTOM.
20	INSTALL FIXTURES AT +12'-2" A.F.F. TO BOTTOM.
21	INSTALL FIXTURES AT +13'-0" A.F.F. TO BOTTOM.
22	CONNECT NEW DISPLAY CASE LIGHT FIXTURES TO EXISTING LIGHTING CIRCUITS. PROVIDE NEW DIMMER AND REQUIRED CONTROL WIRING. DISPLAY CASE LIGHTING FIXTURES WILL ALSO BE CONTROLLED BY THE ADJACENT CORRIDOR LIGHTING OCCUPANCY SENSORS. MODIFY THE DISPLAY CASE AS REQUIRED FOR A COMPLETE INSTALLATION.

2A **FIRST FLOOR LIGHTING PLAN UNIT D**
1/8" = 1'-0"

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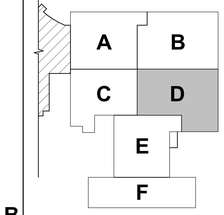
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KEY PLAN N

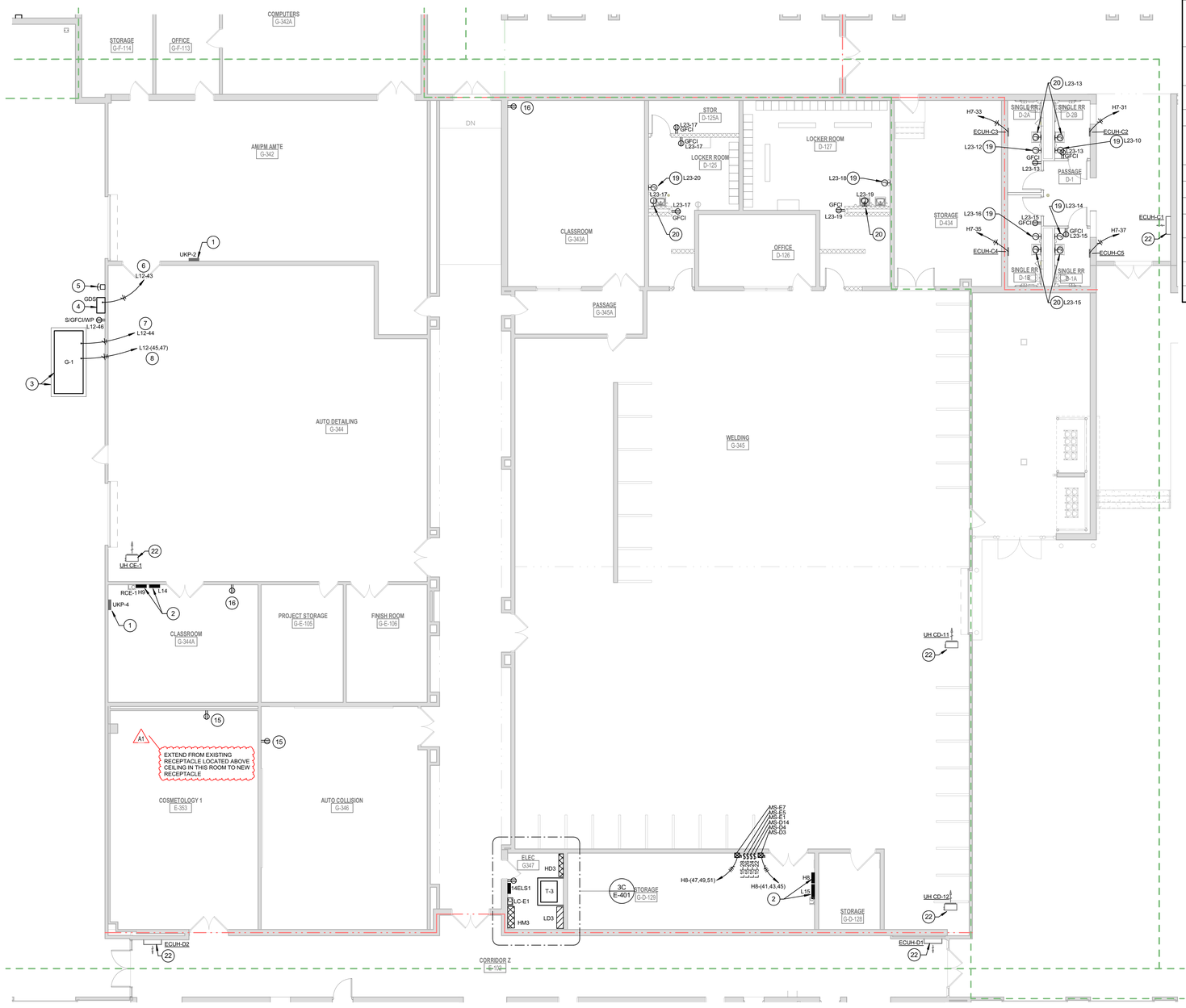
M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

LIGHTING PLAN - UNIT D

EL1D1

EL1D1_LIGHTING PLAN - UNIT D
Central Administration Building Renovation & Shared Light Center
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2A FIRST FLOOR POWER PLAN UNIT E
1/8" = 1'-0"

GENERAL POWER NOTES

#	NOTES
A	REFER TO SHEETS E-001 AND E-002 FOR ADDITIONAL INFORMATION.

POWER PLAN NOTES

#	NOTES
1	EXISTING PANELBOARD TO REMAIN.
2	NEW BRANCH CIRCUIT PANELBOARD. RECONNECT EXISTING BRANCH CIRCUITS AND CONNECT TO EXISTING FEEDER. REFER TO ONE-LINE DIAGRAMS AND PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION.
3	NATURAL GAS GENERATOR AND CONCRETE PAD.
4	GENERATOR DOCKING STATION, GDS. REFER RISER DIAGRAMS FOR ADDITIONAL INFORMATION.
5	LOCATION FOR GENERATOR EPO (FURNISHED BY GENERATOR MANUFACTURER, INSTALLED BY ELECTRICAL CONTRACTOR). ROUTE CONDUIT FROM GENERATOR CONTROL PANEL, UNDER ASPHAULT DRIVE, UP WALL. CUT AND PATCH ASPHAULT AS REQUIRED.
6	CIRCUIT CONNECTION FOR GENERATOR DOCKING STATION STRIP HEATER.
7	CIRCUIT CONNECTION FOR GENERATOR BATTERY CHARGER.
8	CIRCUIT CONNECTION FOR GENERATOR BLOCK HEATER.
9	PROVIDE FEEDER TO 20 KW/KVA UPS. UPS IS PROVIDED BY OWNER. ALL BRANCH CIRCUIT WIRING FROM UPS IS PROVIDED BY OWNER. COORDINATE EXACT LOCATION OF UPS AND REQUIREMENTS WITH OWNER.
10	PROVIDE FEEDER TO IN-RACK COOLING UNIT. IN-RACK COOLING UNIT IS PROVIDED BY OWNER. COORDINATE EXACT LOCATION OF IN-RACK COOLING UNIT AND REQUIREMENTS WITH OWNER.
11	INSTALL NEW RECEPTACLES IN EXISTING OUTLET BOXES/RACEWAY. CONNECT COMPLETE TO CIRCUIT INDICATED.
12	CONNECT RADIO TRANSMITTER TO NEW CIRCUIT INDICATED.
13	RECEPTACLE FOR TELECOMMUNICATIONS RACK. CONNECT TO NEW CIRCUIT INDICATED. FIELD VERIFY EXISTING DEVICE LOCATION.
14	SIMPLEX RECEPTACLE LOCATED AT +36" A.F.F. TO C.L. CONNECT TO CIRCUIT INDICATED. CONFIRM THE (3) SIMPLEX RECEPTACLES ARE ON DIFFERENT PHASES FROM THE PANELBOARD THEY ARE FED FROM. IF THEY ARE ON THE SAME PHASES, MOVE THE CIRCUITS WITHIN THE PANELBOARD.
15	RECEPTACLE FOR SPEAKER AMPLIFIER. EXTEND EXISTING CIRCUIT LOCATED ABOVE CEILING FROM REMOVED PROJECTOR CEILING-MOUNTED RECEPTACLE. ROUTE MC CABLE DOWN EXISTING WALL TO NEW FLUSH MOUNTED RECEPTACLE IN WALL. COORDINATE MOUNTING HEIGHT WITH T-SERIES DRAWINGS. CONNECT COMPLETE. REFER TO DEMOLITION DRAWINGS FOR EXISTING RECEPTACLE LOCATION.
16	RECEPTACLE FOR SPEAKER AMPLIFIER. EXTEND EXISTING CIRCUIT LOCATED ABOVE CEILING FROM REMOVED PROJECTOR CEILING-MOUNTED RECEPTACLE. INSTALL TWO-COMPARTMENT RACEWAY ON EXISTING WALL. COORDINATE MOUNTING HEIGHT AND RACEWAY DETAILS WITH T-SERIES DRAWINGS. CONNECT COMPLETE. REFER TO DEMOLITION DRAWINGS FOR EXISTING RECEPTACLE LOCATION.
17	RECEPTACLE FOR SPEAKER AMPLIFIER. EXTEND EXISTING CIRCUIT FROM CEILING SUSPENDED MONITOR. ROUTE MC CABLE DOWN EXISTING WALL TO NEW FLUSH MOUNTED RECEPTACLE IN WALL. COORDINATE MOUNTING HEIGHT WITH T-SERIES DRAWINGS. CONNECT COMPLETE. REFER TO DEMOLITION DRAWINGS FOR EXISTING RECEPTACLE LOCATION.
18	RECESSED TAMPER-RESISTANT SIMPLEX CLOCK HANGER RECEPTACLE FOR MONITOR. COORDINATE EXACT LOCATION AND ELEVATION WITH T-SERIES DRAWINGS. INSTALL ADJACENT RECEPTACLE DIRECTLY BELOW (IF SHOWN).
19	CIRCUIT CONNECTION FOR HAND DRYER. COORDINATE MOUNTING HEIGHT WITH A-SERIES DRAWINGS. CIRCUIT PROTECTED BY GFCI CIRCUIT BREAKER.
20	CIRCUIT CONNECTION LOCATED ABOVE CEILING FOR SENSOR(S) TRANSFORMER(S). PROVIDE QUANTITY OF JUNCTION BOXES REQUIRED CONNECTED TO CIRCUIT INDICATED. CONNECT COMPLETE TO CIRCUIT INDICATED. REFER TO SCHEMATIC DIAGRAMS FOR ADDITIONAL INFORMATION. COORDINATE WITH P-SERIES DRAWINGS.
21	RECEPTACLE FOR ELECTRIC WATER COOLER. COORDINATE LOCATION WITH MANUFACTURER PRIOR TO INSTALLATION. PROVIDE GFCI CIRCUIT BREAKER.
22	CONNECT NEW MECHANICAL EQUIPMENT TO EXISTING CIRCUIT REMAINING FROM DEMOLITION.
23	PROVIDE 20A-1P CIRCUIT BREAKER AT SPACE INDICATED AND CONNECT COMPLETE.
24	FREEZER ALTERNATE BID: DISCONNECT SWITCH FOR FREEZER CONDENSING UNIT. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER.CONNECT COMPLETE.
25	FREEZER ALTERNATE BID: DISCONNECT SWITCH FOR FREEZER EVAPORATOR. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER. CONNECT COMPLETE.
26	FREEZER ALTERNATE BID: CIRCUIT CONNECTION FOR FREEZER LIGHTING. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER.CONNECT COMPLETE.
27	CIRCUIT CONNECTION FOR TEMPERATURE CONTROL PANEL. CONNECT COMPLETE.

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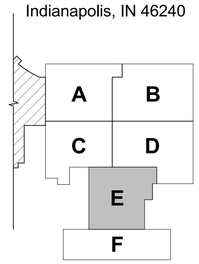
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KEY PLAN N

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

POWER PLAN - UNIT E

EP1E1

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265119/265619/26213.1 - INTERIOR/EXTERIOR/EMERGENCY & EXIT LIGHT FIXTURES SCHEDULE

LABEL	DESCRIPTION	VOLTAGE	SOURCE TYPE	SOURCE LUMENS	SOURCE WATTS	SOURCE CCT	MOUNTING	LENS/REFLECTOR	CERTIFICATIONS	ACCEPTABLE MANUFACTURERS	LABEL
L1	1X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 2,500 LM.	120/277 V	LED	2,500/3,200/4,000 LM SELECTABLE	35 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L1
L2	1X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 3,200 LM.	120/277 V	LED	2,500/3,200/4,000 LM SELECTABLE	35 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L2
L2D	1X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 3,200 LM.	120/277 V	LED	2,500/3,200/4,000 LM SELECTABLE	35 W	3500K/4000K/5000K SELECTABLE	RECESSED IN DRYWALL	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L2D
L3	1X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 4,000 LM.	120/277 V	LED	2,500/3,200/4,000 LM SELECTABLE	35 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L3
L3D	1X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 4,000 LM.	120/277 V	LED	2,500/3,200/4,000 LM SELECTABLE	35 W	3500K/4000K/5000K SELECTABLE	RECESSED IN DRYWALL	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L3D
L3S	1X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 4,000 LM. PROVIDE SURFACE MOUNTING KIT.	120/277 V	LED	2,500/3,200/4,000 LM SELECTABLE	35 W	3500K/4000K/5000K SELECTABLE	SURFACE MOUNTED	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L3S
L4	2X2 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 4,000 LM.	120/277 V	LED	2,500/3,200/4,000 LM SELECTABLE	40 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L4
L5	2X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 4,000 LM.	120/277 V	LED	4,000/5,000/6,000 LM SELECTABLE	50 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L5
L6	2X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 5,000 LM.	120/277 V	LED	4,000/5,000/6,000 LM SELECTABLE	50 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L6
L6D	2X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 5,000 LM.	120/277 V	LED	4,000/5,000/6,000 LM SELECTABLE	50 W	3500K/4000K/5000K SELECTABLE	RECESSED IN DRYWALL	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L6D
L7	2X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE AND LUMEN OUTPUT. SET TO 4000K AND 6,000 LM.	120/277 V	LED	4,000/5,000/6,000 LM SELECTABLE	50 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L7
L8	2X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE. SET TO 4000K.	120/277 V	LED	7,200 LM	65 W	3500K/4000K/5000K SELECTABLE	RECESSED IN GRID	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L8
L8S	2X4 LED FLAT PANEL. 0-10V DIMMING. SELECTABLE COLOR TEMPERATURE. SET TO 4000K. PROVIDE SURFACE HOUSING KIT.	120/277 V	LED	7,200 LM	65 W	3500K/4000K/5000K SELECTABLE	CHAIN MOUNTED TO STRUCTURE	SATIN WHITE	DLC	METALUX CGTS COLUMBIA CBT LITHONIA CPX	L8S
L9	4' LENSED LED STRIP LIGHT. 0-10V DIMMING, WHITE FINISH.	120/277 V	LED	3,000 LM	27 W	4000 K	CHAIN MOUNTED TO STRUCTURE	SEMI-FROSTED CURVED LENS	DLC	METALUX SNLED COLUMBIA MPS LITHONIA CLX	L9
L10	4' LENSED LED STRIP LIGHT. 0-10V DIMMING, WHITE FINISH.	120/277 V	LED	5,000 LM	45 W	4000 K	CHAIN MOUNTED TO STRUCTURE	SEMI-FROSTED CURVED LENS	DLC	METALUX SNLED COLUMBIA MPS LITHONIA CLX	L10
L11	4' LENSED LED STRIP LIGHT. 0-10V DIMMING, WHITE FINISH.	120/277 V	LED	6,500 LM	62 W	4000 K	CHAIN MOUNTED TO STRUCTURE	SEMI-FROSTED CURVED LENS	DLC	METALUX SNLED COLUMBIA MPS LITHONIA CLX	L11
L12	4" SQUARE LED DOWNLIGHT. SELF-FLANGED TRIM. 1%, 0-10V DIMMING.	120/277 V	LED	1,000 LM	11 W	3500 K	RECESSED IN DRYWALL	SEMI-SPECULAR CLEAR	ES	PORTFOLIO LDSQ4B PRESCOLITE LTR-4SQD GOTHAM EVO	L12
L13	4" SQUARE LED DOWNLIGHT. SELF-FLANGED TRIM. 1%, 0-10V DIMMING.	120/277 V	LED	1,500 LM	16 W	3500 K	RECESSED IN GRID	SEMI-SPECULAR CLEAR	ES	PORTFOLIO LDSQ4B PRESCOLITE LTR-4SQD GOTHAM EVO	L13
L14	4" ROUND LED DOWNLIGHT. SELF-FLANGED TRIM. MEDIUM DISTRIBUTION (50°). 1%, 0-10V DIMMING.	120/277 V	LED	1,000 LM	11 W	3500 K	RECESSED IN GRID	SEMI-SPECULAR CLEAR	ES	PORTFOLIO LD4B PRESCOLITE LTR-4RD GOTHAM EVO	L14
L15	4" ROUND LED DOWNLIGHT. SELF-FLANGED TRIM. MEDIUM DISTRIBUTION (50°). 1%, 0-10V DIMMING.	120/277 V	LED	1,500 LM	16 W	3500 K	RECESSED IN GRID	SEMI-SPECULAR CLEAR	ES	PORTFOLIO LD4B PRESCOLITE LTR-4RD GOTHAM EVO	L15
L16	10" X 48" LED LOWBAY. WHITE ALUMINUM HOUSING. WIDE DISTRIBUTION. 0-10V DIMMING.	120/277 V	LED	8,000 LM	70 W	4000 K	CABLE MOUNTED WITH SEPARATE SAFETY CABLE	HIGH IMPACT POLYCARBONATE LENS	DLC	METALUX VHB COLUMBIA PEL LITHONIA IBG	L16
L17	ADJUSTABLE AIM LED TRACK LIGHT. WHITE FINISH. ONE CIRCUIT TRACK. PROVIDE ALL TRACK, CONNECTORS, ETC. AS REQUIRED FOR COMPLETE SYSTEM. PROVIDE ELECTRONIC LOW VOLTAGE DIMMING.	120/277 V	LED	1,000 LM	17 W	4000 K	TRACK		N/A	HALO L805MED/L2G TRACK JUNO T261L INTENSE LIGHTING MXHG2	L17
L18	ADJUSTABLE AIM LED TRACK LIGHT. WHITE FINISH. ONE CIRCUIT TRACK. PROVIDE ALL TRACK, CONNECTORS, ETC. AS REQUIRED FOR COMPLETE SYSTEM. PROVIDE ELECTRONIC LOW VOLTAGE DIMMING.	120/277 V	LED	2,300 LM	38 W	4000 K	TRACK		N/A	HALO L805LRG/L2G TRACK JUNO T259L INTENSE LIGHTING MBW2G2	L18
L19	LED "IN USE" LIGHT, MODIFIED EXIT SIGN, CUSTOM RED LETTERING ON WHITE BACKGROUND, WHITE DIE-CAST ALUMINUM HOUSING, SINGLE FACE.	120/277 V	LED	N/A	5 W	N/A	UNIVERSAL	N/A	N/A	SURE-LITES CX DUAL-LITE SE LITHONIA LE	L19
L20	LED WALL PACK. NOMINALLY 17"W X 9"H X 8"D. FIELD ADJUSTABLE LUMEN OUTPUT. DIE-CAST ALUMINUM HOUSING. DARK BRONZE FINISH. U.L. LISTED FOR WET LOCATIONS.	120/277 V	LED	12,400 LM	90 W	4000 K	WALL MOUNTED	BOROSILICATE GLASS LENS	DLC	LUMARK WPM CURRENT WGH3 LITHONIA TWR2	L20
L21	LED FLAT PANEL. NOMINALLY 13"X13"X2"D. DIE-CAST ALUMINUM HOUSING. POLYESTER POWDER COAT. WHITE FINISH.	120/277 V	LED	2,500 LM	40 W	4000 K	SURFACE MOUNTED ON INSULATED METAL CEILING	IMPACT AND VANDAL-RESISTANT, UV STABILIZED, WHITE POLYCARBONATE	N/A	FC LIGHTING FCW3801 PERFORMANCE IN LIGHTING BS4	L21
L22	6"X4' EXTRUDED ALUMINUM LED RECESSED LINEAR. 1%, 0-10V DIMMING.	120/277 V	LED	625 LM/FT	26 W	4000 K	RECESSED IN DISPLAY CASE WITH FLANGE	FLUSH SATIN LENS	DLC	FOCAL POINT FSM4L FINELITE HP4 PINNACLE EDGE	L22
L23	6"X8' EXTRUDED ALUMINUM LED RECESSED LINEAR. 1%, 0-10V DIMMING.	120/277 V	LED	625 LM/FT	55 W	4000 K	RECESSED IN DISPLAY CASE WITH FLANGE	FLUSH SATIN LENS	DLC	FOCAL POINT FSM4L FINELITE HP4 PINNACLE EDGE	L23
X1C1	LED EXIT LIGHT, MATTE BLACK DIE-CAST ALUMINUM HOUSING, BRUSHED ALUM. SINGLE FACE. STENCIL FACE, RED LETTERS. AC ONLY.	120/277 V	LED	N/A	5 W	N/A	UNIVERSAL	N/A	N/A	SURE-LITES CX DUAL-LITE SE LITHONIA LE	X1C1
X1C2	LED EXIT LIGHT, MATTE BLACK DIE-CAST ALUMINUM HOUSING, BRUSHED ALUM. DUAL FACE. STENCIL FACE, RED LETTERS. AC ONLY.	120/277 V	LED	N/A	5 W	N/A	UNIVERSAL	N/A	N/A	SURE-LITES CX DUAL-LITE SE LITHONIA LE	X1C2
X1W1	LED EXIT LIGHT, MATTE BLACK DIE-CAST ALUMINUM HOUSING, BRUSHED ALUM. SINGLE FACE. STENCIL FACE, RED LETTERS. AC ONLY	120/277 V	LED	N/A	5 W	N/A	UNIVERSAL	N/A	N/A	SURE-LITES CX DUAL-LITE SE LITHONIA LE	X1W1

A1

262913.1 - LIGHTING CONTACTORS SCHEDULE

LABEL	LOCATION NUMBER	LOCATION NAME	EQUIPMENT RATINGS VOLTAGE	AMPERAGE	POLES	NEMA ENCL	ACCESSORIES	COIL CIRCUIT VOLTAGE	PANEL	CIRCUIT	CONTROL	CIRCUIT(S) CONTROLLED	REMARKS
LC-B1	C-132	ELECTRICAL	600 V	30 A	6	NEMA 1	H-O-A RED "ON" PILOT LIGHT DDC INTEGRATION	277 V	14BLS1	9	TEMPERATURE CONTROL SYSTEM	14BLS1-2,4	ELECTRICALLY OPERATED, MECHANICALLY HELD
LC-C1	C-???	ELECTRICAL	600 V	30 A	6	NEMA 1	H-O-A RED "ON" PILOT LIGHT DDC INTEGRATION	277 V	14CLS1	10	TEMPERATURE CONTROL SYSTEM	14CLS1-14	ELECTRICALLY OPERATED, MECHANICALLY HELD
LC-E1	G347	ELEC	600 V	30 A	6	NEMA 1	H-O-A RED "ON" PILOT LIGHT DDC INTEGRATION	277 V	14ELS1	5	TEMPERATURE CONTROL SYSTEM	14ELS1-6,8	ELECTRICALLY OPERATED, MECHANICALLY HELD

GENERAL LIGHT FIXTURE SCHEDULE NOTES

#	NOTES
A	PROVIDE ALL FIXTURES AND FIXTURE INSTALLATIONS IN ACCORDANCE WITH NEC, NFPA, AND LOCAL CODES. PROVIDE UL LISTED FIXTURES AND INSTALL IN ACCORDANCE WITH THE LISTING.
B	COORDINATE ALL FIXTURE DEVICES, COMPONENTS, FITTINGS, SUPPORTS, ETC. REQUIRED FOR A COMPLETE UL LISTED INSTALLATION.
C	PROVIDE ALL DRIVERS, LED MODULES, LENSES, ETC. AS REQUIRED FOR A COMPLETE AND OPERATIONAL LIGHTING UNIT.
D	BID ONLY THE LIGHTING MANUFACTURERS/SERIES SPECIFIED IN THE LIGHT FIXTURE SCHEDULE. A DOCUMENTED PRE-BID SUBMITTAL MUST BE APPROVED BY THE ENGINEER OF THE PROJECT FOR ANY ADDITION/SUBSTITUTION OF THE MANUFACTURERS LISTED DURING BIDDING. APPROVED MANUFACTURERS WILL BE ADDED/MODIFIED ONLY BY ADDENDUM.
E	COORDINATE LIGHTING SYSTEM REQUIREMENTS, INCLUDING BUT NOT LIMITED TO, THE LIGHT FIXTURE SCHEDULE, PLANS, PLAN NOTES, DETAILS, SCHEMATICS, SPECIFICATIONS, ETC.
F	REFER TO LIGHT FIXTURE SCHEDULE, LIGHTING PLANS, AND ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL CEILING TYPES, FINAL LOCATIONS, ELEVATIONS, AND FIXTURE LENGTHS REQUIRED.
G	LUMEN VALUES LISTED IN THE LIGHT FIXTURE SCHEDULES ARE THE MINIMUM DELIVERED LUMENS ALLOWED. PROVIDE LIGHT FIXTURES EQUAL TO OR EXCEEDING THE LISTED VALUES.
H	COORDINATE AND PROVIDE LIGHTING/DIMMING CONTROLS COMPATIBLE WITH ALL FIXTURES, DRIVERS, LED MODULES, ETC.
I	PROVIDE SELF-DIAGNOSTICS AND SELF-TESTING FOR ALL EMERGENCY FIXTURES (EXIT SIGNS, WALL PACKS, INVERTERS, ETC.).
J	PROVIDE A MINIMUM OUTPUT OF 900 LUMENS FOR POINT SOURCE FIXTURES AND 1,200 LUMENS FOR LINEAR FIXTURES ON ALL FIXTURES DESIGNED AS EMERGENCY (CONTAINING INTERNAL BATTERY INVERTERS). PROVIDE ILLUMINATION LASTING A MINIMUM OF 90 MINUTES.
K	VERIFY THE VOLTAGE OF ALL FIXTURES. REFER TO PLANS FOR SPECIFIC VOLTAGE REQUIREMENTS.
L	PROVIDE FACTORY INSTALLED DISCONNECTING MEANS FOR EACH FIXTURE WITH SERVICEABLE COMPONENTS.
M	THE ENGINEER RESERVES THE RIGHT TO SELECT FROM ALL AVAILABLE STANDARD COLORS FOR FIXTURES, POLES, MOUNTING ACCESSORIES, ETC. DURING SUBMITTAL REVIEW.
N	PROVIDE FIXTURES WITH CUSTOM COLORS/FINISH AS SELECTED BY THE ENGINEER WHERE INDICATED.
O	PAINT AFTER FABRICATION WITH NO SHARP EDGES FOR ALL LIGHT FIXTURES.
P	PROVIDE APPROPRIATE SLOPE ADAPTERS, FLANGE KITS, TRIMS, AND ALL OTHER MOUNTING ACCESSORIES AS REQUIRED FOR THE CEILING TYPE.
Q	PROVIDE SPRING-LOADED CAM LATCHES FOR ALL LINEAR FIXTURES UTILIZING A HINGED DOOR.

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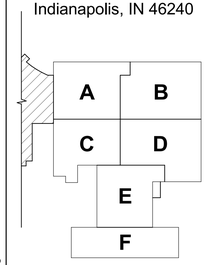
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SARAH KATHLEEN HUMPSTEAD REGISTERED NO. AR10400134 STATE OF INDIANA ARCHITECT

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN N

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

LIGHTING SCHEDULES

E-606

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BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION: L11 **VOLTS:** 208Y/120 V **MAINS RATING:** 100 A
LOCATION: LABS G-338A **PHASES:** 3 **MAINS TYPE:** MLO
MOUNTING: FLUSH **WIRES:** 4
SUPPLY FROM: LD1 **AIC RATING:**

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	16	--
--	17	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	18	--
--	19	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A	A1	EX. CIRCUIT	20	--
--	21	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	22	--
--	23	EX. CIRCUIT		20 A	1					0.00	0.00	2	30 A		EX. CIRCUIT	24	--
--	25	EX. CIRCUIT		20 A	1	0.00	0.00					--	--	--	--	26	--
--	27	EX. CIRCUIT		20 A	1			0.00	0.00			2	40 A		EX. CIRCUIT	28	--
G	29	C-105	EWC	20 A	1					1.00	0.00	--	--	--	--	30	--
--	31	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	32	--
--	33	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	34	--
--	35	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	36	--
--	37	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	38	--
--	39	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	40	--
--	41	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	42	--
		TOTAL LOAD:				0.00 kVA		0.00 kVA		1.00 kVA							
		TOTAL AMPS:				0 A		0 A		8 A							

TOTAL CONNECTED LOAD: 1.00 kVA **TOTAL DEMAND LOAD:** 1.00 kVA
TOTAL CONNECTED AMPS: 8 A **TOTAL DEMAND AMPS:** 3 A

LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
Receptacle - General	1000 VA	100.00%	1000 VA

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)

C	CONTACTOR CONTROLLED
G	GFCI PROTECTED
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)
S	SHUNT TRIP
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG
	FEED THROUGH LUGS (FTL)
	SUB FEED LUGS (SFL)

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 30 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION: L12 **VOLTS:** 208Y/120 V **MAINS RATING:** 225 A
LOCATION: ELECTRICAL C-331 **PHASES:** 3 **MAINS TYPE:** MCB
MOUNTING: SURFACE **WIRES:** 4
SUPPLY FROM: LD1 **AIC RATING:**

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	16	--
--	17	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	18	--
--	19	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	20	--
--	21	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	22	--
--	23	EX. CIRCUIT		20 A	1					0.00	0.00	2	20 A		EX. CIRCUIT	24	--
	25	UKP-1	PANEL	100 A	3	0.00	0.00					--	--	--	--	26	--
--	27	--	--	--	--			0.00	0.00			1	20 A		EX. CIRCUIT	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		EX. CIRCUIT	30	--
--	31	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	32	--
--	33	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	34	--
--	35	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		20 A	1			0.00	0.00			2	20 A		EX. CIRCUIT	40	--
--	41	EX. CIRCUIT		20 A	1					0.00	0.00	--	--	--	--	42	--
	43	EXTERIOR	GDS HTR	20 A	1	0.50	1.50					1	20 A	BATT CH	EXTERIOR	44	
	45	EXTERIOR	BLK HTR	20 A	2			1.00	0.18			1	20 A	RECEPT	EXTERIOR	46	
--	47	--	--	--	--					1.00	0.36	1	20 A	RECEPT	C-331, C-332	48	
--	49	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	50	--
--	51	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	52	--
--	53	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	54	--
		TOTAL LOAD:				2.00 kVA		1.18 kVA		1.36 kVA							
		TOTAL AMPS:				17 A		10 A		12 A							

TOTAL CONNECTED LOAD: 4.54 kVA **TOTAL DEMAND LOAD:** 4.67 kVA
TOTAL CONNECTED AMPS: 17 A **TOTAL DEMAND AMPS:** 13 A

LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
Receptacle - General	540 VA	100.00%	540 VA
Mechanical - Heating	500 VA	125.00%	625 VA
Power - Continuous	3500 VA	100.00%	3500 VA

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)

C	CONTACTOR CONTROLLED
G	GFCI PROTECTED
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)
S	SHUNT TRIP
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG
	FEED THROUGH LUGS (FTL)
	SUB FEED LUGS (SFL)

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 42 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION: L23 **VOLTS:** 208Y/120 V **MAINS RATING:** 225 A
LOCATION: ELECT. D431 **PHASES:** 3 **MAINS TYPE:** MCB
MOUNTING: SURFACE **WIRES:** 4
SUPPLY FROM: LD1 **AIC RATING:**

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	ROOF	EF-C2	20 A	1	0.70	0.70					1	20 A	EF-D11	ROOF	2	
	3	ROOF	EF-C4	20 A	1			0.70	1.18			1	20 A	EF-D13	ROOF	4	
	5	ROOF	EF-C9	20 A	1					1.66	0.10	1	20 A	EF-CC3	ROOF	6	
	7	ROOF	EF-D1	20 A	1	1.18	0.53					1	20 A	EF-CD1	ROOF	8	
	9	ROOF	EF-D2	20 A	1			1.66	1.20			1	20 A	H DRYER	D-2B	10	G
	11	ROOF	EF-D10	20 A	1					0.70	1.20	1	20 A	H DRYER	D-2A	12	G
	13	D-2B, D-2A	RECEPT	20 A	1	0.56	1.20					1	20 A	H DRYER	D-1A	14	G
	15	D-1B, D-1A	RECEPT	20 A	1			0.56	1.20			1	20 A	H DRYER	D-1B	16	G
	17	D-125, D-125A	RECEPT	20 A	1					0.64	1.20	1	20 A	H DRYER	D-127	18	G
	19	D-127	RECEPT	20 A	1	0.28	1.20					1	20 A	H DRYER	D-125	20	G
	21	ROOF	RECEPT	20 A	1			0.36	0.00			1	20 A		SPARE	22	--
	23	ROOF	EF-C3	20 A	1					0.86	0.00	1	20 A		SPARE	24	--
	25	ROOF	EF-CC1	20 A	1	0.70	0.00					1	20 A		SPARE	26	--
	27	ROOF	EF-CC2	20 A	1			0.53	0.00			1	20 A		SPARE	28	--
	29	ROOF	EF-E2	20 A	1					1.18	0.00	1	20 A		SPARE	30	--
--	31	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	32	--
--	33	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	34	--
--	35	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	36	--
--	37	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	38	--
--	39	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	40	--
--	41	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	42	--
		TOTAL LOAD:				7.05 kVA		7.39 kVA		7.54 kVA							
		TOTAL AMPS:				59 A		62 A		63 A							

TOTAL CONNECTED LOAD: 21.98 kVA **TOTAL DEMAND LOAD:** 22.40 kVA
TOTAL CONNECTED AMPS: 63 A **TOTAL DEMAND AMPS:** 62 A

LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
Receptacle - General	1800 VA	100.00%	1800 VA
Mechanical - Motor	19580 VA	102.12%	19995 VA
Power - Continuous	600 VA	100.00%	600 VA

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)

C	CONTACTOR CONTROLLED
G	GFCI PROTECTED
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)
S	SHUNT TRIP
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG
	FEED THROUGH LUGS (FTL)
	SUB FEED LUGS (SFL)

NOTES:
1. NEW PANELBOARD.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION: L3 **VOLTS:** 208Y/120 V **MAINS RATING:** 225 A
LOCATION: IDF-1 A-119A **PHASES:** 3 **MAINS TYPE:** MCB
MOUNTING: SURFACE **WIRES:** 4
SUPPLY FROM: LD1 **AIC RATING:**

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	1	30 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			3	20 A		EX. CIRCUIT	16	--
--	17	EX. CIRCUIT		20 A	1					0.00	0.00	--	--	--	--	18	--
--	19	EX. CIRCUIT		20 A	1	0.00	0.00					--	--	--	--	20	--
--	21	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	22	--
--	23	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	24	--
--	25	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	26	--
--	27	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	28	--
--	29	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	30	--
--	31	EX. CIRCUIT		20 A	1	0.00	0.00					3	70 A		EX. CIRCUIT	32	--
--	33	EX. CIRCUIT		20 A	1			0.00	0.00			--	--	--	--	34	--
--	35	EX. CIRCUIT		30 A	1					0.00	0.00	--	--	--	--	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					3	100 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		30 A	2			0.00	0.00			--	--	--	--	40	--
--	41	--	--	--	--					0.00	0.00	--	--	--	--	42	--
--	43	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	44	--
--	45	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	46	--
--	47	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	48	--
--	49	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	50	--
--	51	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	52	--
--	53	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	54	--
		TOTAL LOAD:				0.00 kVA		0.00 kVA		0.00 kVA							
		TOTAL AMPS:				0 A		0 A		0 A							

TOTAL CONNECTED LOAD: 0.00 kVA **TOTAL DEMAND LOAD:** 0.00 kVA
TOTAL CONNECTED AMPS: 0 A **TOTAL DEMAND AMPS:** 0 A

LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)

C	CONTACTOR CONTROLLED
G	GFCI PROTECTED
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)
S	SHUNT TRIP
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG
	FEED THROUGH LUGS (FTL)
	SUB FEED LUGS (SFL)

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 42 CIRCUIT PANELBOARD L3A WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.
4. RELABEL PANELBOARD FROM L3A TO L3.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION: L5 **VOLTS:** 208Y/120 V **MAINS RATING:** 225 A
LOCATION: ELEC. A-309B **PHASES:** 3 **MAINS TYPE:** MCB
MOUNTING: SURFACE **WIRES:** 4
SUPPLY FROM: LD1 **AIC RATING:**

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					1	30 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	16	--
--	17	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	18	--
--	19	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	20	--
--	21	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	22	--
--	23	EX. CIRCUIT		20 A	1					0.00	0.00	2	40 A		EX. CIRCUIT	24	--
--	25	EX. CIRCUIT		20 A	1	0.00	0.00					--	--	--	--	26	--
--	27	EX. CIRCUIT		40 A	2			0.00	0.00			2	40 A		EX. CIRCUIT	28	--
--	29	--	--	--	--					0.00	0.00	--	--	--	--	30	--
--	31	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	32	--
--	33	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	34	--
--	35	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	40	--
	41	ROOF	EF-A2	20 A	1					0.70	0.00	1	20 A		SPARE	42	--
	43	ROOF	EF-A7	20 A	1	1.66	0.00					1	20 A		SPARE	44	--
	45	ROOF	EF-A8	20 A	1			0.70	0.00			1	20 A		SPARE	46	--
	47	ROOF	EF-AC1	20 A	1					0.70	0.00	1	20 A		SPARE	48	--
--	49	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	50	--
--	51	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	52	--
--	53	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	54	--
		TOTAL LOAD:				1.66 kVA		0.70 kVA		1.40 kVA							
		TOTAL AMPS:				15 A		6 A		13 A							

TOTAL CONNECTED LOAD: 3.76 kVA **TOTAL DEMAND LOAD:** 4.18 kVA
TOTAL CONNECTED AMPS: 15 A **TOTAL DEMAND AMPS:** 12 A

LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
Mechanical - Motor	3760 VA	111.04%	4175 VA

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)

C	CONTACTOR CONTROLLED
G	GFCI PROTECTED
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)
S	SHUNT TRIP
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG
	FEED THROUGH LUGS (FTL)
	SUB FEED LUGS (SFL)

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 30 CIRCUIT PANELBOARD L5 AND 12 CIRCUIT L5C WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION: L1 **VOLTS:** 208Y/120 V **MAINS RATING:** 100 A
LOCATION: MECHANICAL ROOM... **PHASES:** 3 **MAINS TYPE:** MCB
MOUNTING: SURFACE **WIRES:** 4
SUPPLY FROM: LD1 **AIC RATING:**

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	16	--
--	17	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	18	--
--	19	EX. CIRCUIT		30 A	2	0.00	0.00					1	20 A		EX. CIRCUIT	20	--
--	21	--	--	--	--			0.00	0.00			1	15 A		EX. CIRCUIT	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	15 A		EX. CIRCUIT	24	--
--	25	EX. CIRCUIT		20 A	1	0.00	0.00					1	15 A		EX. CIRCUIT	26	--
--	27	EX. CIRCUIT		20 A	1			0.00	0.00			2	30 A		EX. CIRCUIT	28	--
--	29	EX. CIRCUIT		20 A	1					0.00	0.00	--	--	--	--	30	--
	31	ROOF	EF-A1	20 A	1	0.70	0.70					1	20 A	EF-C1	ROOF	32	
	33	ROOF	EF-A14	20 A	1			0.70	1.66			1	20 A	EF-E3	ROOF	34	
	35	ROOF	EF-E4	20 A	1					0.70	1.18	1	20 A	EF-C6	ROOF	36	
	37	C-329	DWS-1	20 A	1	0.36	0.00					1	20 A		SPARE	38	--
	39	C-329	RECEPT	20 A	1			0.72	0.00			1	20 A		SPARE	40	--
--	41	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	42	--
		TOTAL LOAD:				1.76 kVA		3.08 kVA		1.88 kVA							
		TOTAL AMPS:				15 A		26 A		16 A							

TOTAL CONNECTED LOAD: 6.72 kVA **TOTAL DEMAND LOAD:** 7.14 kVA
TOTAL CONNECTED AMPS: 26 A **TOTAL DEMAND AMPS:** 20 A

LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
Receptacle - General	1080 VA	100.00%	1080 VA
Mechanical - Motor	5640 VA	107.36%	6055 VA

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)

C	CONTACTOR CONTROLLED
G	GFCI PROTECTED
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)
S	SHUNT TRIP
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG
	FEED THROUGH LUGS (FTL)
	SUB FEED LUGS (SFL)

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 30 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION: L2 **VOLTS:** 208Y/120 V **MAINS RATING:** 225 A
LOCATION: OFFICE H-F-123 **PHASES:** 3 **MAINS TYPE:** MCB
MOUNTING: FLUSH **WIRES:** 4 **MCB RATING:** 225 A
SUPPLY FROM: LD1 **AIC RATING:** **MCB OPTIONS:** S

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	2	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		100 A	3	0.00	0.00					--	--	--	--	14	--
--	15	--	--	--	--			0.00	0.00			2	20 A		EX. CIRCUIT	16	--
--	17	--	--	--	--					0.00	0.00	--	--	--	--	18	--
--	19	EX. CIRCUIT		100 A	3	0.00	1.66					1	20 A	EF-A9	ROOF	20	
--	21	--	--	--	--			0.00	0.42			1	20 A	EF-A11	ROOF	22	
--	23	--	--	--	--					0.00	1.66	1	20 A	EF-A12	ROOF	24	
--	25	EX. CIRCUIT		100 A	3	0.00	1.18					1	20 A	EF-C5	ROOF	26	
--	27	--	--	--	--			0.00	0.70			1	20 A	EF-E8	ROOF	28	
--	29	--	--	--	--					0.00	0.18	1	20 A	RECEPT	ROOF	30	
	31	L2A	PANEL	100 A	3	0.00	0.00					1	20 A		SPARE	32	--
--	33	--	--	--	--			0.00	0.00			1	20 A		SPARE	34	--
--	35	--	--	--	--					0.00	0.00	1	20 A		SPARE	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	40	--
--	41	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	42	--
--	43	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	44	--
--	45	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	46	--
--	47	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	48	--
--	49	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	50	--
--	51	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	52	--
--	53	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	54	--
		TOTAL LOAD:				2.84 kVA		1.12 kVA		1.84 kVA							
		TOTAL AMPS:				25 A		9 A		16 A							

TOTAL CONNECTED LOAD: 5.80 kVA **TOTAL DEMAND LOAD:** 6.22 kVA
TOTAL CONNECTED AMPS: 25 A **TOTAL DEMAND AMPS:** 17 A

LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
Receptacle - General	180 VA	100.00%	180 VA
Mechanical - Motor	5620 VA	107.38%	6035 VA

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)

C	CONTACTOR CONTROLLED
G	GFCI PROTECTED
P	HANDLE LOCKING DEVICE
S	SHUNT TRIP
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG
Yes	FEED THROUGH LUGS (FTL)
No	SUB FEED LUGS (SFL)

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 54 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.
4. CONNECT SHUNT TRIP WIRING TO MAIN CIRCUIT BREAKER.

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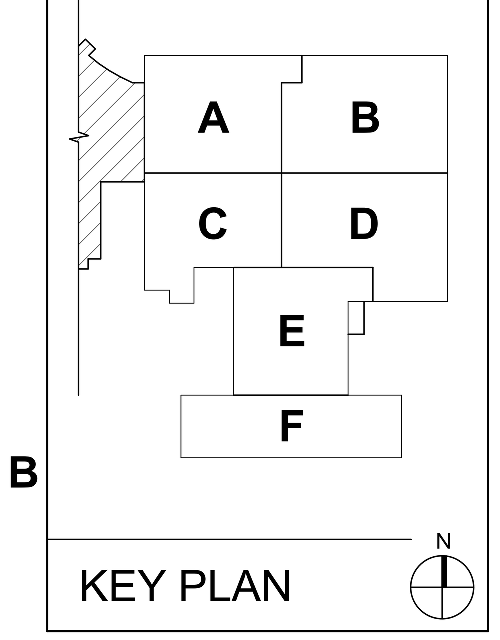
Project No. 2019-067.JEL
Project Date 12.08.2023
Produced JAR JNS

SARAH KATHLEEN HEMPSTEAD REGISTERED NO. AR10400134 STATE OF INDIANA ARCHITECT

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

PANELBOARD SCHEDULES

E-609

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	L17	VOLTS:	208Y/120 V	MAINS RATING:	225 A
LOCATION:	STORAGE E-118	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	FLUSH	WIRES:	4	MCB RATING:	225 A
SUPPLY FROM:	LD3	AIC RATING:		MCB OPTIONS:	S

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	16	--
--	17	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	18	--
--	19	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	20	--
--	21	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	22	--
--	23	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	24	--
--	25	EX. CIRCUIT		100 A	3	0.00	0.00					2	30 A		EX. CIRCUIT	26	--
--	27	--	--	--	--			0.00	0.00			--	--	--	--	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		EX. CIRCUIT	30	--
--	31	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	32	--
--	33	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	34	--
--	35	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	40	--
--	41	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	42	--
	43	E-115D, E-115DA	RECEPT	20 A	1	0.46	1.20					1	20 A	H DRYER	E-111A	44	G
G	45	E-115D	H DRYER	20 A	1			1.20	1.20			1	20 A	H DRYER	E-111B	46	G
	47	E-115E, E-115EA	RECEPT	20 A	1					0.46	0.56	1	20 A	RECEPT	E-111B, E-111A	48	
G	49	E-115E	H DRYER	20 A	1	1.20	0.60					1	20 A	EWC	E-348	50	G
	51	E-111, E-111C	RECEPT	20 A	1			0.36	0.00			1	20 A		SPARE	52	--
--	53	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	54	--
--	55	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	56	--
--	57	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	58	--
--	59	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	60	--
--	61	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	62	--
--	63	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	64	--
--	65	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	66	--

		A	B	C
THIS SECTION TOTAL:	TOTAL LOAD:	3.46 kVA	2.76 kVA	1.02 kVA
	TOTAL AMPS:	31 A	25 A	9 A
TOTAL LOAD CONNECTED TO FEED THROUGH LUGS:	TOTAL LOAD:	0.00 kVA	0.00 kVA	0.00 kVA
	TOTAL AMPS:	0 A	0 A	0 A
GRAND TOTAL LOADS:	TOTAL LOAD:	3.46 kVA	2.76 kVA	1.02 kVA
	TOTAL AMPS:	31 A	25 A	9 A

TOTAL CONNECTED LOAD:	7.24 kVA	7.54 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	31 A	21 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
C	CONTACTOR CONTROLLED	Receptacle - General	1940 VA	100.00%	1940 VA
G	GFCI PROTECTED	Mechanical - Motor	4800 VA	106.25%	5100 VA
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)	Power - Continuous	500 VA	100.00%	500 VA
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
Yes	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 42 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.
4. CONNECT SHUNT TRIP WIRING TO MAIN CIRCUIT BREAKER.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	L18	VOLTS:	208Y/120 V	MAINS RATING:	225 A
LOCATION:	TOOL & PARTS...	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4	MCB RATING:	225 A
SUPPLY FROM:	LD3	AIC RATING:		MCB OPTIONS:	S

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		20 A	1					0.00	0.00	3	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					--	--	--	--	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			--	--	--	--	16	--
--	17	EX. CIRCUIT		100 A	3					0.00	0.00	1	20 A		EX. CIRCUIT	18	--
--	19	--	--	--	--	0.00	0.00					3	100 A		EX. CIRCUIT	20	--
--	21	--	--	--	--			0.00	0.00			--	--	--	--	22	--
--	23	EX. CIRCUIT		20 A	1					0.00	0.00	--	--	--	--	24	--
--	25	EX. CIRCUIT		100 A	3	0.00	0.00					1	20 A		EX. CIRCUIT	26	--
--	27	--	--	--	--			0.00	0.00			1	20 A		EX. CIRCUIT	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		EX. CIRCUIT	30	--
--	31	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	32	--
--	33	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	34	--
--	35	EX. CIRCUIT		30 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	40	--
--	41	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	42	--
--	43	EX. CIRCUIT		20 A	1	0.00	0.00					3	20 A		EX. CIRCUIT	44	--
--	45	EX. CIRCUIT		20 A	1			0.00	0.00			--	--	--	--	46	--
	47	ROOF	EF-D5	20 A	1					1.66	0.00	--	--	--	--	48	--
	49	ROOF	EF-D6	20 A	1	1.18	0.70					1	20 A	EF-D18	ROOF	50	
	51	ROOF	EF-D7	20 A	1			0.42	0.28			1	20 A	RECEPT	E-121A	52	
	53	ROOF	EF-D8	20 A	1					1.18	1.20	1	20 A	H DRYER	E-121A	54	G
	55	E-121, E-120	RECEPT	20 A	1	0.36	0.00					1	20 A		SPARE	56	--
	57	ROOF	RECEPT	20 A	1			0.54	0.00			1	20 A		SPARE	58	--
--	59	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	60	--
--	61	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	62	--
--	63	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	64	--
--	65	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	66	--

	A	B	C
TOTAL LOAD:	2.24 kVA	1.24 kVA	4.04 kVA
TOTAL AMPS:	20 A	10 A	35 A

TOTAL CONNECTED LOAD:	7.52 kVA	7.94 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	35 A	22 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
C	CONTACTOR CONTROLLED	Receptacle - General	1080 VA	100.00%	1080 VA
G	GFCI PROTECTED	Mechanical - Motor	6340 VA	106.55%	6755 VA
P	HANDLE LOCKING DEVICE	Power - Continuous	100 VA	100.00%	100 VA
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 48 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.
4. CONNECT SHUNT TRIP WIRING TO MAIN CIRCUIT BREAKER.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	L15	VOLTS:	208Y/120 V	MAINS RATING:	225 A
LOCATION:	STORAGE G-D-129	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4	MCB RATING:	225 A
SUPPLY FROM:	LD3	AIC RATING:		MCB OPTIONS:	S

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		100 A	3	0.00	0.00					3	20 A		EX. CIRCUIT	8	--
--	9	--	--	--	--			0.00	0.00			--	--	--	--	10	--
--	11	--	--	--	--					0.00	0.00	--	--	--	--	12	--
--	13	EX. CIRCUIT		100 A	3	0.00	0.00					2	20 A		EX. CIRCUIT	14	--
--	15	--	--	--	--			0.00	0.00			--	--	--	--	16	--
--	17	--	--	--	--					0.00	0.00	2	20 A		EX. CIRCUIT	18	--
--	19	EX. CIRCUIT		100 A	3	0.00	0.00					--	--	--	--	20	--
--	21	--	--	--	--			0.00	1.18			1	20 A	EF-D4	ROOF	22	
--	23	--	--	--	--					0.00	1.42	1	20 A	EF-D14	ROOF	24	
--	25	EX. CIRCUIT		100 A	3	0.00	0.70					1	20 A	EF-E1	ROOF	26	
--	27	--	--	--	--			0.00	0.70			1	20 A	EF-E5	ROOF	28	
--	29	--	--	--	--					0.00	0.36	1	20 A	RECEPT	ROOF	30	
--	31	SPARE		20 A	1	0.00	0.18					1	20 A	RECEPT	G347	32	
--	33	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	34	--
--	35	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	40	--
--	41	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	42	--
--	43	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	44	--
--	45	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	46	--
--	47	EX. CIRCUIT		20 A	2					0.00	0.00	1	20 A		EX. CIRCUIT	48	--
--	49	--	--	--	--	0.00	0.00					1	20 A		EX. CIRCUIT	50	--
--	51	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	52	--
--	53	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	54	--
--	55	SPARE		20 A	1	0.00	0.00					3	20 A		EX. CIRCUIT	56	--
--	57	SPARE		20 A	1			0.00	0.00			--	--	--	--	58	--
--	59	SPARE		20 A	1					0.00	0.00	--	--	--	--	60	--
--	61	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	62	--
--	63	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	64	--
--	65	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	66	--

	A	B	C
TOTAL LOAD:	0.88 kVA	1.88 kVA	1.78 kVA
TOTAL AMPS:	7 A	17 A	16 A

TOTAL CONNECTED LOAD:	4.54 kVA	4.89 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	17 A	14 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
C	CONTACTOR CONTROLLED	Receptacle - General	540 VA	100.00%	540 VA
G	GFCI PROTECTED	Mechanical - Motor	3996 VA	108.86%	4350 VA
P	HANDLE LOCKING DEVICE				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 60 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.
4. CONNECT SHUNT TRIP WIRING TO MAIN CIRCUIT BREAKER.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	L16	VOLTS:	208Y/120 V	MAINS RATING:	225 A
LOCATION:	STORAGE E-109	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4	MCB RATING:	225 A
SUPPLY FROM:	LD3	AIC RATING:		MCB OPTIONS:	S

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	EX. CIRCUIT		30 A	1			0.00	0.00			1	30 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT		30 A	1					0.00	0.00	1	30 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		30 A	1	0.00	0.00					1	30 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			2	50 A		EX. CIRCUIT	16	--
--	17	SPARE		20 A	1					0.00	0.00	--	--	--	--	18	--
--	19	EX. CIRCUIT		100 A	3	0.00	0.00					3	100 A		EX. CIRCUIT	20	--
--	21	--	--	--	--			0.00	0.00			--	--	--	--	22	--
--	23	--	--	--	--					0.00	0.00	--	--	--	--	24	--
--	25	EX. CIRCUIT		20 A	3	0.00	0.00					1	20 A		SPARE	26	--
--	27	--	--	--	--			0.00	0.00			1	20 A		SPARE	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		SPARE	30	--
--	31	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	32	--
--	33	EX. CIRCUIT		20 A	2			0.00	0.00			2	20 A		EX. CIRCUIT	34	--
--	35	--	--	--	--					0.00	0.00	--	--	--	--	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT	A1	20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	40	--
--	41	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	42	--
--	43	EX. CIRCUIT		30 A	3	0.00	0.00					1	20 A		EX. CIRCUIT	44	--
--	45	--	--	--	--			0.00	0.00			1	20 A		EX. CIRCUIT	46	--
--	47	--	--	--	--					0.00	0.00	1	20 A		EX. CIRCUIT	48	--
--	49	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	50	--
--	51	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	52	--
--	53	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	54	--

	A	B	C
TOTAL LOAD:	0.00 kVA	0.00 kVA	0.00 kVA
TOTAL AMPS:	0 A	0 A	0 A

TOTAL CONNECTED LOAD:	0.00 kVA	0.00 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	0 A	0 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
C	CONTACTOR CONTROLLED				
G	GFCI PROTECTED				
P	HANDLE LOCKING DEVICE				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 48 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.
4. CONNECT SHUNT TRIP WIRING TO MAIN CIRCUIT BREAKER.

POWER DISTRIBUTION PANELBOARD SCHEDULE

DESIGNATION:	LD3	VOLTS:	208Y/120 V	MAINS RATING:	800 A
LOCATION:	ELEC G347	PHASES:	3	MAINS TYPE:	MLO
MOUNTING:	SURFACE	WIRES:	4		
SUPPLY FROM:	T-3	AIC RATING:			

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	L14		200 A	3	0.00	0.88					3	200 A		L15	2	
--	3	--	--	--	--			0.00	1.88			--	--	--	--	4	--
--	5	--	--	--	--					0.00	1.78	--	--	--	--	6	--
	7	L16		200 A	3	0.00	3.46					3	200 A		L17	8	
--	9	--	--	--	--			0.00	2.76			--	--	--	--	10	--
--	11	--	--	--	--					0.00	1.02	--	--	--	--	12	--
	13	L18		200 A	3	2.24	0.00					3	100 A		EX. CIRCUIT	14	--
--	15	--	--	--	--			1.24	0.00			--	--	--	--	16	--
--	17	--	--	--	--					4.04	0.00	--	--	--	--	18	--
--	19	EX. CIRCUIT		100 A	3	0.00	0.00					3	100 A		EX. CIRCUIT	20	--
--	21	--	--	--	--			0.00	0.00			--	--	--	--	22	--
--	23	--	--	--	--					0.00	0.00	--	--	--	--	24	--
--	25	SPARE		225 A	3	0.00	0.00					3	225 A		SPARE	26	--
--	27	--	--	--	--			0.00	0.00			--	--	--	--	28	--
--	29	--	--	--	--					0.00	0.00	--	--	--	--	30	--
--	31	SPARE		225 A	3	0.00	0.00					3	225 A		SPARE	32	--
--	33	--	--	--	--			0.00	0.00			--	--	--	--	34	--
--	35	--	--	--	--					0.00	0.00	--	--	--	--	36	--
--	37	SPARE		100 A	3	0.00	0.00					3	100 A		SPARE	38	--
--	39	--	--	--	--			0.00	0.00			--	--	--	--	40	--
--	41	--	--	--	--					0.00	0.00	--	--	--	--	42	--
--	43	SPARE		100 A	3	0.00	0.00					3	100 A		SPARE	44	--
--	45	--	--	--	--			0.00	0.00			--	--	--	--	46	--
--	47	--	--	--	--					0.00	0.00	--	--	--	--	48	--
--	49	SPACE		--	3	--	--					3	--		SPACE	50	--
--	51	--	--	--	--			--	--			--	--	--	--	52	--
--	53	--	--	--	--					--	--	--	--	--	--	54	--

	A	B	C
TOTAL LOAD:	6.58 kVA	5.88 kVA	6.84 kVA
TOTAL AMPS:	56 A	49 A	58 A

TOTAL CONNECTED LOAD:	19.30 kVA	19.71 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	58 A	55 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
C	CONTACTOR CONTROLLED	Receptacle - General	3560 VA	100.00%	3560 VA
G	GFCI PROTECTED	Mechanical - Motor	15136 VA	102.74%	15551 VA
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)	Power - Continuous	600 VA	100.00%	600 VA
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. DISCONNECT AND REMOVE EXISTING FUSED POWER DISTRIBUTION PANELBOARD.
2. PROVIDE NEW POWER DISTRIBUTION PANELBOARD.
3. CONNECT NEW POWER DISTRIBUTION PANELBOARD TO NEW FEEDER. RECONNECT EXISTING BRANCH FEEDERS, MODIFY AS REQUIRED. CONNECT TO NEW FEEDERS.
4. FOR EXISTING FUSED SWITCHES FIELD VERIFY FUSE SIZES AND PROVIDE MATCHING CIRCUIT BREAKER SIZE.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	L14	VOLTS:	208Y/120 V	MAINS RATING:	225 A
LOCATION:	CLASSROOM G-344A	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4	MCB RATING:	200 A
SUPPLY FROM:	LD3	AIC RATING:		MCB OPTIONS:	S

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	2			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	--	--	--	--					0.00	0.00	1	20 A		EX. CIRCUIT	6	--
	7	UKP-2	PANEL	100 A	3	0.00	0.00					1	20 A		EX. CIRCUIT	8	--
--	9	--	--	--	--			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	--	--	--	--					0.00	0.00	1	20 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		100 A	3	0.00	0.00					2	30 A		EX. CIRCUIT	14	--
--	15	--	--	--	--			0.00	0.00			--	--	--	--	16	--
--	17	--	--	--	--					0.00	0.00	1	20 A		SPARE	18	--
--	19	EX. CIRCUIT		100 A	3	0.00	0.00					3	60 A		EX. CIRCUIT	20	--
--	21	--	--	--	--			0.00	0.00			--	--	--	--	22	--
--	23	--	--	--	--					0.00	0.00	--	--	--	--	24	--
--	25	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	26	--
--	27	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	28	--
--	29	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	30	--
--	31	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	32	--
--	33	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	34	--
--	35	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	36	--
--	37	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	38	--
--	39	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	40	--
--	41	EX. CIRCUIT		20 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	42	--
--	43	EX. CIRCUIT		20 A	1	0.00	0.00					3	20 A		EX. CIRCUIT	44	--
--	45	EX. CIRCUIT		20 A	1			0.00	0.00			--	--	--	--	46	--
--	47	EX. CIRCUIT		20 A	1					0.00	0.00	--	--	--	--	48	--
--	49	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	50	--
--	51	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	52	--
--	53	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	54	--

	A	B	C
TOTAL LOAD:	0.00 kVA	0.00 kVA	0.00 kVA
TOTAL AMPS:	0 A	0 A	0 A

TOTAL CONNECTED LOAD:	0.00 kVA	0.00 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	0 A	0 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
C	CONTACTOR CONTROLLED				
G	GFCI PROTECTED				
P	HANDLE LOCKING DEVICE				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. DISCONNECT AND REMOVE EXISTING PANELBOARD. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 48 CIRCUIT PANELBOARD WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.
4. CONNECT SHUNT TRIP WIRING TO MAIN CIRCUIT BREAKER.

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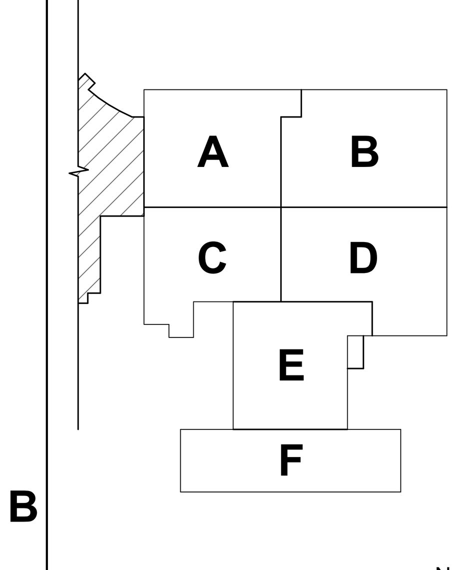
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Produced JAR JNS

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

PANELBOARD SCHEDULES

E-612

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	12AEQ1	VOLTS:	208Y/120 V	MAINS RATING:	400 A
LOCATION:	IDF-1 A-119A	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4		
SUPPLY FROM:	12CEQ1	AIC RATING:			

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
--	1	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	2	--
--	3	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	4	--
--	5	EX. CIRCUIT		20 A	1					0.00	0.00	2	20 A		EX. CIRCUIT	6	--
--	7	EX. CIRCUIT		20 A	1	0.00	0.00					--	--	--	--	8	--
--	9	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	10	--
--	11	EX. CIRCUIT	A1	20 A	1					0.00	0.00	1	30 A		EX. CIRCUIT	12	--
--	13	EX. CIRCUIT		20 A	1	0.00	0.00					1	20 A		EX. CIRCUIT	14	--
--	15	EX. CIRCUIT		20 A	1			0.00	0.00			1	20 A		EX. CIRCUIT	16	--
--	17	EX. CIRCUIT		30 A	1					0.00	0.00	1	20 A		EX. CIRCUIT	18	--
--	19	EX. CIRCUIT		30 A	1	0.00	0.18					1	20 A	RECEPT	A-119A	20	
--	21	EX. CIRCUIT		30 A	1			0.00	0.18			1	20 A	RECEPT	A-119A	22	
	23	A-119A	EF-A13	20 A	1					0.70	0.18	1	20 A	RECEPT	A-119A	24	
	25	A-119A	IR COOL	40 A	2	5.00	0.54					1	20 A	RECEPT	A-119	26	
--	27	--	--	--	--			5.00	0.72			1	20 A	RECEPT	A-119, H-316	28	
--	29	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	30	--
--	31	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	32	--
--	33	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	34	--
--	35	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	36	--
--	37	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	38	--
--	39	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	40	--
--	41	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	42	--

		A	B	C
THIS SECTION TOTAL:	TOTAL LOAD:	5.72 kVA	5.90 kVA	0.88 kVA
	TOTAL AMPS:	54 A	55 A	7 A
TOTAL LOAD CONNECTED TO FEED THROUGH LUGS:	TOTAL LOAD:	3.96 kVA	1.92 kVA	2.10 kVA
	TOTAL AMPS:	33 A	16 A	18 A
GRAND TOTAL LOADS:	TOTAL LOAD:	9.68 kVA	7.82 kVA	2.98 kVA
	TOTAL AMPS:	87 A	71 A	25 A

TOTAL CONNECTED LOAD:	20.48 kVA	23.16 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	87 A	64 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Receptacle - General	3780 VA	100.00%	3780 VA
C	CONTACTOR CONTROLLED	Receptacle - Continuous	4800 VA	100.00%	4800 VA
G	GFCI PROTECTED	Mechanical - Motor	700 VA	125.00%	875 VA
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)	Mechanical - Cooling	10000 VA	125.00%	12500 VA
S	SHUNT TRIP	Power - Continuous	1200 VA	100.00%	1200 VA
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
Yes	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. DISCONNECT AND REMOVE LIEBERT MINI-CENTER. PROVIDE NEW TUB, INTERIOR, TRIM, ETC. MODIFY WALL OPENING AS REQUIRED, MATCH ANY DAMAGED FINISH TO MATCH EXISTING.
2. REPLACE THE EXISTING 24 CIRCUIT LIEBERT MINI-CENTER WITH A PANELBOARD WITH CIRCUIT QUANTITY INDICATED.
3. RECONNECT QUANTITY CIRCUITS INDICATED. FIELD VERIFY CIRCUIT BREAKER TRIP RATINGS AND POLE QUANTITY, AND MODIFY AS REQUIRED.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	12BEQ1	VOLTS:	208Y/120 V	MAINS RATING:	400 A
LOCATION:	ELECTRICAL C-132	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4		
SUPPLY FROM:	12AEQ1	AIC RATING:			

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	G-B-139	RECEPT	20 A	1	1.20	0.36					1	20 A	RECEPT	C-149	2	
	3	C-148	RECEPT	20 A	1			0.36	0.36			1	20 A	RECEPT	C-149	4	
	5	C-148	RECEPT	20 A	1					0.36	0.36	1	20 A	RECEPT	C-149	6	
	7	C-148	RACK	20 A	1	1.20	0.00					2	30 A	XMITR	B-F-415	8	
	9	F-C-140	RACK	20 A	1			1.20	0.00			--	--	--	--	10	--
	11	A400C	RACK	20 A	1					1.20	0.18	1	20 A	RECEPT	A400C	12	
	13	C-132	TCP	20 A	1	1.20	0.00					1	20 A		SPARE	14	--
--	15	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	16	--
--	17	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	18	--
--	19	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	20	--
--	21	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	24	--
--	25	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	26	--
--	27	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	28	--
--	29	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	30	--

	A	B	C
TOTAL LOAD:	3.96 kVA	1.92 kVA	2.10 kVA
TOTAL AMPS:	33 A	16 A	18 A

TOTAL CONNECTED LOAD:	7.98 kVA	7.98 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	33 A	22 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Receptacle - General	1980 VA	100.00%	1980 VA
C	CONTACTOR CONTROLLED	Receptacle - Continuous	4800 VA	100.00%	4800 VA
G	GFCI PROTECTED	Power - Continuous	1200 VA	100.00%	1200 VA
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	12CLS1	VOLTS:	208Y/120 V	MAINS RATING:	225 A
LOCATION:	ELECTRICAL C-???	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4	MCB RATING:	175 A
SUPPLY FROM:	T-CLS1	AIC RATING:		MCB OPTIONS:	Y

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
P	1	400C	FACP	20 A	1	1.20	0.00					1	20 A		SPARE	2	--
--	3	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	4	--
--	5	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	6	--
--	7	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	8	--
--	9	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	10	--
--	11	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	12	--
--	13	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	14	--
--	15	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	16	--
--	17	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	18	--
--	19	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	20	--
--	21	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	24	--
--	25	SPD		30 A	3	0.00	0.00					1	20 A		SPARE	26	--
--	27	--	--	--	--			0.00	0.00			1	20 A		SPARE	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		SPARE	30	--

	A	B	C
TOTAL LOAD:	1.20 kVA	0.00 kVA	0.00 kVA
TOTAL AMPS:	10 A	0 A	0 A

TOTAL CONNECTED LOAD:	1.20 kVA	1.20 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	10 A	3 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Power - Continuous	1200 VA	100.00%	1200 VA
C	CONTACTOR CONTROLLED				
G	GFCI PROTECTED				
P	HANDLE LOCKING DEVICE				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. PROVIDE INTERNAL SPD.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	14CEQ1	VOLTS:	480Y/277 V	MAINS RATING:	225 A
LOCATION:	ELECTRICAL C-???	PHASES:	3	MAINS TYPE:	MLO
MOUNTING:	SURFACE	WIRES:	4		
SUPPLY FROM:	ATS-CEQ1	AIC RATING:			

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	T-CEQ1	XFMR	175 A	3	16.56	6.67					3	30 A	UPS	A-119A	2	
--	3	--	--	--	--			14.70	6.67			--	--	--	--	4	--
--	5	--	--	--	--					9.56	6.67	--	--	--	--	6	--
--	7	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	8	--
--	9	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	10	--
--	11	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	12	--
--	13	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	14	--
--	15	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	16	--
--	17	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	18	--
--	19	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	20	--
--	21	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	24	--
--	25	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	26	--
--	27	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	28	--
--	29	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	30	--

	A	B	C
TOTAL LOAD:	23.23 kVA	21.37 kVA	16.23 kVA
TOTAL AMPS:	87 A	80 A	59 A

TOTAL CONNECTED LOAD:	60.83 kVA	66.43 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	87 A	80 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Receptacle - General	3960 VA	100.00%	3960 VA
C	CONTACTOR CONTROLLED	Receptacle - Continuous	8400 VA	100.00%	8400 VA
G	GFCI PROTECTED	Lighting - Interior	1600 VA	125.00%	2000 VA
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)	Mechanical - Motor	15668 VA	117.25%	18370 VA
S	SHUNT TRIP	Mechanical - Cooling	10000 VA	125.00%	12500 VA
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI	Power - Continuous	21200 VA	100.00%	21200 VA
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	12CEQ1	VOLTS:	208Y/120 V	MAINS RATING:	400 A
LOCATION:	ELECTRICAL C-???	PHASES:	3	MAINS TYPE:	MCB
MOUNTING:	SURFACE	WIRES:	4	MCB RATING:	400 A
SUPPLY FROM:	T-CEQ1	AIC RATING:		MCB OPTIONS:	Y

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	C-329	TCP	20 A	1	0.00	1.20					1	20 A	RACK	D431	2	
	3	C-329	TCP	20 A	1			0.00	3.60			3	20 A	FRZR	ROOF - CONDENSING UNIT	4	
	5	H326	RACK	20 A	1					1.20	3.60	--	--	--	--	6	--
	7	FREEZER - EVAP	EVAP	20 A	2	2.08	3.60					--	--	--	--	8	--
--	9	--	--	--	--			2.08	1.20			1	20 A	RACK	E-349	10	
	11	FREEZER	LIGHTS	20 A	1					1.60	0.18	1	20 A	RECEPT	C-???	12	
--	13	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	14	--
--	15	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	16	--
--	17	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	18	--
--	19	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	20	--
--	21	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	24	--
--	25	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	26	--
--	27	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	28	--
--	29	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	30	--

		A	B	C
THIS SECTION TOTAL:	TOTAL LOAD:	6.88 kVA	6.88 kVA	6.58 kVA
	TOTAL AMPS:	58 A	58 A	55 A
TOTAL LOAD CONNECTED TO FEED THROUGH LUGS:	TOTAL LOAD:	9.68 kVA	7.82 kVA	2.98 kVA
	TOTAL AMPS:	87 A	71 A	25 A
GRAND TOTAL LOADS:	TOTAL LOAD:	16.56 kVA	14.70 kVA	9.56 kVA
	TOTAL AMPS:	145 A	129 A	80 A

TOTAL CONNECTED LOAD:	40.83 kVA	46.43 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	145 A	129 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Receptacle - General	3960 VA	100.00%	3960 VA
C	CONTACTOR CONTROLLED	Receptacle - Continuous	8400 VA	100.00%	8400 VA
G	GFCI PROTECTED	Lighting - Interior	1600 VA	125.00%	2000 VA
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)	Mechanical - Motor	15668 VA	117.25%	18370 VA
S	SHUNT TRIP	Mechanical - Cooling	10000 VA	125.00%	12500 VA
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI	Power - Continuous	1200 VA	100.00%	1200 VA
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
Yes	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	14CLS1	VOLTS:	480Y/277 V	MAINS RATING:	100 A
LOCATION:	ELECTRICAL C-???	PHASES:	3	MAINS TYPE:	MLO
MOUNTING:	SURFACE	WIRES:	4		
SUPPLY FROM:	ATS-CLS1	AIC RATING:			

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	14BLS1	PANEL	100 A	3	1.59	2.63					3	100 A	PANEL	14ELS1	2	
--	3	--	--	--	--			3.60	3.17			--	--	--	--	4	--
--	5	--	--	--	--					2.41	2.69	--	--	--	--	6	--
	7	T-CLS1	XFMR	70 A	3	1.20	1.32					1	20 A	LIGHTING	H-314, A-119, A-120, H-318, A-119A, H-F-128, H-321,...	8	
--	9	--	--	--	--			0.00	1.15			1	20 A	LIGHTING	C-329, C-330, C-331, C-???, G-342A	10	
--	11	--	--	--	--					0.00	1.27	1	20 A	LIGHTING	H-315, A306, A302, A-301, H-317, G-B-139, G-333,...	12	
	13	A-309B, A300C1, A-300A, A-300	LIGHTING	20 A	1	0.24	0.86					1	20 A	LIGHTING	EXTERIOR LIGHTING	14	
	15	H-F-101, C-F-102, A-300C, G-F-103, G-B-104	LIGHTING	20 A	1			0.93	0.00			1	20 A		SPARE	16	--
	17	W A-101	LIGHTING	20 A	1					0.57	0.00	1	20 A		SPARE	18	--
--	19	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	20	--
--	21	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	24	--
--	25	SPD		30 A	3	0.00	0.00					1	20 A		SPARE	26	--
--	27	--	--	--	--			0.00	0.00			1	20 A		SPARE	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		SPARE	30	--

	A	B	C
TOTAL LOAD:	7.84 kVA	8.85 kVA	6.93 kVA
TOTAL AMPS:	29 A	32 A	25 A

TOTAL CONNECTED LOAD:	23.62 kVA	28.55 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	32 A	34 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Lighting - Interior	19693 VA	125.00%	24616 VA
C	CONTACTOR CONTROLLED	Lighting - Exterior	2730 VA	100.00%	2730 VA
G	GFCI PROTECTED	Power - Continuous	1200 VA	100.00%	1200 VA
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. PROVIDE INTERNAL SPD.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	14BLS1	VOLTS:	480Y/277 V	MAINS RATING:	100 A
LOCATION:	ELECTRICAL C-132	PHASES:	3	MAINS TYPE:	MLO
MOUNTING:	SURFACE	WIRES:	4		
SUPPLY FROM:	14CLS1	AIC RATING:			

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	A-C-101, A-315, A-316, A-B-101	LIGHTING	20 A	1	0.58	0.40					1	20 A	LIGHTING	EXTERIOR	2	
	3	A-B-118, A400C, A-405, A-408, A-410, A-C-115,...	LIGHTING	20 A	1			0.71	0.22			1	20 A	LIGHTING	EXTERIOR	4	
	5	C-105, F-C-103, F-C-104, D-102, A-300D, D-103	LIGHTING	20 A	1					1.14	0.00	1	20 A		SPARE	6	--
	7	F-416, F-C-140, F-414, F-413, F-418, F-418A,...	LIGHTING	20 A	1	0.61	0.00					1	20 A		SPARE	8	--
	9	B-F-415, B-???, C-176, B-425, C-146, C-147, C-14...	LIGHTING	20 A	1			2.67	0.00			1	20 A		SPARE	10	--
	11	G340, D-436, D-435, D431, D-430, G-B-136,...	LIGHTING	20 A	1					1.27	0.00	1	20 A		SPARE	12	--
--	13	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	14	--
--	15	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	16	--
--	17	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	18	--
--	19	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	20	--
--	21	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	24	--
--	25	SPD		30 A	3	0.00	0.00					1	20 A		SPARE	26	--
--	27	--	--	--	--			0.00	0.00			1	20 A		SPARE	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		SPARE	30	--

	A	B	C
TOTAL LOAD:	1.59 kVA	3.60 kVA	2.41 kVA
TOTAL AMPS:	6 A	13 A	9 A

TOTAL CONNECTED LOAD:	7.60 kVA	9.34 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	13 A	11 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Lighting - Interior	6976 VA	125.00%	8720 VA
C	CONTACTOR CONTROLLED	Lighting - Exterior	620 VA	100.00%	620 VA
G	GFCI PROTECTED				
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. PROVIDE INTERNAL SPD.

BRANCH CIRCUIT PANELBOARD SCHEDULE

DESIGNATION:	14ELS1	VOLTS:	480Y/277 V	MAINS RATING:	100 A
LOCATION:	ELEC G347	PHASES:	3	MAINS TYPE:	MLO
MOUNTING:	SURFACE	WIRES:	4		
SUPPLY FROM:	14CLS1	AIC RATING:			

O	CKT NO.	CIRCUIT ROOM #	CIRCUIT TYPE	TRIP	P	A		B		C		P	TRIP	CIRCUIT TYPE	CIRCUIT ROOM #	CKT NO.	O
	1	G-F-130, E-102	LIGHTING	20 A	1	0.47	1.54					1	20 A	LIGHTING	E-124, E-354, E-120, E-121A, E-121, E-122	2	
	3	G342, G-344, G-344A, E-353, G-346	LIGHTING	20 A	1			1.29	1.88			1	20 A	LIGHTING	E-113, E-351, E-116, E-115C, E115A, E-115D, E-115E,...	4	
	5	D-125, D-127, G-343A, D-1A, D-1B, D-2A, D-2B,...	LIGHTING	20 A	1					2.06	0.63	1	20 A	LIGHTING	EXTERIOR	6	
--	7	SPARE		20 A	1	0.00	0.62					1	20 A	LIGHTING	EXTERIOR	8	
--	9	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	10	--
--	11	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	12	--
--	13	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	14	--
--	15	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	16	--
--	17	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	18	--
--	19	SPARE		20 A	1	0.00	0.00					1	20 A		SPARE	20	--
--	21	SPARE		20 A	1			0.00	0.00			1	20 A		SPARE	22	--
--	23	SPARE		20 A	1					0.00	0.00	1	20 A		SPARE	24	--
--	25	SPD		30 A	3	0.00	0.00					1	20 A		SPARE	26	--
--	27	--	--	--	--			0.00	0.00			1	20 A		SPARE	28	--
--	29	--	--	--	--					0.00	0.00	1	20 A		SPARE	30	--

	A	B	C
TOTAL LOAD:	2.63 kVA	3.17 kVA	2.69 kVA
TOTAL AMPS:	10 A	11 A	10 A

TOTAL CONNECTED LOAD:	8.49 kVA	10.30 kVA	TOTAL DEMAND LOAD:
TOTAL CONNECTED AMPS:	11 A	12 A	TOTAL DEMAND AMPS:

PANELBOARD & CIRCUIT BREAKER OPTIONS ("O" COLUMN / MCB OPTIONS ABBREVIATIONS)		LOAD CLASSIFICATION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATE DEMAND (VA)
		Lighting - Interior	7243 VA	125.00%	9054 VA
C	CONTACTOR CONTROLLED	Lighting - Exterior	1250 VA	100.00%	1250 VA
G	GFCI PROTECTED				
P	HANDLE LOCKING DEVICE (PERMANENT IN OFF)				
S	SHUNT TRIP				
X	80% RATED MAIN CIRCUIT BREAKER WITH LSI				
Y	100% RATED MAIN CIRCUIT BREAKER WITH LSI				
Z	100% RATED MAIN CIRCUIT BREAKER WITH LSIG				
	FEED THROUGH LUGS (FTL)				
	SUB FEED LUGS (SFL)				

NOTES:
1. PROVIDE INTERNAL SPD.

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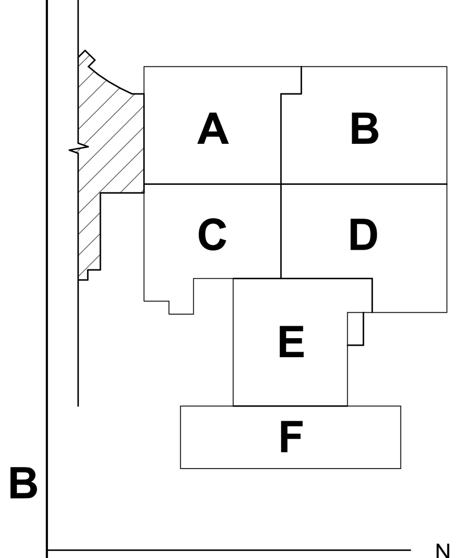
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Project Date 12.08.2023
Produced JAR JNS

SARAH KATHLEEN HEMPSTEAD
REGISTERED
NO. AR10400134
STATE OF INDIANA
ARCHITECT

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#	Revision	Date
A1	ADDENDUM #1	02.01.2024

1901 E 86th St
Indianapolis, IN 46240



KEY PLAN

M.S.D. of Washington Township

J. Everett Light Career Center - Renovation

PANELBOARD SCHEDULES - EMERGENCY

E-613