ADDENDUM 001

TO THE

DLR Group
Architecture Engineering Design
1000 Louisiana St, Suite 1100
Houston, TX 77002
Telephone 713-561-3925

PROJECT MANUAL AND DRAWINGS

FOR

January 17, 2025

SCHINDEWOLF GYM ADDITION
KLEIN INDEPENDENT SCHOOL DISTRICT

01.17.2025

DLR Group Project No. 39-25107-00

FOR COMBINED CONTRACT

NOTICE TO BIDDERS: The Project Manual and Drawings for the above referenced project are hereby amended as follows (including but not limited to):

PROJECT MANUAL

001000 – NOTICE FOR SUBCONTRACTOR PROPOSALS

ITEM NO. 1 - 11600 - ATHLETIC EQUIPMENT

a. Added Spec section in its entirety.
b. Includes Basis of Design for Basketball Main Court Backstops, Volleyball System, Wall Pads, Wood Bleachers.

ITEM NO. 2 - 262726– WIRING DEVICES

a. Changed all switches, occupancy sensors, and receptacles to be Gray instead of White. See revised spec.
b. Removed all Decora styles. See revised spec.
c. Added 2.3 RECEPTACLES B. See revised spec.
d. Changed 2.4 OCCUPANCY SENSORS A, B and C from "Whattstopper" types to Lutron types with model numbers. See revised spec.
e. Changed 2.5 DIGITAL TIMER SWITCHES A from "Whattstopper" types to Lutron types with model numbers. See revised spec.

ITEM NO. 3 - 260573 – SHORT CIRCUIT COORDINATION STUDY ARC FLASH HAZARD ANALYSIS
a. Added spec section in its entirety.

ITEM NO. 4 - 262222 – LOW VOLTAGE HARMONIC MITIGATING DISTRIBUTION TRANSFORMERS
a. Added spec section in its entirety.

ITEM NO. 5 - 262901 – MOTORS AND STARTERS
a. Added spec section in its entirety.

ITEM NO. 6 - 264313.13 – SURGE PROTECTIVE DEVICES (SPD) – STANDARD INTERRUPTING
a. Added spec section in its entirety.

ITEM NO. 7 - Substitution Request Forms
a. Added approved alternate for the gym flooring
b. Added approved alternate for the metal canopy

ITEM NO. 8 - RFI Log
a. Log as it stands on 01/17/2025

DRAWINGS

ITEM NO. 9 - SHEET C11.3 – CONSTRUCTION DETAILS (4 OF 4)
a. Added sheet in its entirety.

ITEM NO. 10 - Sheet S3.21 – ANCHOR BOLTS AND BASE PLATE DETAILS
a. Updated Base plate schedule to align with planned column sizes.

ITEM NO. 11 - Sheet MEP.23 – MEP ROOF PLAN
a. Revised True North Arrow.
b. Adjusted location of EAH-1.
c. Removed (1) WP/GFCI. See revised sheet.
d. Removed one electrical keyed note. See revised sheet.

ITEM NO. 12 - Sheet M1.1 – OVERALL MECHANICAL PLAN LEVEL 1
a. Revised True North Arrow.
b. Tagged existing hydronic pipe sizes near MECH E104.

ITEM NO. 13 - Sheet M1.1A – MECHANICAL PLAN LEVEL 1 – AREA A
a. Revised True North Arrow.
b. Adjusted location of combination temperature / humidity sensor in the gym.
c. Removed CO2 sensor in the gym and deleted corresponding M3.4 mechanical keyed note.
d. Changed temperature sensor in Ticket Booth A103 to combination temperature / humidity sensor.
e. Changed mechanical keyed note M3.4 to M3.3 in Ticket Booth A103.

ITEM NO. 14 - Sheet M1.2A – MECHANICAL PLAN LEVEL 2 – AREA A
a. Revised True North Arrow.

b. Edited mechanical keyed note M1.8 to specify air dispersion option and support framing for DuctSox. Adjusted elevation of DuctSox to coordinate with structural.
c. Adjusted DuctSox to only serve plan north and south of gym.
d. Tagged DuctSox with the following text notes: AFD and END CAP.
e. Changed AHU-G1 SA duct outlet to ductwork tee and medium pressure duct size to 76”x16” in lieu of 84”x16”.
f. Removed mechanical keyed note M2.1.
g. Changed mechanical 48”x24” sidewall return grille tags from Mark F to Mark G.
h. Changed location of AC-1 condensate to floor sink next to water heater. Tagged with mechanical keyed M2.3.
i. Removed VFD-AHU-SAF-1 in mechanical room.

ITEM NO. 15 - Sheet M4.01 - MECHANICAL CONTROLS POINTS AND SEQUENCES
a. Revised control points list.
b. Revised sequence coordination table.

ITEM NO. 16 - Sheet M5.01 - MECHANICAL SCHEDULES
a. Changed CU-1 MOCP to 30.
b. Added air device mark G to Air Device Schedule.
c. Added number of passes to condenser data to CH-3 schedule.
d. Revised AHU-G1 schedule.

ITEM NO. 17 - Sheet M5.02 – OUTSIDE AIR & BUILDING PRESSURE CALCULATIONS
a. Edited sheet name.
b. Edited AHU-ADMIN outside air calculation.
c. Added building pressurization calculation.

ITEM NO. 18 - Sheet M6.01 - MECHANICAL DETAILS
a. Removed fire/smoke damper detail.
b. Added DuctSox detail.

ITEM NO. 19 - Sheet P1.1 – OVERALL PLUMBING PLAN LEVEL 1
a. Revised True North Arrow.

ITEM NO. 20 - Sheet P1.1A – PLUMBING PLAN LEVEL 1 – AREA A
a. Added keynote P5.3 with associated size and added keynote P5.8 with associated size.
b. Revised True North Arrow.

ITEM NO. 21 - Sheet P1.2 – OVERALL PLUMBING PLAN LEVEL 2
a. Revised True North Arrow.

ITEM NO. 22 - Sheet P1.2A – PLUMBING PLAN LEVEL 2 – AREA A
a. Revised storm and overflow storm line to match with roof drain location. See revised plan.
b. Revised True North Arrow.

ITEM NO. 23 - Sheet P1.3 – DEMOLITION OVERALL PLUMBING PLAN LEVEL 1
a. Revised True North Arrow.

ITEM NO. 24 - Sheet P5.01 – PLUMBING SCHEDULES
a. Revised CW inlet size for U-1 and U-2 to ¾”.

ITEM NO. 25 - Sheet P6.01 – PLUMBING DETAILS
a. Revised detail 1 (Electric Water heater Detail) to add drip pan and remove Aquastat Pump Control.
b. Revised detail 2 (Inline Circ Pump Detail) to remove Aquastat.
c. Revised detail 8 (Vent Thru Roof) to remove Lead Flashing from detail.
d. Revised detail 9 (Floor Drain Detail) to remove “deep seal” from “P Trap” note.

e. Revised detail 17 (Sprinkler Riser and Service Elevation) detail to include extra arrow to indicate existing sprinkler zones.

ITEM NO. 26 - Sheet EF1.1 – COMPOSITE FIRE ALARM PLAN

a. Revised true north arrows. See revised plan.

ITEM NO. 27 - Sheet ED1.1 – COMPOSITE DEMOLITION ELECTRICAL LIGHTING AND POWER PLAN LEVEL 1

a. Revised true north arrows. See revised sheet.
b. Added arrows to electrical keyed notes. See revised sheet.

ITEM NO. 28 - Sheet E1.1 – COMPOSITE ELECTRICAL LIGHTING PLAN LEVEL 1

a. Revised true north arrows. See revised sheet.

ITEM NO. 29 - Sheet E1.1A – ELECTRICAL LIGHTING PLAN LEVEL 1 – AREA A

a. Revised true north arrows. See revised sheet.
b. Added electrical keyed notes. See revised sheet.
c. Revised lighting controls. See revised sheet.
d. Added circuit to exit signs. See revised sheet.
e. Relocated lighting controls. See revised sheet.
f. Added lighting controls in gym. See revised sheet.
g. All exterior lights changed to emergency type. See revised sheet.

ITEM NO. 30 - Sheet E1.2 – COMPOSITE ELECTRICAL LIGHTING PLAN LEVEL 2

a. Revised true north arrows. See revised sheet.

ITEM NO. 31 - Sheet E1.2A – ELECTRICAL LIGHTING PLAN LEVEL 2 – AREA A

a. Revised true north arrows. See revised sheet.
b. Removed lights in MEP room. See revised sheet.
c. Relocated lights in MEP room. See revised.
d. Provided circuit to exit sign. See revised sheet.

ITEM NO. 32 - Sheet E2.1 – COMPOSITE ELECTRICAL POWER PLAN LEVEL 1

a. Revised true north arrows. See revised sheet.
b. Added location of existing generator. See revised sheet.

ITEM NO. 33 - Sheet E2.1A – ELECTRICAL POWER PLAN LEVEL 1 - AREA A

a. Revised true north arrows. See revised sheet.
b. Added new panel in gym. See revised sheet.
c. Added receptacles and circuits for AV rack. See revised sheet.
d. Added WP/GFCI receptacles and circuits to exterior. See revised sheet.
e. Revised electrical keyed notes. See revised sheet.

ITEM NO. 34 - Sheet E2.2 – COMPOSITE ELECTRICAL POWER PLAN LEVEL 2

a. Revised true north arrows. See revised sheet.

ITEM NO. 35 - Sheet E2.2A – ELECTRICAL POWER PLAN LEVEL 2 – AREA A

a. Revised true north arrows. See revised sheet.
b. Added new electrical panels. See revised sheet.
c. Added new SPDs. See revised sheet.
d. Added new transformers. See revised sheet.
e. Removed (1) VFD and circuit. See revised sheet.
f. Modified electrical keyed notes. See revised sheet.

ITEM NO. 36 - Sheet E3.1 – ENLARGED ELECTRICAL POWER PLANS – DEMO & NEW

a. Revised true north arrows. See revised sheet.
b. Added electrical panels. See revised sheet.

c. Added SPDs. See revised sheet.

ITEM NO. 37 - Sheet E4.01 – ELECTRICAL ONE-LINE DIAGRAM
a. Revised both demo and new electrical one-line diagrams. See revised sheet.
b. Added and modified electrical one-line diagram keyed notes. See revised sheet.
c. Added generator and PEAK KVA load analysis. See revised sheet.

ITEM NO. 38 - Sheet E4.02 – ELECTRICAL SCHEDULES
a. Added new SPDs to schedule. See revised sheet.
b. Added new transformer to transformer schedule. See revised sheet.

ITEM NO. 39 - Sheet E5.01 – ELECTRICAL SCHEDULES
a. Revised lighting fixture schedule. See revised sheet.

ITEM NO. 40 - Sheet E5.02 – ELECTRICAL SCHEDULES
a. Updated and added all electrical panel schedules. See revised sheet.

ITEM NO. 41 - Sheet E6.01 – ELECTRICAL DETAILS
a. Revised and removed details. See revised sheet.

ITEM NO. 42 - Sheet E6.02 – ELECTRICAL DETAILS
a. Revised and removed details. See revised sheet.

ITEM NO. 43 - Sheet MEP0.21 – MEP SITE PLAN
a. Revised and removed details. See revised sheet.
b. Revised electrical keyed notes. See revised sheet.
c. Revised panel circuits for marquee sign. See revised sheet.
d. Added approximate location of existing electrical room. See revised sheet.

END OF ADDENDUM 001

SECTION 116600
ATHLETIC EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
1. Basketball backstops and accessories.
2. Wall Pads.
3. Volleyball Equipment.

B. Related sections:

1. Section 051200- Structural Steel: Structural steel framing to support basketball backstops.

1.2 SUBMITTALS

A. Submit in accordance with Section 01330 - Submittal Procedures.

1. List of proposed products and product data.
2. Shop drawings showing layout, elevations, dimensions, fabrication details, method of attachment, loads to be transmitted to building structural members, requirements for supplementary bracing or structural support members and electrical wiring diagrams.
3. Manufacturer must provide calculations and reports for tests performed by an independent testing laboratory accredited by the American Association of Laboratory Accreditation (A2LA) that clearly demonstrate compliance with minimum safety factors included in product specifications.
4. Samples of fabric for selection by Architect.
5. Manufacturer's installation and maintenance instructions.

1.3 QUALITY ASSURANCE

A. Source limitation: All components including suspension system, frame assembly, backboards, goals, electric winches, and controls for backstops shell be of a single manufacturer.
B. All welding to be performed by personnel having passed Welder Qualification testing in accordance with American Welding Society (AWS) code D1.1 or higher. Manufacturer to provide certification and test results upon request.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Provide volleyball floor sleeves, covers and floor inserts in accordance with requirements of related trades that are responsible for installation. Do not deliver balance of athletic equipment until building is enclosed and other construction within gymnasium is substantially complete.

1.5 WARRANTY

A. All Basketball Backstop support structures including clamps, fittings and tube to have a minimum warranty of 25 years from date of substantial installation. Warranty for other items to be as indicated in product specifications.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Draper, Inc., 411 South Pearl Street, Spiceland, Indiana 47385-0425; 765-987-7999.
B. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 - Product Substitution Procedures.

2.2 BASKETBALL BACKSTOPS

A. Main Court Backstops (2 Required)

1. Type:
Basketball backstop basis of design product:
- DRAPER EZ FOLD Model TF-20, ceiling-suspended, forward folding by Draper, Inc. of Spiceland, IN.

Backstop shall be a welded together main frame constructed from steel mechanical tubing to form a rigid tetrahedral "T" design of back-to-back right triangles. The main stem shall be 6" OD 11-ga. steel tubing, the top of the "T" shall be 4" OD 11-ga. steel tubing and the side braces shall be 2-1/4" OD 14-ga. steel tubing. Side braces shall join stem no higher than 4'6" above goal (18" above top of backboard). The main stem shall be long enough to allow ±6" height adjustment of either fan or rectangular banks. The folding front brace shall be jackknife type, fully adjustable, self-locking in the down position and constructed of 2-1/2" OD 13-ga. (outer) steel tubing and 2-1/4" OD 14-ga. (inner) steel tubing.

Pivot or hinge joint for folding of backstop shall not exceed 15" from roof structure except when required by architectural conditions for coordination with other trades or equipment. Pivot or hinge point to be designed in a manner to provide a minimum structural capacity of approximately 20,000 Lbs. and a safety factor of 50:1. The main backstop frame shall pivot on 1-1/4" minimum solid steel shaft secured in a milled bearing hole in 1/2" minimum steel plate hangers to ensure accurate positioning of bank.

Bank attached to the 6" OD main stem by heavy-duty bank hangers. Hangers constructed of 1" x 2" 11-ga. steel tubing and formed 1/4" steel plate with slotted holes for lateral adjustment. All banks shall have one upper bank hanger and include a goal brace, which attaches directly to the goal mounting plate and directly to the 6" main stem of the backstop to eliminate any strain on the bank and help prevent glass breakage. Backstop to have powder coat finish.

Backstop is raised or lowered by a ¼" (6.35 mm) aircraft cable, certified minimum break strength of 7,000 pounds (3178 kg), operating on cast iron sheaves with bronze oilite bearings that do not require lubrication.

Backstop shall be supported from 4" OD 11-ga. steel mechanical tubing anchored to roof structure by means of heavy steel support hangers. Attachment to building structure to be with clamps capable of supporting a minimum of 20,000 Lbs. each. Superstructure shall be designed with a minimum of four attachment clamps to produce a combined minimum attachment point safety factor of 75 to 1 and manufacture must be able to present independent testing data to substantiate safety factor.

Superstructure tubes shall be reinforced with bridging and/or bracing when truss centers exceed 12'0".

Backstop shall be provided with choice of black or white powder coat finish.

2. Operation:
   Winch basis of design product:
   - DRAPER model no. 503285 electric winch by Draper, Inc., Spiceland, IN

   Winch has a powerful ¾ HP, 115-volt, single phase, instant reverse motor with thermal overload protection that is governed to stall at 14 amps. Motor is rated at an intermittent 10-minute duty cycle. Winch motor operates at full load amperage rating of 11.5 full load amps. Winch has integral limit switches to stop travel in up and down positions.

   Winch has an oil-bath gear case with precision ball bearings and premium seals for a lifetime of maintenance-free, leak free operation. Gear case features hardened steel gears that are securely captured to take on radial and thrust loads. Double worm gear reduction is in a ratio of 200:1 to provide exceptional holding power under load and eliminates the need for special or supplemental braking systems. Winch is specified to continuously run at the maximum rated load of 1250 lbs. (566 kilograms) for the motors rated duty cycle of 10 minutes without sustaining any gear damage.

   Winch has a large 4 ½" (114 mm) diameter cable drum that is helically grooved to accept ¼" – 7 x 19 galvanized aircraft cable. Drum will accept up to 35' (10.7 meters) on a single layer and has a torsion spring tensioning roller to ensure cable tracks properly into grooves, even if cable is allowed to go slack. Large diameter, grooves and tensioning spring provide long cable life and performance.

   Winch can be mounted in any orientation that allows for correct wrap direction and unobstructed cable travel which provides extreme flexibility during installation.

   Winch Assembly is covered by a five-year limited warranty and weighs just 68 Lbs. (30.8 kilograms)

   Motor shall be controlled by an individual flush mounted, three-position, momentary contact tumbler-style key switch.

3. Bank:
   Backboard basis of design product:
   - DRAPER Model 503136 rectangular glass backboard by Draper, Inc. of Spiceland, IN.

   Backboard to be 72" x 42" (183 cm x 107 cm) to meet all NCAA, NFHS and professional requirements. Backboard frame of a heavy, brushed aluminum extrusion for maximum durability. Extended frame section of high tensile aluminum (6063-T5). Ends of the frame extrusions mitered and fitted with steel brackets on all four corners, with the upper brackets incorporating keyhole slots for mounting the backboard to the support structure at standard mounting centers.

   Goal mounting structure of a heavy, formed steel assembly, secured to the lower horizontal frame member to minimize stress on the glass section. Special steel sleeves at the goal mounting hole locations to secure rear structure to front mounting plate, forming a unitized assembly to minimize shock to the glass. Entire frame including

goal-mounting structure fitted with a shock absorbing neoprene material to cushion and protect the glass section.

1/2" (12 mm) thick, fully tempered glass section with uniform load and impact strength. Glass is tempered to meet ANSI Standard Z91.1 Class A and CPSC Standard 16 CFR1201 Category II. Glass is tested to conform with requirement of FIBA Rule 2.8 – Rigidity Test for Backboard Tempered Safety Glass. Official white border and target area is permanently fired into front side of glass section so that it cannot wear away.

Goal mount structure provided with two holes (7/16") and two studs (3/8"-16) to secure backboard and goal to a direct mount "goal brace" feature which relieves all stress and shock on the backboard conforming to NCAA (Rule 1.15.1) and NFHS (Rule 1.11.1). Goal mounting holes (4) to be standard 5" (127mm) horizontal x 4" (102 mm) vertical mounting centers.

Backboard covered by a Lifetime Limited Warranty when installed on a Draper EZ Fold basketball backstop with Goal Brace or Direct Mount Height Adjuster.

4. Backboard Safety Padding:
   Backboard Edge Padding basis of design product:
   - DRAPER Model 5032XX bolt-on backboard safety padding by Draper, Inc., Spiceland, IN.

   Molding process produces a tough "skin" on the outside of the foam padding for long life. Pre-molded corners for improved player safety. Foam has about a 15 lbs. density and durometer of approximately 35 on the Shore A scale. Molded-in steel track and bolt-on attachment system eliminate frustrating re-gluing or taping. Meets or exceeds all NCAA, NFHS and FIBA requirements. Available in Grey, Dark/Royal Blue, Red/Scarlet, Navy Blue, Marine/Columbia Blue, Kelly Green, Yellow, Forest Green, Orange, Purple, Black, and Maroon.) 10-year warranty when installed indoors.

5. Goal:
   Goal basis of design product:
   - DRAPER Model 503581 tube-tie breakaway goal by Draper, Inc. of Spiceland, IN.

   Goal is designed to withstand shock loads due to a player slam dunking and/or hanging on the rim. The rim shall deflect down when a static load in excess of 180 pounds is applied. The rim will return to the playing position once the load is removed. The function of the breakaway goal shall meet all NCAA and NFHS rules. Goal shall be set at factory for proper flex and rebound requirements but is field adjustable to ensure continued rule compliance

   Goal features tube-tie net attachment, which consists of a series of small tubes welded below the rim and a 1/8" nylon cord which passes through the tubes, catching the net loops between the tubes. The tube-tie provides superior strength and a smooth attachment system for maximum player safety. Rim shall be fabricated from a 5/8" diameter steel rod formed into an 18" inside diameter ring. Inside of ring shall be positioned 6" from the face of backboard by a heavy-duty mounting plate with mounting holes centered to match 5" x 5" or 5" x 4" backboard mounting holes. Goal will mount on standard glass, fiberglass, and wood banks.

   Rim rigidly braced by means of die cut steel braces formed and welded to underside of rim for maximum support. Goal is provided with twelve "no tie" net attachment clips,

welded to rim for net attachment. Goal painted in an official durable orange powder coat and furnished with zinc plated mounting hardware and high-quality white nylon anti-whip net. Goal to have three-year limited warranty.

6. Height Adjuster:
   8' to 10' Height Adjuster basis of design product:
   - DRAPER Model 503093/503097direct mount electric height adjuster by Draper, Inc., Spiceland, IN.

   503093/503097 direct mount electric height adjuster is built with a main frame-assembly constructed of 2" x 2-1/2" x 1/4" steel angle and 1/4" thick flat steel. Slip tubes consist of 2-5/8" O.D. outer tubes and 2-1/4" O.D. inner tubes. The 503093/503097height adjuster frame assembly is jig welded and factory assembled to ensure precise alignment and smooth operation. The 503093/503097height adjuster is electrically operated via a 110-volt single-phase linear actuator with a 25% duty cycle. Electric linear actuator provides smooth reversible motion for loads up to 600 pounds. Linear actuator motor includes cam style limit switches that will allow 24" of travel. The motor shall be controlled by an individual flush mounted, three-position, momentary contact tumbler-style key switch.

   Height adjuster includes a self-adhesive height scale that is graduated in 1" increments and labeled at 6" intervals. Height scale applied after installation to insure accuracy. Height adjuster covered by one-year limited warranty.

7. Safety Strap:
   Safety Strap basis of design product:
   - DRAPER model no. 503229 Aut-O-Loc safety strap by Draper, Inc., Spiceland, IN.

   Aut-O-Loc Safety Strap is designed to engage instantly whenever a cable or other lifting mechanism fails. Aut-O-Loc is actuated by speed or inertia in order to stop a load from falling due to a sudden failure such as a cable breakage, cable clamp failure or any increase in speed due to failure or back drive of a winch. Aut-O-Loc is rated for a 1000 lbs. (454 Kg) load and incorporates a 2” wide polyester belt with a breaking strength rating of 6000 lbs. (2,721 Kg) to withstand a 1750 lbs. (794 Kg) free-falling load without any failure of components or the belt.

   The housing and drum are manufactured from high tensile heat-treated aluminum alloy that naturally resists corrosion without paint. The drum which houses the mechanism is a singular machined piece to retain its structural integrity in the case of a load capture. The locking mechanism always remains in the ready position regardless of whether belt is retracting or extending. The unit operates at a sound level less than 20db to allow the operator to clearly hear the operational sounds of the winch and backstop, so they may stop winch operation if there are abnormal audible warnings to indicate possible mechanical issues.

   Aut-O-Loc has a universal mount that can accommodate 3 ½” (89 mm) or 4” tube (102 mm) and can mount to support tubes running parallel and/or perpendicular to the backboard. Unit is self-aligning with the use of two integral guide wheel to the force of a fall positions the unit in the ideal plane to prevent damage to unit and the supporting structure. The locking mechanism will fully engage within 3” (76 mm) of belt travel in the event of failure. The locking mechanism utilizes multiple high strength steel pawls that deploy and evenly load the drum and housing when engaged and do not rely on a singular locking mechanism.

Aut-O-Loc's retractable nylon strap includes a brightly colored warning strip that indicates when maximum payout of the belt has been reached. The strap also features a brightly colored warning indicator that deploys automatically when engaged. Aut-O-Loc is permanently locked when a load of more than 1000 lbs. (454 Kg) of force is caught to prevent possible re-use and failure of critical components that are stressed when the unit engages.

B. Side Court Backstops (4 Required)

1. Type:
Basketball backstop basis of design product:
- DRAPER EZ FOLD Model TF-20, ceiling-suspended, forward folding by Draper, Inc. of Spiceland, IN.

Backstop shall be a welded together main frame constructed from steel mechanical tubing to form a rigid tetrahedral "T" design of back-to-back right triangles. The main stem shall be 6" OD 11-ga. steel tubing, the top of the "T" shall be 4" OD 11-ga. steel tubing and the side braces shall be 2-1/4" OD 14-ga. steel tubing. Side braces shall join stem no higher than 4'6" above goal (18" above top of backboard). The main stem shall be long enough to allow ±6" height adjustment of either fan or rectangular banks. The folding front brace shall be jackknife type, fully adjustable, self-locking in the down position and constructed of 2-1/2" OD 13-ga. (outer) steel tubing and 2-1/4" OD 14-ga. (inner) steel tubing.

Pivot or hinge joint for folding of backstop shall not exceed 15" from roof structure except when required by architectural conditions for coordination with other trades or equipment. Pivot or hinge point to be designed in a manner to provide a minimum structural capacity of approximately 20,000 Lbs. and a safety factor of 50:1. The main backstop frame shall pivot on 1-1/4" minimum solid steel shaft secured in a milled bearing hole in 1/2" minimum steel plate hangers to ensure accurate positioning of bank.

Bank attached to the 6" OD main stem by heavy-duty bank hangers. Hangers constructed of 1" x 2" 11-ga. steel tubing and formed 1/4" steel plate with slotted holes for lateral adjustment. All banks shall have one upper bank hanger and include a goal brace, which attaches directly to the goal mounting plate and directly to the 6" main stem of the backstop to eliminate any strain on the bank and help prevent glass breakage. Backstop to have powder coat finish.

Backstop is raised or lowered by a ¼" (6.35 mm) aircraft cable, certified minimum break strength of 7,000 pounds (3178 kg), operating on cast iron sheaves with bronze oilite bearings that do not require lubrication.

Backstop shall be supported from 4" OD 11-ga. steel mechanical tubing anchored to roof structure by means of heavy steel support hangers. Attachment to building structure to be with clamps capable of supporting a minimum of 20,000 Lbs. each. Superstructure shall be designed with a minimum of four attachment clamps to produce a combined minimum attachment point safety factor of 75 to 1 and manufacture must be able to present independent testing data to substantiate safety factor. Superstructure tubes shall be reinforced with bridging and/or bracing when truss centers exceed 12'0".

Backstop shall be provided with choice of black or white powder coat finish.

2. Operation:
   Winch basis of design product:
   - DRAPER model no. 503285 electric winch by Draper, Inc., Spiceland, IN

   Winch has a powerful ¾ HP, 115-volt, single phase, instant reverse motor with thermal overload protection that is governed to stall at 14 amps. Motor is rated at an intermittent 10-minute duty cycle. Winch motor operates at full load amperage rating of 11.5 full load amps. Winch has integral limit switches to stop travel in up and down positions.

   Winch has an oil-bath gear case with precision ball bearings and premium seals for a lifetime of maintenance-free, leak free operation. Gear case features hardened steel gears that are securely captured to take on radial and thrust loads. Double worm gear reduction is in a ratio of 200:1 to provide exceptional holding power under load and eliminates the need for special or supplemental braking systems. Winch is specified to continuously run at the maximum rated load of 1250 lbs. (566 kilograms) for the motors rated duty cycle of 10 minutes without sustaining any gear damage.

   Winch has a large 4 ½" (114 mm) diameter cable drum that is helically grooved to accept ¼" – 7 x 19 galvanized aircraft cable. Drum will accept up to 35' (10.7 meters) on a single layer and has a torsion spring tensioning roller to ensure cable tracks properly into grooves, even if cable is allowed to go slack. Large diameter, grooves and tensioning spring provide long cable life and performance.

   Winch can be mounted in any orientation that allows for correct wrap direction and unobstructed cable travel which provides extreme flexibility during installation.

   Winch Assembly is covered by a five-year limited warranty and weighs just 68 Lbs. (30.8 kilograms)

   Motor shall be controlled by an individual flush mounted, three-position, momentary contact tumbler-style key switch.

3. Bank:
   Backboard basis of design product:
   - DRAPER Model 503136 rectangular glass backboard by Draper, Inc. of Spiceland, IN.

   Backboard to be 72" x 42" (183 cm x 107 cm) to meet all NCAA, NFHS and professional requirements. Backboard frame of a heavy, brushed aluminum extrusion for maximum durability. Extended frame section of high tensile aluminum (6063-T5). Ends of the frame extrusions mitered and fitted with steel brackets on all four corners, with the upper brackets incorporating keyhole slots for mounting the backboard to the support structure at standard mounting centers.

   Goal mounting structure of a heavy, formed steel assembly, secured to the lower horizontal frame member to minimize stress on the glass section. Special steel sleeves at the goal mounting hole locations to secure rear structure to front mounting plate, forming a unitized assembly to minimize shock to the glass. Entire frame including goal-mounting structure fitted with a shock absorbing neoprene material to cushion and protect the glass section.

1/2" (12 mm) thick, fully tempered glass section with uniform load and impact strength. Glass is tempered to meet ANSI Standard Z91.1 Class A and CPSC Standard 16 CFR1201 Category II. Glass is tested to conform with requirement of FIBA Rule 2.8 – Rigidity Test for Backboard Tempered Safety Glass. Official white border and target area is permanently fired into front side of glass section so that it cannot wear away.

Goal mount structure provided with two holes (7/16") and two studs (3/8"-16) to secure backboard and goal to a direct mount "goal brace" feature which relieves all stress and shock on the backboard conforming to NCAA (Rule 1.15.1) and NFHS (Rule 1.11.1). Goal mounting holes (4) to be standard 5" (127mm) horizontal x 4" (102 mm) vertical mounting centers.

Backboard covered by a Lifetime Limited Warranty when installed on a Draper EZ Fold basketball backstop with Goal Brace or Direct Mount Height Adjuster.

4. Backboard Safety Padding:
   Backboard Edge Padding basis of design product:
   - DRAPER Model 5032XX bolt-on backboard safety padding by Draper, Inc., Spiceland, IN.

   Molding process produces a tough "skin" on the outside of the foam padding for long life. Pre-molded corners for improved player safety. Foam has about a 15 lbs. density and durometer of approximately 35 on the Shore A scale. Molded-in steel track and bolt-on attachment system eliminate frustrating re-gluing or taping. Meets or exceeds all NCAA, NFHS and FIBA requirements. Available in Grey, Dark/Royal Blue, Red/Scarlet, Navy Blue, Marine/Columbia Blue, Kelly Green, Yellow, Forest Green, Orange, Purple, Black, and Maroon.) 10-year warranty when installed indoors.

5. Goal:
   Goal basis of design product:
   - DRAPER Model 503581 tube-tie breakaway goal by Draper, Inc. of Spiceland, IN.

   Goal is designed to withstand shock loads due to a player slam dunking and/or hanging on the rim. The rim shall deflect down when a static load in excess of 180 pounds is applied. The rim will return to the playing position once the load is removed. The function of the breakaway goal shall meet all NCAA and NFHS rules. Goal shall be set at factory for proper flex and rebound requirements but is field adjustable to ensure continued rule compliance

   Goal features tube-tie net attachment, which consists of a series of small tubes welded below the rim and a 1/8" nylon cord which passes through the tubes, catching the net loops between the tubes. The tube-tie provides superior strength and a smooth attachment system for maximum player safety. Rim shall be fabricated from a 5/8" diameter steel rod formed into an 18" inside diameter ring. Inside of ring shall be positioned 6" from the face of backboard by a heavy-duty mounting plate with mounting holes centered to match 5" x 5" or 5" x 4" backboard mounting holes. Goal will mount on standard glass, fiberglass, and wood banks.

   Rim rigidly braced by means of die cut steel braces formed and welded to underside of rim for maximum support. Goal is provided with twelve "no tie" net attachment clips, welded to rim for net attachment. Goal painted in an official durable orange powder coat and furnished with zinc plated mounting hardware and high-quality white nylon anti-whip net. Goal to have three-year limited warranty.

6. Height Adjuster:
   8' to 10' Height Adjuster basis of design product:
   - DRAPER Model 503093/503097direct mount electric height adjuster by Draper, Inc., Spiceland, IN.

   503093/503097 direct mount electric height adjuster is built with a main frame-assembly constructed of 2" x 2-1/2" x 1/4" steel angle and 1/4" thick flat steel. Slip tubes consist of 2-5/8" O.D. outer tubes and 2-1/4" O.D. inner tubes. The 503093/503097height adjuster frame assembly is jig welded and factory assembled to ensure precise alignment and smooth operation. The 503093/503097height adjuster is electrically operated via a 110-volt single-phase linear actuator with a 25% duty cycle. Electric linear actuator provides smooth reversible motion for loads up to 600 pounds. Linear actuator motor includes cam style limit switches that will allow 24" of travel. The motor shall be controlled by an individual flush mounted, three-position, momentary contact tumbler-style key switch.

   Height adjuster includes a self-adhesive height scale that is graduated in 1" increments and labeled at 6" intervals. Height scale applied after installation to insure accuracy. Height adjuster covered by one-year limited warranty.

7. Safety Strap:
   Safety Strap basis of design product:
   - DRAPER model no. 503229 Aut-O-Loc safety strap by Draper, Inc., Spiceland, IN.

   Aut-O-Loc Safety Strap is designed to engage instantly whenever a cable or other lifting mechanism fails. Aut-O-Loc is actuated by speed or inertia in order to stop a load from falling due to a sudden failure such as a cable breakage, cable clamp failure or any increase in speed due to failure or back drive of a winch. Aut-O-Loc is rated for a 1000 lbs. (454 Kg) load and incorporates a 2” wide polyester belt with a breaking strength rating of 6000 lbs. (2,721 Kg) to withstand a 1750 lbs. (794 Kg) free-falling load without any failure of components or the belt.

   The housing and drum are manufactured from high tensile heat-treated aluminum alloy that naturally resists corrosion without paint. The drum which houses the mechanism is a singular machined piece to retain its structural integrity in the case of a load capture. The locking mechanism always remains in the ready position regardless of whether belt is retracting or extending. The unit operates at a sound level less than 20db to allow the operator to clearly hear the operational sounds of the winch and backstop, so they may stop winch operation if there are abnormal audible warnings to indicate possible mechanical issues.

   Aut-O-Loc has a universal mount that can accommodate 3 ½” (89 mm) or 4” tube (102 mm) and can mount to support tubes running parallel and/or perpendicular to the backboard. Unit is self-aligning with the use of two integral guide wheel to the force of a fall positions the unit in the ideal plane to prevent damage to unit and the supporting structure. The locking mechanism will fully engage within 3” (76 mm) of belt travel in the event of failure. The locking mechanism utilizes multiple high strength steel pawls that deploy and evenly load the drum and housing when engaged and do not rely on a singular locking mechanism.

   Aut-O-Loc’s retractable nylon strap includes a brightly colored warning strip that indicates when maximum payout of the belt has been reached. The strap also features

a brightly colored warning indicator that deploys automatically when engaged. Aut-O-Loc is permanently locked when a load of more than 1000 lbs. (454 Kg) of force is caught to prevent possible re-use and failure of critical components that are stressed when the unit engages.

2.3 WALL PADDING

A. Gym Addition

Wall padding basis of design product:

- DRAPER Model ECOVISION GYM WALL PADS, by Draper, Inc. of Spiceland, IN.

Wall pads to be standard sized 2' x 5' 10” and custom sizes as indicated on project plans. Bidder is responsible for verification of job conditions and dimensions.

Wall pads shall be constructed using 7/16" thick urea-formaldehyde free oriented strand board (OSB) backer and 2" thick flexible urethane cushioning material bonded together, then fully wrapped with flexible PVC and scrim laminate that features a leather grain emboss pattern. Cover shall have average weight of 14 oz. per square yard, breaking strength of 350 PSI, tear resistance of 65 pounds and be rated as self-extinguishing in accordance with California State Fire Code F-230 and Class-A Rated in accordance with requirements of NFPA-101. Cover to be resistant to rot, mildew, fungus and ultraviolet light and is available in Red, Dark Blue, Marine Blue, Beige, Grey, Black, Forest Green, Kelly Green, Maroon, Orange, Yellow, White, Purple and Navy Blue. Panel front and edges shall be fully wrapped and securely stapled to the OSB backer so that the backer is not exposed on front or four sides. Pads shall be supplied with concealed Z-clip attachment at panel top and bottom.

Entire wall pad assembly shall have been submitted to indoor air quality evaluation (IAQ) using a GREENGUARD product evaluation protocol following the requirements of The GREENGUARD Environmental Institutes (GEI) Product Certification Program, ASTM Standard D5116 and the United States Environmental Protection Agency and modeled based on GEI requirements for a standard gymnasium loading and ASHRAE 62.1 – 2004 ventilation conditions. Pad assembly shall qualify as low emitting and found to met all of the requirements of the UL GREENGUARD GOLD and UL GREENGUARD certification program which are emissions of total volatile organic compounds = 0.22 mg/m3, formaldehyde = 0.0135 ppm, total aldehydes = 0.043 ppm, individual volatile organic compounds = 1/1000 TLV and = ½ chronic REL and total phthalates = 0.01 mg/m3.

Pads shall meet all requirements of ASTM F2440-18.

Manufacturer must be able to provide independent lab and test reports to verify compliance with above standards and certifications.

Provide molded Cut-out trim kits in sizes and quantities indicted on drawings and as required by job conditions. Cut-out trim to be constructed of flexible, flame retardant molded urethane. Cut-out kits may be single units for switches, receptacles or other small obstructions or field cut and assembled kits that can be cut and assembled to exact shape and size for large obstructions. Choose Black or Gray cut-outs to best match wall pad vinyl.

2.4 VOLLEYBALL EQUIPMENT

A. Gym Addition

1. Power Volleyball System (2 required).
   Volleyball System basis of design product:
   - DRAPER Model 500001 PVS Power Volleyball System by Draper, Inc. of Spiceland, IN.

   The 500001 PVS consists of one standard with power winch and one standard with adjustable cable anchor collar. Post are telescoping type to meet all FIVB, USVBA, NCAA and NFHS requirements for competition. Post adjust from 6'1" (1.854 m) to 8' 4" (2.540 m) in 1" (2.540 cm) increments to meet all age group height settings from elementary school use to international competition for both men and women. The 6' (1.890 cm) bottom upright is 3½" OD (8.890 cm) schedule 80 aluminum tube, with a wall thickness of .300" (.7620 cm). The bottom upright is provided with a special rubber foot to protect finished floors and to provide precise net height adjustment. The upper telescoping adjustable tube is 2-7/8" OD (7.303 cm) schedule 80 aluminum tube, with a wall thickness of .276" (.7010 cm) with a 4" (10.16 cm) diameter pulley and oilite bushing.

   The tensioning winch incorporate a heavy-duty, self-locking worm gear mechanism. Winch furnished with a heavy 2" (5 cm) wide high tensile nylon strap with heavy-duty snap hook to eliminate the possibility of hook breaking and guarantee safe connection to net top cable. The power winch is furnished complete with a folding handle for player safety.

   Systems shall come complete with DRAPER Model 500004 Power Volleyball Net. Net is 32' (9.75 M) long x 39-3/8" (1 M) high. Netting is high quality 4" square mesh made of 2.5 mm black knotless nylon with vinyl coated polyester hem double stitched around entire perimeter of net. Top hem of net furnished with a 40'6" long x 1/8" diameter 2000 lb. minimum breaking strength galvanized aircraft cable with a nylon coating (3/16" OD) to protect against fraying. Ends of cable have loops with heavy swaged type fittings for easy installation. Hems in end of net furnished with a pocket for use with a 1/2" diameter fiberglass dowel rod. Ends of net have six 1" wide polypropylene tension straps with buckles for providing additional tightening of net. Bottom of net has a 1/4" diameter braided white nylon rope equipped with a spring-loaded, pressure type rope tensioner.

   System also to include DRAPER Model 500016 Combination Antenna and Boundary Marker.

2. Floor Plate, solid brass, flanged (6 required).
   Volleyball Cover Plate basis of design product:
   - DRAPER Model 501002 Brass Floor Plate by Draper, Inc. of Spiceland, IN.

   Floor plate shall be solid brass alloy with permanently attached hinged cover. Outer ring shall have six mounting holes to allow cover plate to be attached to wood floor. Plate shall be installed flush with playing surface. Floor plate shall be 73/8" outside diameter by 3/8" thick. The diameter of opening shall be 4-1/4". Floor plate shall be supplied with six #10 x 1½" brass flat head wood screws for mounting plate to wood floor.

3. Floor Sleeve (One per cover plate required).
   Floor Sleeves basis of design product:
   - DRAPER Model 501006 3-1/2" I.D. Floor Sleeve by Draper, Inc. of Spiceland, IN.

   Floor sleeve constructed of steel mechanical tubing with an inside diameter of 3-1/2", welded to an octagonal shaped bottom plate. Sleeve is 8-1/2" long and designed to be installed with the bottom at 9 ½" below the playing surface.

4. Transporter (1 required).
   Heavy-Duty Volleyball Post Transporter/Storage Cart basis of design product:
   - DRAPER model 501016 transporter/storage cart by Draper, Inc., Spiceland, IN

   Heavy-duty transporter/storage cart can store, and transport one referee stand and six volleyball posts. Transporter/Storage Cart is provided with blue vinyl covered bottom shelf and pouch to allow for storage of nets, pads antennas and boundary markers. Frame is rectangular steel tubing finished with attractive gloss black powder coat. Transporter/Storage Cart rolls 4" x 1 1/4" non-marking swivel casters.

5. Judge's Stand (2 required).
   Judges stand basis of design product:
   - DRAPER Model 5014xx (xx=color) by Draper, Inc. of Spiceland, IN.

   Judges stand is designed to be free-standing and does not require attachment to a volleyball post for stability. Frame is constructed of sturdy 1 5/16” OD steel tubing with a tough and attractive gloss black powder coat finish. All four legs have protective rubber tips.

   Judges stand platform is 32 inches wide and consist of vinyl covered plywood that is fully padded on front and sides for player safety. Platform is located 48” above playing surface. Maximum allowable load is 250 Lbs.

   Judges Stand folds flat to an overall size of 84” (h) x 30” (w) x 10” (d) for easy storage and transportation. Judges stand includes two 4” non-marking wheels for easy transportation.

   Judges stand supplied with safety padding for player protection. Each leg and cross member toward the court shall have 1” thick urethane foam and 14 oz. leather-grain embossed wraps with hook and loop attachment. Last two digits indicate pad color. Colors available: 01 White; 02 Marine Blue; 03 Brown; 04 Red; 05 Beige; 06 Orange; 07 Yellow; 08 Grey; 09 Maroon; 10 Dark Blue (standard); 11 Black; 12 Purple; 13 Forest Green; 14 Kelly Green; 15 Navy Blue. Consult your Draper, Inc. dealer for details and color

   Color: TBD

6. Protective Pads for Standards (4 required).
   Volleyball Post Padding basis of design product:
   - DRAPER Model 5011XX Official Padding for 3-1/2" O.D. Volleyball Systems by Draper, Inc. of Spiceland, IN.

   Pads hinged at corners to fold neatly around posts and tensioning winch to provide maximum player protection. Pads are constructed of 1 1/2" thick polyethylene foam

filler covered with polyester reinforced vinyl with three (3) hook and loop fastening straps for quick set-up and take-down, and constructed to accommodate winch, or judges stand when used.

Standard pads are Dark Blue in color unless otherwise specified. Last two digits indicate pad color. Colors available: 01 White; 02 Marine Blue; 04 Red; 05 Beige; 06 Orange; 07 Yellow; 08 Grey; 09 Maroon; 10 Dark Blue (standard); 11 Black; 12 Purple; 13 Forest Green.

Pads sold each unless otherwise specified.

Color: TBD

PART 3 – EXECUTION

3. 1 PREPARATION

A. Coordinate support of basketball backstops and gymnasium divider curtains with roof structure to ensure proper distribution of loads and adequacy of attachment points. Ensure that building structure has been designed for loads of specific gymnasium divider to be provided. Provide additional structural framing members as required in accordance with Section [_____] - [_____].
B. Coordinate configuration, size, and installation of basketball backstops and gymnasium divider curtains with height, slope, and type of building structure and lighting fixtures, mechanical equipment, ductwork, fire-suppression system, bleachers, athletic equipment, and other potential obstructions.
C. Field-verify dimensions prior to fabrication.
D. Coordinate electrical requirements for motorized operating mechanism to ensure proper power source, conduit, wiring, and boxes for keyed switches. Prior to installation, verify type and location of power supply. See “Electrical Contractor Shall Provide and Install”
E. Coordinate delivery of Volleyball Floor Sleeves and Covers with sub-contractors responsible for installation.
F. For installations made after wood gymnasium flooring is installed, provide protection and exercise care not to damage flooring.

3. 2 INSTALLATION

A. Install in accordance with manufacturer's written instructions and shop drawings.
B. Install even, plumb and level.
C. Install control switch such that operator has view of complete basketball backstop during lowering and raising.
D. Adjust limit switches of electric winch to ensure accurate position in both stored and lowered positions.

3. 3 TESTING AND DEMONSTRATION

A. Operate basketball backstops to ensure proper lifting and lowering. Adjust as required to ensure smooth operation and accurate positioning.
B. Demonstrate to Owner's designated representative complete operation and required maintenance.

END OF SECTION

SECTION 260573 - SHORT CIRCUIT COORDINATION STUDY ARC FLASH HAZARD ANALYSIS

PART 1 - GENERAL

1.1SCOPE

A. The Contractor shall furnish short-circuit and protective device coordination studies for the electrical power system, including all existing and newly installed electrical equipment. The analysis and study shall include all distribution branches, and begin at the main overcurrent protective device.

B. Provide a complete short circuit study, equipment interrupting or withstand evaluation, and protective device coordination study for the power distribution system. Normal operating method, alternate operation, and operations which could result in maximum fault conditions shall be thoroughly addressed in the study. The study shall assume all motors operating at rated voltage and speed. Electrical equipment bus impedance shall be assumed as zero. Short circuit momentary duties and interrupting duties shall be calculated on the basis of maximum available fault current at the switchboard busses and motor control centers (where installed).

C. A protective device coordination study shall be performed to determine appropriate relay settings. The study shall include all distribution switchboards, motor control centers (where installed, and panel board main circuit breakers. Panel board branch circuit devices need not be considered. The phase over current and ground fault protection shall be included as well as setting for all other adjustable protective devices.

D. An equipment evaluation study shall be performed to determine the adequacy of circuit breakers, controllers, surge arresters, busways, switches, and fuses by tabulating and comparing the short circuit ratings of these devices with the available fault currents.

E. Any problem areas or inadequacies shall be promptly brought to the ENGINEERS attention.

F. The Contractor shall furnish an Arc Flash Hazard Analysis Study per NFPA 70E - Standard for Electrical Safety in the Workplace, reference Article 130.5 and Annex D.

1.2 REFERENCES

A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

1. IEEE 141 - Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems

2. IEEE 242 - Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems

3. IEEE 399 - Recommended Practice for Industrial and Commercial Power System Analysis

4. IEEE 241 - Recommended Practice for Electric Power Systems in Commercial Buildings

5. IEEE 1015 - Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems.

6. IEEE 1584 - Guide for Performing Arc-Flash Hazard Calculations

B. American National Standards Institute (ANSI):

1. ANSI C57.12.00 – Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers

2. ANSI C37.13 – Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures

3. ANSI C37.010 – Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis

4. ANSI C37.41 – Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories.

C. The National Fire Protection Association (NFPA)

1. NFPA 70 - National Electrical Code, latest edition

2. NFPA 70E - Standard for Electrical Safety in the Workplace

1.3 SUBMITTALS FOR REVIEW/APPROVAL

A. The short-circuit and protective device coordination studies shall be submitted to the design Engineer prior to receiving final approval of the distribution equipment shop drawings and/or prior to release of equipment drawings for manufacturing. If formal completion of the studies may cause delay in equipment manufacturing, approval from the Engineer may be obtained for preliminary submittal of sufficient study data to ensure that the selection of device and characteristics will be satisfactory.

1.4 SUBMITTALS FOR CONSTRUCTION

A. The results of the short-circuit, protective device coordination and arc flash hazard analysis studies shall be summarized in a final report. No more than five (5) bound copies of the complete final report shall be submitted. For large system studies, submittals requiring more than five (5) copies of the report will be provided without the section containing the computer printout of the short-circuit input and output data. Additional copies, where required, shall be provided on CD in PDF format.

B. The report shall include the following sections:

1. One-line diagram

2. Descriptions, purpose, basis and scope of the study

3. Tabulations of circuit breaker, fuse and other protective device ratings versus calculated short circuit duties

4. Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip unit settings, fuse selection

5. Fault current calculations including a definition of terms and guide for interpretation of the computer printout

6. Incident energy and flash protection boundary calculations

7. Recommendations for system improvements, where needed

8. Executive Summary.

9. Equipment manufacturer’s information used to prepare study

10. Assumptions made during study.

1.5 QUALIFICATIONS

A. The short-circuit, protective device coordination and arc flash hazard analysis studies shall be conducted under the supervision and approval of a Registered Professional Electrical Engineer skilled in performing and interpreting the power system studies. The Registered Professional Electrical Engineer shall be a full-time employee of the Engineering Services Organization.

PART 2 - PRODUCT

2.1 DATA COLLECTION

A. The Contractor shall furnish all data as required by the power system studies. The Engineer performing the short-circuit, protective device coordination and arc flash hazard analysis studies shall furnish the Contractor with a listing of required data immediately after award of the contract. The Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to the release of the equipment for manufacturing.

B. Source combination may include present and future motors and generators.

C. Load data utilized may include existing and proposed loads obtained from Contract Documents provided by Owner or Contractor.

D. Include fault contribution of existing motors in the study, with motors <100 hp grouped together. The Contractor shall obtain required existing equipment data, if necessary, to satisfy the study requirements.

2.2 SHORT-CIRCUIT AND PROTECTIVE DEVICE EVALUATION STUDY

A. Use actual conductor impedances if known. If unknown, use typical conductor impedances based on IEEE 141.

B. Transformer design impedances shall be used when test impedances are not available.

C. Provide the following:

1. Calculation methods and assumptions

2. Selected base per unit quantities

3. One-line diagram of the system being evaluated

4. Source impedance data, including electric utility system and motor fault contribution characteristics

5. Typical calculations

6. Tabulations of calculated quantities

7. Results, conclusions, and recommendations.

D. Calculate short-circuit momentary and interrupting duties for a three-phase bolted fault at each:

1. Electric utility’s supply termination point

2. Incoming switchgear

3. Low voltage switchgear

4. Motor control centers

5. Branch circuit panelboards

6. Other significant locations throughout the system.

E. For grounded systems, provide a bolted line-to-ground fault current study for areas as defined for the three-phase bolted fault short-circuit study.

F. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to short circuit ratings

2. Adequacy of switchgear, motor control centers, and panelboard bus bars to withstand short-circuit stresses

3. Adequacy of transformer windings to withstand short-circuit stresses

4. Cable and busway sizes for ability to withstand short-circuit heating

5. Notify Owner in writing of any new or existing circuit protective devices improperly rated for the calculated available fault current.

2.3 PROTECTIVE DEVICE COORDINATION STUDY

A. Proposed protective device coordination time-current curves shall be graphically displayed on log-log scale paper.

B. Include on each curve sheet a complete title and one-line diagram with legend identifying the specific portion of the system covered.

C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which device is exposed.

D. Identify device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.

E. Plot the following characteristics on the curve sheets, where applicable for this project:

1. Electric utility’s protective device

2. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands

3. Low voltage equipment circuit breaker trip devices, including manufacturer’s tolerance bands

4. Transformer full-load current, magnetizing inrush current, and ANSI transformer withstand parameters

5. Conductor damage curves

6. Ground fault protective devices, as applicable

7. Pertinent motor starting characteristics and motor damage points

8. Other system load protective devices for the largest branch circuit and the largest feeder circuit breaker in each motor control center.

F. Provide time margins between device characteristics per the following requirements such that selective coordination is provided. Selective coordination shall be proven with a coordination study provided by the equipment manufacturer with the use of time current curves, or manufacturers' selective coordination tables, or both.

1. Emergency (NEC Article 700) - all currents, all times

2. Legally Required Stand-by (NEC Article 701) - all currents, all times

3. Elevator Systems (NEC Article 620) - all currents, all times

4. Health Care Essential Electrical Systems (NEC Article 517)

a. Equipment Branch - 0.10 seconds

b. Critical Branch - 0.10 seconds

c. Life Safety Branch - 0.10 seconds

2.4 ARC FLASH HAZARD ANALYSIS

A. The arc flash hazard analysis shall be performed according to the IEEE 1584 equations that are presented in NFPA 70E, Annex D.

B. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short-circuit and coordination study model. Alternative methods shall be presented in the proposal.

C. The flash protection boundary and the incident energy shall be calculated at all significant locations in the electrical distribution system (switchboards, switchgear, motor-control centers, panelboards, busway and splitters) where work could be performed on energized parts.

D. The Arc-Flash Hazard Analysis shall include all significant locations in 240 volt and 208 volt systems fed from transformers equal to or greater than 75 kVA.

E. Safe working distances shall be specified for calculated fault locations based upon the calculated arc flash boundary considering an incident energy of 1.2 cal/cm2.

F. The Arc Flash Hazard analysis shall include calculations for maximum and minimum contributions of fault current magnitude. The minimum calculation shall assume that the utility contribution is at a minimum and shall assume a minimum motor load. Conversely, the maximum calculation shall assume a maximum contribution from the utility and shall assume motors to be operating under full-load conditions.

G. Arc flash computation shall include both line and load side of main breaker calculations, where necessary.

H. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. Maximum clearing time will be capped at 2 seconds based on IEEE 1584 section B.1.2.

2.5 REPORT SECTIONS

A. Input Data:

1. Short-circuit reactance of rotating machines
2. Cable and conduit materials
3. Transformers
4. Circuit resistance and reactive values.

B. Short-Circuit Data:

1. Source fault impedance and generator contributions
2. X to R ratios
3. Asymmetry factors
4. Motor contributions
5. Short circuit kVA
6. Symmetrical and asymmetrical fault currents.

C. Recommended Protective Device Settings:

1. Phase and Ground Relays:
   a. Current transformer ratio
   b. Current setting
   c. Time setting
   d. Instantaneous setting
   e. Specialty non-overcurrent device settings
   f. Recommendations on improved relaying systems, if applicable
2. Circuit Breakers:
   a. Adjustable pickups and time delays (long time, short time, ground)
   b. Adjustable time-current characteristic
   c. Adjustable instantaneous pickup

d. Recommendations on improved trip systems, if applicable.

D. Incident energy and flash protection boundary calculations

1. Arcing fault magnitude

2. Device clearing time

3. Duration of arc

4. Arc flash boundary

5. Working distance

6. Incident energy

7. Hazard Risk Category

8. Recommendations for arc flash energy reduction

PART 3 - EXECUTION

3.1 FIELD ADJUSTMENT

A. The Contractor shall adjust relay and protective device settings according to the recommended settings table provided by the coordination study. Field adjustments shall be completed by the engineering service division of the equipment manufacturer under the Startup and Acceptance Testing contract portion.

B. Make minor modifications to equipment as required to accomplish conformance with short circuit and protective device coordination studies.

C. Notify Owner in writing of any required major equipment modifications.

D. Following completion of all studies, acceptance testing and startup by the field engineering service division of the equipment manufacturer, a 2-year warranty shall be provided on all components manufactured by the engineering service parent manufacturing company.

3.2 ARC FLASH WARNING LABELS

A. The vendor shall provide a 3.5 in. x 5 in. thermal transfer type label of high adhesion polyester for each work location analyzed.

B. The label shall have an orange header with the wording, “WARNING, ARC FLASH HAZARD”, and shall include the following information:

1. Location designation

2. Nominal voltage

3. Flash protection boundary

4. Hazard risk category

5. Incident energy

6. Working distance

7. Engineering report number, revision number and issue date.

C. Labels shall be machine printed, with no field markings.

D. Arc flash labels shall be provided in the following manner and all labels shall be based on recommended overcurrent device settings.

1. For each 600, 480 and applicable 208 volt panelboards, one arc flash label shall be provided.

2. For each motor control center, one arc flash label shall be provided.

3. For each low voltage switchboard, one arc flash label shall be provided.

E. Labels shall be field installed by the engineering service division of the equipment manufacturer under the Startup and Acceptance Testing contract portion.

3.3 ARC FLASH TRAINING

A. The equipment vendor shall train personnel of the potential arc flash hazards associated with working on energized equipment (minimum of 4 hours). Maintenance procedures in accordance with the requirements of NFPA 70E shall be provided in the equipment manuals. The training shall be certified for continuing education units (CEUs) by the International Association for Continuing Education Training (IACET).

END OF SECTION 260573

SECTION 262222 - LOW VOLTAGE HARMONIC MITIGATING DISTRIBUTION TRANSFORMERS

PART 1 - GENERAL

1.1SCOPE

A. Provide 480 - 208Y/120 volt 3 phase, 4 wire transformers as shown, scheduled and as specified.

B. The type of transformers required are dry-type harmonic mitigating transformers.

1.2 STANDARDS

A. Products shall be designed, manufactured, tested and installed in compliance with applicable ANSI/IEE and NEMA standards.

1. All low voltage transformers shall be UL listed and labeled.

2. All low voltage transformers 15 kVA and larger shall meet or exceed post-January 1, 2016 U.S. DOE efficiency requirements Energy, 10 C.F.R. §431.196(a)(2) (2015) regardless of whether transformer date of manufacture is pre or post January 1, 2016.

3. All low voltage transformers 15 kVA and larger shall be tested for efficiency in accordance with U.S. DOE test methods Energy, 10 C.F.R. §431, Subpart K, Appendix A (2015).

1.3 ACCEPTABLE MANUFACTURERS

A. Power Quality International, Inc. (PQI)

1.4 SUBMITTALS

A. Shop drawings shall include, but not be limited to:

1. Cutsheets of transformers with sound and load ratings, dimensions, weights, impedance rating, insulation type, temperature rise, phase displacement and tap configurations.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

A. National Electrical Code.

B. Local, municipal, and/or state codes that have jurisdiction.

1.6 DESIGN OBJECTIVES

A. The design of the electrical distribution system, as described by this specification and detailed in the accompanying electrical drawings, provides for control of the harmonic currents that are generated by non-linear electronic loads. These design objectives, and the various standards that apply, are detailed herein as follows:

1. To reduce the 'penalty losses' that are produced by harmonic currents, which would otherwise result in an increase in the cost-of-power, apparatus heating and the cost of air-conditioning, within economic limits.

2. To limit harmonic current injection into the Point of Common Coupling (PCC), as required in IEEE 519, Section 10.4, Table 10.3.

3. To limit positive, negative and zero sequence harmonic currents in the distribution system so that the Individual Harmonic Distortion of Voltage (IHDv) levels do not exceed 3% at the loads and the Total Harmonic Distortion of Voltage (THDv) levels do not exceed 5% at the loads, as recommended in IEEE 519, Section 6.6, Paragraph 2.

4. To limit zero sequence harmonic currents in the neutral conductors so that their ratings are not exceeded and Common Mode Noise (CMN) neutral-ground voltage levels do not exceed 5 volts at the loads, as recommended by CBEMA. Where computers and/or audio/visual devices are interconnected into a communications 'network', to limit the difference in CMN to < 2 volts at all loads, as recommended by EPRI.

1.7 FACTORY TESTING

A. The manufacturer shall provide linear and non-linear efficiency test on each transformer. Transformers not meeting the following criteria will not be used on this job. The data shall be included in the Operations and Maintenance Manuals. The tests shall be conducted between 0% and 100% full load and shall be plotted for each transformer.

1. Linear Load Efficiency: Transformer shall meet or exceed post-January 1, 2016 U.S. DOE efficiency requirements Energy, 10 C.F.R. §431.196(a)(2) (2015) regardless of whether transformer date of manufacture is pre or post January 1, 2016. Proof of compliance Type Tests, for each transformer type and rating, must be based on U.S. DOE test methods Energy, 10 C.F.R. §431, Subpart K, Appendix A (2015). Type Test are required with each submission.

2. Non-Linear Load Efficiency: This requirement is defined as meeting the efficiency requirements of NEMA TP1-2002 under non-linear loading, which has 100% THDI and a harmonic profile that is based on IEEE 519, Table 4.3 - 'Spectrum of Typical Switch Mode Power Supplies'. Proof of compliance Type Tests, for each transformer type and rating, must be based on the Voltage and Current Difference Loss Measurement Method using laboratory grade CTs and 0.1% accuracy Wattmeters OR shall be calculated in accordance with IEEE C57.110. Type Tests are required with each submission. The Power In – Power Out Measurements Method is not an acceptable test method due to the limitations associated with CT, PT and WattMeter accuracy.

1.8 FACTORY NAME PLATES

A. Provide two (2) – name plates per transformer indicating all code required items (i.e. kVA voltage, phase etc.). Name plates shall also include, phase shift and a name as indicated on transformer schedule or one-line diagram. The name plates shall be located on a non removable section of the outer shell.

1.9 ALTERNATES

A. In the event the contractor wishes to propose an alternative to the specified Harmonic Mitigating Transformers and/or Zero Sequence Harmonic Filters, the contractor shall provide the engineer with a detailed alternate Harmonic Mitigation Plan, which includes a schedule of proposed replacement devices that will meet all of the requirements described in this specification. The equipment proposal from the non-specified vendor(s) shall include the following information:

1. Evidence of significant relevant application experience.

2. Quantitative performance data including before/after effect on voltage distortion at the loads that demonstrates the vendor's capability to achieve the harmonic treatment called for in this specification.

3. Product technical specification and installation wiring diagram.

4. Pertinent product application information.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Type 'DV', Single Output, Harmonic Filtering Distribution Transformers (Dry Type) shall be provided for all transformers indicated with a zero (0), thirty (30), fifteen (15), forty-five (45), twenty (20) and forty (40) degree primary to secondary phase shifts.

B. Harmonic mitigating transformers with Wye configured primary windings are not acceptable.

C. Harmonic mitigating transformers without zig-zag configured secondary windings that completely cancel zero-sequence flux under balanced load conditions are not acceptable.

2.2 PRODUCT DESCRIPTION

A. The design of the harmonic filtering transformers, described in this Specification, shall be optimized for harmonic rich environments that are characterized by high neutral currents. These transformers shall:

1. Provide an ultra-low zero sequence impedance path for all load-generated zero sequence harmonic currents, including I_3, I_9, I_{15}, I_{21}, etc.

2. Provide for the cancellation of the 5th, 7th, etc. positive and negative sequence harmonic currents, at the units' primary bus, when 0° and 30° (15° and 45°) phase-shifting units are used in combination.

3. Provide for the cancellation of the 5th, 7th, 11th, 13th, etc. positive and negative sequence harmonic currents, at the units' primary bus, when 0°, 20° and 40° phase-shifting units are used in combination.

4. Provide for the cancellation of 5th, 7th, 11th, 13th, 17th, 19th, etc. positive and negative sequence harmonic currents, at the units' primary bus, when 0°, 15°, 30° and 45° phase-shifting units are used in combination.

5. Harmonic cancellation shall be by electromagnetic means only. No capacitors or electronics shall be used.

6. Reduce voltage and current distortion and imbalance at the primary terminals of the unit.

7. Reduce current crest factor at the primary terminals of the unit.

8. Reduce average and peak phase current on the primary terminals of the unit.

9. Reduce system losses.

10. Improve system power factor.

11. Reduce voltage distortion in the secondary sub-system.

2.3 DEVICE CONFIGURATION

A. Type: ANN

B. Insulation Class: 220°C

C. Temperature Rise: 150°C

D. System Frequency: 60 Hertz

E. Primary Voltage: 480 Volts Delta (Wye configured primary is not acceptable)

F. Secondary Voltage: 208/120 Volts Zig-Zag with two (2) windings per core leg for 0 degree phase shift and 208/120 Volt modified zig-zag with three (3) windings per core leg for 30, 15, 45, 20 and 40 degree phase shifts.

G. Phase: Three Phase

H. Rating: as scheduled on drawings

I. Primary-Secondary Phase-Shift: as scheduled on drawings

2.4 TRANSFORMER CHARACTERISTICS

A. Key Requirements

1. Positive & negative sequence impedance: standard %
2. Zero sequence reactance at 60Hz: < 0.3 %
3. Zero sequence impedance at 60Hz: < 0.9 %
4. Crest Factor suitability: 5
5. BIL: 10,000 Volts (windings 1000V
6. Capability to deliver full nameplate kVA to loads of K-factor up to: 30
7. Neutral connection shall be rated at two times the ampacity of the secondary phase current.

B. Basic Requirements:

1. Built to the following Standards: CSA C9-M1981, CSA22.2 No.47-1977, UL 506, IEEE C57.110, and NEMA ST 20
2. Three-phase, common core construction
3. Convection air-cooled
4. Copper or Aluminum Windings
5. Insulation Class: R (200 degree C)
6. Magnetic field at 1.5 feet: max. 0.1 Gauss
7. Full load Efficiency at 170°C
8. Magnetizing Inrush Current: max. 10 times full load rating
9. Taps: 2 x ± 2.5%
10. Sound level: per C57.12.91
11. Enclosure: ventilated, drip-proof NEMA-1 totally enclosed
12. Finish: PQI white power coat
13. Anti-vibration pads shall be used between the core and the enclosure

2.5 VENDOR INFORMATION

A. Evidence of significant relevant application experience.

B. Quantitative performance data including before/after effect on voltage distortion at load panels that demonstrates the capability to achieve the harmonic mitigation called for in this specification.

C. Product technical specification.

D. Pertinent product application information.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install transformer in accordance with manufacturer's written instructions, and recognized industry practices.

B. Housekeeping Pad: Provide a nominal 3-½" high, 2500 PSI (28 Day) concrete reinforced pad with number 6 welded wire mesh. The pad shall conform to the shape of the transformer and extend at least 3 inches beyond the length and width of the transformer. All corners of the pad shall be rounded.

C. Mounting: Install floor mounted transformers on properly sized rubber-in-shear vibration isolators. Trapeze mounted transformers shall use rubber-in-shear hangers. Wall mounted transformers shall not be mounted directly to the wall without vibration isolation.

D. Connection: Route conductors in a minimum of 2 feet of flexible steel conduit to transformer enclosure. Provide grounding conductor sized per NEC, connected to the building grounding electrode system.

3.2 FIELD TESTING

A. Insulation, Tests: Prior to energization, check transformers windings for continuity and test the insulation resistance. Tests shall be made using a Biddle Megger or equivalent test instrument, per manufacturers' recommendations.

Continuity Check

Primary	Pass / Fail		Secondary	Pass / Fail
H_1-H_2			X_1-X_0	
H_2-H_3			X_2-X_0	
H_3-X_1			X_3-X_0	

Insulation Resistance Test (1000V, DC)

Connections	Megohms
High to Low, Gnd	
Low to High, Gnd	
High, Low to Gnd	

B. Tap Setting: Measure current and voltage under load conditions to provide correct tap settings.

Tap Setting	Primary Voltage Reading		Secondary Voltage Reading	
	H_1-H_2		X_1-X_0	
	H_2-H_3		X_2-X_0	
	H_3-X_1		X_3-X_0	

C. Receptacle Tests: At the furthest receptacle from each panel serving a computer or copier, a power quality meter shall be used to determine the following:

Receptacle Test	
Panel Name (Fed From)	
Circuit Number	
Room Name or Number	
Location Inside Room	
Voltage (Line-Neutral)	
THD_V	
Voltage (Neutral-Ground)	
Current (Phase)	
THD_I	

D. Conduct all tests 3 to 6 months after building occupation. Submit all tests for Engineer's review.

END OF SECTION 262222

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1SCOPE

A. Provide wiring devices as shown, scheduled, required and as specified.

B. The types of wiring devices required include:

1. Switches
2. Receptacles
3. Occupancy Sensors
4. Digital Timer Switches
5. Coverplates
6. Floor Boxes
7. Fire Rated Poke Through Devices

1.2 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2014h (Validated 2022).

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification); 2017g (Validated 2023).

C. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

D. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.

G. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

H. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

I. UL 1310 - Class 2 Power Units; Current Edition, Including All Revisions.

J. UL 1699 - Arc-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.3 QUALITY ASSURANCE

A. All wiring devices shall comply with NEMA WD 1 and NEMA WD 6 as well as FS W-C-596 and FS W-S-896 as applicable.

B. All switches shall comply with UL 20 as applicable.

C. All receptacles shall comply with UL 498 as applicable.

D. All GFCI receptacles shall comply with UL 943.

E. All USB charging receptacles shall comply with UL 1310.

F. All AFCI receptacles shall comply with UL 1699.

1.4 ACCEPTABLE MANUFACTURERS

A. Hubbell

B. Leviton

C. Pass & Seymour

1.5 SUBMITTALS

A. Shop drawings shall include but not be limited to:

1. Cut sheets of all devices indicating NEMA configuration, rating, materials, color, and all accessories.

2. Cut sheets of all coverplates indicating materials, color and any engraving specified on drawing or in the specifications.

1.6 REQUIREMENTS OF REGULATORY AGENCIES WORK IN ACCORDANCE WITH

A. National Electric Code.

B. Local, municipal, or state codes that have jurisdiction.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

A. GENERAL

1. Provide factory assemble wiring devices with the rating type and color as required and specified for the service indicated.

2. Provide matching one-piece multiple gang plates where switches are ganged.

3. Provide wall plates for each receptacle furnished.

4. Architect reserves the right to select wiring device styles and colors to match wall finish.

5. Wall plates shall be of same manufacturer as devices.

2.2 SWITCHES

A. Provide specification grade ~~White~~**Gray** toggle switches where indicated on the Drawings. Provide "Red" switches for switching emergency lighting circuits where switching is indicated. Coordinate exact locations with architect.

1. Wall switches shall be 20 amp, 120-277 volt and shall be Hubbell, Leviton or P&S as follows:

TOGGLE SWITCHES	**HUBBELL**	**LEVITON**	**P&S**
SINGLE POLE	HBL1221	1221-2	PS20AC1
DOUBLE POLE	HBL1222	1222-2	PS20AC2
THREE WAY	HBL1223	1223-2	PS20AC3
FOUR WAY	HBL1224	1224-2	PS20AC4
MOMENTARY CONTACT	HBL1557	1257	1251
THREE POSITION, TWO CIRCUIT MAINTAINED CONTACT	HBL1385	1285	1225
KEY TYPE LOCKABLE BARREL KEY OR CORBIN STYLE	HBL1221-RKL	1221-2KL	PS20AC1-KL
PROVIDE WITH EXTRA KEYS	HBL1209RKL	2KL	4609
DISCONNECT SWITCH / INSTA HOT	HBL7810DS	MS303-DSS	7803

2. Dwelling units shall use Hubbell CS115I, CS120I, P&S CS15AC1, and CS20AC1.

3. Dimmers: Provide Lutron DIVA or equal as shown on drawings. Wall box dimmers shall be sized to handle the load served. Provide phase dimmers to control LED lamps when 0-10 volt dimming drivers are not provided.

4. Light Handle Switches: Provide Hubbell HBL1221-IL, Leviton 1221-LHC, P&S PS20AC1-ISl lighted handles to switch emergency lights where noted on the drawings.

B. ~~Provide specification grade Gray decora style rocker switches where indicated on the Drawings. Provide "Red" switches for switching emergency lighting circuits where switching is indicated. Coordinate exact locations with architect.~~

1. ~~Wall switches shall be 20 amp, 120-277 volt and shall be Hubbell Decorator Series, Leviton, Decora or Pass & Seymor Decorator, as follows:~~

~~ROCKER/DECORATOR SWITCHES~~	~~HUBBELL~~	~~LEVITON~~	~~P&S~~
~~SINGLE POLE~~	~~DS120~~	~~5621-2~~	~~2621~~
~~DOUBLE POLE~~	~~DS220~~	~~5622-2~~	~~2622~~
~~THREE WAY~~	~~DS320~~	~~5623-2~~	~~2623~~
~~FOUR WAY~~	~~DS420~~	~~5624-2~~	~~2624~~
~~MOMENTARY CONTACT~~	~~HBL1557~~	~~1257~~	~~1251~~
~~THREE POSITION, TWO CIRCUIT MAINTAINED CONTACT~~	~~HBL1385~~	~~1285~~	~~1225~~
~~KEY TYPE LOCKABLE BARREL KEY OR CORBIN STYLE~~	~~HBL1221-RKL~~	~~1221-2KL~~	~~PS20AC1-KL~~
~~PROVIDE WITH EXTRA KEYS~~	~~HBL1209RKL~~	~~2KL~~	~~4609~~
~~DISCONNECT SWITCH / INSTA HOT~~	~~HBL7810DS~~	~~MS303-DSS~~	~~7803~~

2. ~~Dimmers: Provide Lutron DIVA or equal where required. Wall Box dimmers shall be sized to handle the load. Provide Phase dimmers to control LED lamps when 0-10V drivers are not provided.~~

3. ~~Light Handle Switches: Provide Leviton 5649-2 or P&S 2625 lighted handles to switch emergency lights where noted on the drawings.~~

2.3 RECEPTACLES

A. Provide specification grade ~~White~~**Gray** receptacles where indicated on the drawings. Provide "Red" receptacles for receptacles on emergency power. Coordinate exact location with architect.

1. Receptacles shall be Hubbell, Leviton or Pass & Seymour as follows:

CONVENTIONAL RECEPTACLES	**HUBBELL**	**LEVITON**	**P&S**
HEAVY DUTY BRASS MOUNTING YOKE NEMA 5-20R DUPLEX	HBL5352	5362	5362
HEAVY DUTY BRASS MOUNTING YOKE NEMA 5-20R SIMPLEX	HBL5361	5361	5361
ISOLATED GROUND 20A, 125V ORANGE NEMA 5-20R DUPLEX	IG5352	5362IG	IG5362
CLOCK HANGER 15A-125V BROWN WITH STAINLESS STEEL PLATE WITH HANGER	HBL5235	5361-CH	S3733-SS
GFCI DUPLEX 20A, 125V SELF TESTING,	GFRST20	GFTR2	2097TR

FEED THRU CAPABLE, TAMPER RESISTANT FOR LOCATIONS REQUIRING TAMPER RESISTANT INSTALLATION OR AS INDICATED ON THE DRAWINGS			
GFCI DUPLEX 20A, 125V SELF TESTING, FEED THRU CAPABLE, TAMPER/WEATHER RESISTANT FOR INSTALLATION IN DAMP/WET LOCATION OR AS INDICATED ON THE DRAWINGS	GFTWRST20	GFWR2	2097TRWR
HEAVY DUTY TAMPER RESISTANT BRASS MOUNTING YOKE	HBL5362WTR	5362-SG	---
TAMPER RESISTANT 20A, 125V DUPLEX	BR20WHITR	8300-SG	TR63-H
SURGE PROTECTION 20A, 125V DUPLEX, BLUE NEMA 5-20R WITH AUDIBLE ALARM	HBL5362SA	7380-B	5362SP
USB CHARGER TYPE DUPLEX 20A, 125V TAMPER RESISTANT, DUAL USB TYPE A PORTS MIN. OF 5A USB OUTPUT, TAMPER RESISTANT	USB20A5x 5A OUTPUT	T5832* 3.6A OUTPUT	2097TRUSBA4* 2.1A OUTPUT
PLUG LOAD CONTROLLED RECEPTACLES 20A, 125V TAMPER RESISTANT WITH TWO CONTROLLED FACES	BR20C2WHITR	TBR20-S2W	TR5362CDW
PLUG LOAD CONTROLLED RECEPTACLES 20A, 125V TAMPER RESISTANT WITH ONE CONTROLLED FACE	BR20C1WHITR	TBR20-S1W	TR5362CHW
ARC FAULT CIRCUIT INTERRUPTER RECEPTACLES	AF20TRW	AFTR2-W	AF202TRW
GROUND FAULT CIRCUIT INTERRUPTER / ARC FAULT DUAL FUNCTION	AFGF20TR	AGTR2-W	AFGF202TR

B. ~~Provide specification grade, Decora type Gray receptacles where indicated on the drawings. Provide "Red" receptacles for receptacles on emergency power. Coordinate exact location with architect.~~

1. ~~Receptacles shall be Hubbell, Leviton, or Pass & Seymour as follows:~~

~~**DECORATOR / DECORA RECEPTACLES**~~	~~**HUBBELL**~~	~~**LEVITON**~~	~~**P&S**~~
~~DECORATOR DUPLEX 20A, 125V NEMA~~	~~DR20~~	~~16362~~	~~26342~~

5-15R SELF GROUNDING			
DECORATOR SIMPLEX 20A, 125V NEMA 5-15R SELF GROUNDING	---	1635	26361
ISOLATED GROUND DUPLEX 20A, 125V ORANGE NEMA 5-20R	IG20DRx	16362-IG	IG26362
CLOCK HANGER 15A 125V BROWN WITH STAINLESS STEEL PLATE WITH HANGER	HBL5235	5361-CH	S3733-SS
GFCI DUPLEX 20A, 125V SELF TESTING, FEED THRU CAPABLE, TAMPER RESISTANT FOR LOCATIONS REQUIRING TAMPER RESISTANT INSTALLATION OR AS INDICATED ON THE DRAWINGS	GFRST20	GFTR2	2097TR
GFCI DUPLEX 20A, 125V SELF TESTING, FEED THRU CAPABLE, TAMPER/WEATHER RESISTANT FOR INSTALLATION IN DAMP/WET LOCATION OR AS INDICATED ON THE DRAWINGS	GFTWRST20	GFWR2	2097TRWR
TAMPER RESISTANT DUPLEX 20A, 125V NEMA 5-20R	DR20WHITR	16362-SG	TR26362
SURGE PROTECTION 20A, 125V DUPLEX, BLUE NEMA 5-20R WITH AUDIBLE ALARM	HBL5362SA	7380-W	5362SP
USB CHARGER TYPE DUPLEX 20A, 125V TAMPER RESISTANT, DUAL USB TYPE A PORTS MIN. OF 5A USB OUTPUT, TAMPER RESISTANT	USB20A5x - 5A OUTPUT	T5832* 3.6A OUTPUT	2097TRUSBA4* 2.1A OUTPUT
PLUG LOAD CONTROLLED RECEPTACLES 20A, 125V TAMPER RESISTANT WITH TWO CONTROLLED FACE	DR20C2WHITR	16352-2PW	TR26362CDW
PLUG LOAD CONTROLLED RECEPTACLES 20A, 125V TAMPER RESISTANT WITH ONE CONTROLLED FACE	DR20C1WHITR	16352-1PW	TR26362CHW
ARC FAULT CIRCUIT INTERRUPTER RECEPTACLES	AF20TRW	AFTR2-W	AF202TRW
GROUND FAULT CIRCUIT INTERRUPTER / ARC FAULT DUAL FUNCTION	AFGF20TR	AGTR2-W	AFGF202TR

C. **Provide hospital grade, Red receptacles where indicated on the drawings. Provide "Red" receptacles for receptacles on emergency power. Coordinate exact location with architect.**

1. **Receptacles shall be Hubbell, Leviton, or Pass & Seymour as follows:**

HOSPITAL GRADE RECEPTACLES	HUBBELL	LEVITON	P&S
HOSPITAL GRADE DUPLEX 20A, 125V NEMA 5-20R TAMPER RESISTANT FOR ALL LOCATIONS OTHER THAN BEHAVIOR HEALTH	8300TRA	T8300	26342
HOSPITAL GRADE DECORATOR DUPLEX NEMA 5-20R TAMPER RESISTANT	2182TRA	16362-SG	26361
HOSPITAL GRADE DUPLEX 20A, 125V NEMA 5-20R WITH INTEGRAL WIRE LEADS FOR INSTALLATION IN ONLY BEHAVIOR HEALTH LOCATIONS TO COMPLY WITH NEC 517-18(c)	HBL8300SGA	8300-SG	IG26362
HOSPITAL GRADE SIMPLEX, 20A, 125V NEMA 5-20R	HBL8310	8310	S3733-SS
HOSPITAL GRADE SURGE PROTECTIVE 5-20R, NEMA 5-20R, DUPLEX	HBL8362SA	T8380-B	2097TR
HOSPITAL GRADE GFCI TAMPER RESISTANT 20A, 125V, NEMA 5-20R SELF TESTING, FEED THRU CAPABLE	GFTRST83	GFNL2-HG	2097TRWR
HOSPITAL GRADE GFCI TAMPER/WEATHER RESISTANT, SELF TESTING, FEED THRU CAPABLE	GFRTW83	GFWT2-HG	TR26362
HOSPITAL GRADE USB DUPLEX CHARGER, 20A, 125V NEMA 5-20R TAMPER RESISTANT WITH TWO USB TYPE A 2.0 PORTS 5.0A 5V DC DECORATOR TYPE	USB8300A5* 5A OUTPUT	T5382-HG* 3.6A OUTPUT	TR8300HUSB* 3.1A OUTPUT

2.4 OCCUPANCY SENSORS

A. Provide ~~White~~ **Gray** dual technology wall mounted sensors, provide one of the following:

1. Single Pole:

a. ~~Wattstopper #DSW301~~ **Lutron #MS-B102**

2. Double Pole:

a. ~~Wattstopper # DSW302~~ **Lutron #MS-B202**

3. Dimmer:

a. ~~Wattstopper #DW311~~**Lutron: #MS-Z101**

B. Provide dual technology ceiling sensor with low voltage controlling switch and power pack.

1. Single Button:

a. ~~Wattstopper # DT300 Sensor, BZ150 Power Pack and LVSW101 Digital Switch~~ **Lutron: #LOS-CDT-2000, RMJS-OT-DV, MRF2S-AS-DV-WH for switching.**

C. Provide Ultra Sonic Ceiling sensor for restrooms.

1. ~~Wattstopper #UT3000, BZ150 Power Pack~~**Lutron Occupancy/Vacancy Sensor.**

2.5 DIGITAL TIMER SWITCHES

A. Provide ~~Wattstopper TS-400-G digital timer. Locate in mechanical, electrical, MDF, and IDF rooms.~~**Lutron NX: TD300 digital timer.**

B. The time switch shall provide audible notification and visual notification (blink the room lights) prior to turning lights off.

C. The time switch shall have a 12-hour manual override setting.

2.6 COVERPLATES

A. Furnish and install coverplates on all outlet boxes. Oversize (Jumbo) coverplates are not acceptable.

B. Coverplates shall be 302/304 smooth stainless steel.

C. Provide Hubbell WP Series, Bell, Carlon or Leviton NEMA 3R weatherproof coverplates on all exterior wiring devices. Enclosure shall be suitable for wet locations when in use.

D. Coverplates shall be Hubbell SS Series, Leviton, Pass & Seymour 302/304 smooth stainless steel on all receptacles 30 amps and larger.

E. Stainless steel device plates shall be provided at locations with tile or stone walls.

PART 3 - EXECUTION

3.1 WIRING DEVICE MOUNTING HEIGHTS

A. Unless noted to the contrary on plans, or directed otherwise during the progress of the Work, wiring devices shall be set as follows:

1. Switches 42" above finished floor.

2. Wall mounted receptacles shall be installed vertically at 15 inches to the bottom outlet above finished floor unless otherwise noted or as required by local codes.

3. Wall telephone outlets shall be mounted 15 inches to the bottom above finished floor unless otherwise noted. Mount even with wall mounted receptacles.

4. At locations above counters, set devices at 6 inches above to the centerline counter tops, verify exact mounting height with the architect.

3.2 INSTALLATION (REFER TO 26 05 33 FOR OUTLET BOX SPECIFICATIONS).

A. Wall switches shall be set in a suitable steel box and shall be installed on the strike side of the door as finally hung, whether so indicated on the Drawings or not.

B. Receptacles shall be installed in a suitable steel box.

C. The Architect reserves the right to relocate wiring device up to a distance of 5 feet from the location shown, before rough-in, without additional cost.

D. Provide multi-gang device covers at locations where devices gang together.

E. Device locations are indicated schematically on the drawings along with the type and mounting height. Final locations and mounting heights shall be coordinated with the Architect on the jobsite, and with shop drawings of equipment; including equipment to be furnished and installed by the Owner. Devices installed in walls covered with vinyl, fabric wallpaper or other special finishes shall be coordinated and verified with the Architect on the job site.

F. Stranded wire termination to switches, receptacles, devices and miscellaneous control devices shall be with an approved solderless terminal if clamp type securing is not possible (i.e. Sta-Con crimp on fork tongue connectors; Burndy Type TP-F).

G. Provide keyed switches in all common areas not monitored by the faculty (i.e. gym, corridors, cafeteria, commons natatoriums).

H. All 15 amp and 20 amp receptacles shall be tamper-resistant type.

I. All 20A, 120V receptacles in food service areas shall be GFCI.

J. Provide GFCI circuit breakers for all drinking fountain branch circuits where GFCI receptacles are not indicated on plan.

K. Provide ARC Fault circuit interrupters (AFCI) as required to comply with article 210.12 of NFPA 70. This shall include but not be limited to dwelling units and dormitories. AFCI breakers may be used.

L. Provide ground fault circuit interrupter (GFCI)/ARC Fault circuit interrupter (AFCI) dual function receptacles to comply with articles 210.8, 210.12 and 406.4 of NFPA 70.

M. Contractor shall indicate the circuit serving each wiring device. Provide a typewritten label located on the inside face of the coverplate for all recessed mounted devices and on the outside of the coverplate on all surface mounted devices.

END OF SECTION 262726

SECTION 262901 - MOTORS AND STARTERS

PART 1 - GENERAL

1.1 SCOPE

A. Provide manual motor starters as shown, scheduled and as specified herein.

B. All integral motor starters furnished under Division 23 requirements shall be installed under Division 26 requirements unless noted otherwise on the plans.

C. Refer to 26 29 13 for motor starter specifications.

1.2 STANDARDS

A. Products shall be designed, manufactured, tested and installed in compliance with applicable standards.

B. Products shall conform to all applicable UL standards and shall be UL-labeled.

1.3 ACCEPTABLE MANUFACTURERS

A. Provide one of the following manufacturers:

1. General Electric Company/ABB
2. Square D Company
3. Siemens
4. Eaton

1.4 SUBMITTALS

A. Shop drawings shall include, but not be limited to:

1. Cutsheets of all enclosures, switches, overloads, ratings, and all accessories clearly labeled.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

A. WORK IN ACCORDANCE WITH:

1. National Electrical Code.

2. Local, municipal, or state codes that have jurisdiction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. GENERAL: Refer to the Drawings for starter requirements for each motor.

2.2 MANUAL MOTOR STARTERS

A. GENERAL: Manual starters shall consist of a manually operated toggle switch equipped with melting alloy type thermal overload relay. Thermal unit shall be of one-piece construction and interchangeable. Starter shall be inoperative if thermal unit is removed. Contacts shall be double break, silver alloy, visible from both sides of starter. Manual starters shall be square "D" class 2510 or 2512 or approved equal. Provide the size and number of poles shall be as shown and required by equipment served. Furnish red pilot light as indicated.

B. ENCLOSURES: All manual motor starter enclosures shall be NEMA 1, general purpose enclosures, unless shown otherwise. Provide NEMA 3R enclosure where installed outside or in a sprinkled area.

PART 3 - EXECUTION

3.1 INSTALLATION OF MOTORS

A. GENERAL: Mount electric motors which are not factory installed.

B. MOTOR CONNECTIONS: Provide electrical and grounding connections to motors as indicated. Connections as follows:

1. Not less than 18 inch length of Sealtite, extending from motor connection box to motor branch circuit conduit on outdoor and wet locations. Provide Greenfield for inside dry locations.

2. Install connections mechanically secure, assuring electrical continuity, proper and effective grounding.

C. INSTALLATION OF MOTOR STARTER

1. Install motor starters in accordance with the manufacturer`s written instructions, the applicable requirements of the NEC and the NECA`s "Standard of Installation", and recognized industry practices to ensure that products serve the intended function.

2. Combination starter disconnects and starters mounted in ceiling plenums shall be installed 18” above ceiling grid.

END OF SECTION 262901

SECTION 264313.13 - SURGE PROTECTIVE DEVICES (SPD) - STANDARD INTERRUPTING

PART 1 - GENERAL

1.1 SCOPE

A. Specify the electrical and mechanical requirements for a non-modular high-energy surge protective device system (SPD). The specified system shall provide effective high energy surge current diversion and be suitable for application in IEEE C62.41.1 Category A, B and C3 environments, as tested by IEEE C62.11, IEEE C62.45.

B. The system shall be constructed using multiple surge current diversion modules utilizing metal oxide varistors (MOV) computer matched to +/- 1-volt variance and tested for manufacturer's defects. The modules shall be designed and constructed in a manner that ensures surge current sharing. Use of gas tubes, silicon avalanche diodes or selenium cells are unacceptable. Devices shall utilize a minimum of three (3) MOV's fuse links pair per phase. This will allow greater than 50% redundant protection in if a MOV fails.

C. Third Party Test Report verifying surge current rating, longevity, testing, and filtering capabilities shall be provided with submittal.

1.2 STANDARDS

A. The specified system shall be designed, manufactured, tested and installed in compliance with the following codes and standards:

1. Canadian Standards Association (CSA or CUL)

2. American National Standards Institute and

3. Institute of Electrical and Electronic Engineers (IEEE C62.11, IEEE C62.41.1, IEEE C62.41.2 and IEEE C62.45)

4. Institute of Electrical and Electronic Engineers 1100 Emerald Book

5. Federal Information Processing Standards Publication 94 (FIPS PUB 94)

6. National Electrical Manufacturer Association (NEMA LS-1 1992)

7. National Fire Protection Association (NFPA 20, NFPA 70, NFPA 75 and NFPA 780)

8. National Electric Code

9. Underwriters Laboratories (UL 1449 and UL 1283)

10. International Electrotechnical Commission (IEC 801)

11. International Standards Organization (ISO) Company certified ISO 9001 for manufacturing, design and service

12. EMC Directive 89/336/EEC - CE compliant

B. The systems individual units shall be UL/ANSI Listed and labeled under UL 1449 (Fourth Edition) Standard for Surge Protection Devices Type 2 20kA with a nominal discharge current of 20kA and the surge ratings shall be permanently affixed to the SPD. The units shall also be listed and labeled to UL 1283 for type 2 locations Standard for Electromagnetic Interference Filters, and CSA/CUL Listed.

1.3 ACCEPTABLE MANUFACTURERS

A. Current Technology

B. ACT Communications

1.4 SUBMITTALS

A. Shop drawings shall include, but not be limited to:

1. Cutsheets of surge protection devices with ratings, physical dimensions and all accessories clearly labeled.

2. Device labels shall be clearly indicated in cutsheets.

3. All standards and listings, as specified in section 1.2A-B, shall be clearly labeled in cutsheets provided.

4. Cutsheets shall clearly outline that design requirements of this specification have been met.

1.5 QUALITY ASSURANCE

A. The manufacturer shall be ISO 9001 certified. The specified system shall be tested at the component and fully assembled level, under surge conditions with AC power applied for a minimum of 1 hour. Testing shall include but not be limited to quality control checks, dielectric voltage withstand test per UL and CSA requirements, UL ground continuity tests and operational and calibration tests.

B. The unit shall be designed and manufactured in the USA by a qualified manufacturer of surge protection equipment and Active Tracking Filters. The manufacturer shall have been engaged in the design and manufacture of such products for a minimum of 10 years.

PART 2 - PRODUCTS

2.1 ENCLOSURE

A. The specified system shall be provided in a heavy duty NEMA 4 or better dust-tight, drip-tight enclosure with no ventilation openings.

2.2 OVERCURRENT PROTECTION (FUSING)

A. Individual surge components shall be fused to prevent violent failure. The fusing shall be UL listed and shall be capable of interrupting up to 200kA symmetrical fault current with 480VAC applied. Replaceable fusing is unacceptable. Overcurrent protection that limits specified surge currents is not acceptable. Devices that utilize a single fuse to protect two or more suppression paths are not accepted.

2.3 DESIGN REQUIREMENTS

A. Protection Modes:

1. The SPD shall provide protection as follows: All modes, L-N or L-L, L-G and N-G (where applicable) Note: L = Line, G = Ground, N = Neutral

B. UL 1449 Ratings:

1. The maximum UL 1449 listed surge ratings for each and/or all of the specified protection modes shall not exceed the following in any mode of protection:

System Voltage	Voltage Protection Rating			
	L-N	L-L	N-G	L-L
120/240	600-volts	700-volts	700-volts	1200-volts
120/208	600-volts	700-volts	700-volts	1200-volts
240		1200-volts		1000-volts
277/480	1200-volts	1200-volts	1200-volts	1800-volts
480		1800-volts		1800-volts

C. Noise Attenuation:

1. The unit shall be UL 1283 Listed as an electromagnetic interference filter in type 2 locations. The filter shall provide insertion loss with a maximum of 60 dB from 100 KHz to 100 MHz per 50 Ohm Insertion Loss Methodology from MIL 220A. The system shall provide up to 120 dB insertion loss from 100 KHz to 100 MHz when used in a coordinated facility system.

D. Life Cycle Testing:

1. The SPD system shall be duty life cycle tested to survive 6,000 20kV, 10kA Surges, per IEEE C62.41.1 Category C3 surge current with less than 5% degradation of clamping voltage.

2.4 CONNECTIONS

A. Provide 60” wire leads #10 AWG or UL 1449 tested size.

2.5 STANDARD FEATURES

A. Unit Status Indicators:

1. Red and green solid state indicators with printed labels shall be provided on the front cover to redundantly indicate on-line unit status including N-G monitoring. The absence of the green light and the presence of the red light shall reliably indicate that surge protection is reduced and service is needed to restore full operation.

B. Dry Contacts for remote monitoring:

1. Electrically isolated Form C dry contacts, one normally open and one normally closed set standard on all units for remote monitoring.

C. Undervoltage detection:

1. Unit shall be equipped with 70% undervoltage detection capability.

D. Phase Loss Monitoring:

1. Unit shall be equipped with phase loss monitoring.

E. Power Loss Monitoring:

1. Unit shall be equipped with power loss monitoring.

2.6 TESTING

A. Component Testing and Monitoring:

1. Unit shall include an on-line circuit which tests and redundantly monitors individual components in all protection modes including neutral to ground (where applicable). Units that require external test sets or equipment are not acceptable.

2.7 ENVIRONMENTAL REQUIREMENTS

A. Storage Temperature: -55 to +85 C (-67 to +187 F)

B. Operating Temperature: -40 to +60 C (-40 to 140 F)

C. Relative Humidity: 0% to 95%

D. Audible Noise: less than 45 dBa at 5 feet (1.5 m).

E. Operating Altitude: 0 to 18,000 feet above sea level.

2.8 WARRANTY

A. The manufacturer shall provide a full 10 year parts and a 5 year labor warranty from date of shipment against any part failure when installed in compliance with manufacturer's written instructions, UL Listing requirements and any applicable national, state or local electrical codes. Direct, factory trained, ISO 9001 certified employees must be available for 48 hour assessment. A 24 hour 800 number must be available to support warranty.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install the parallel SPD with short and straight conductors as practically possible. Locate adjacent to the switchboard or panel it is serving. The contractor shall twist the SPD input conductors together to reduce input conductor inductance. The contractor shall follow the SPD manufacturer's recommended installation practices as found in the installation, operation and maintenance manual and comply with all applicable codes. Provide STT Tierguide cable if the cable length exceeds 5 feet from the circuit breaker servicing the SPD.

B. Provide Flush Mount Stainless Steel Cover Kit for kitchen areas.

C. Provide Flush Mount Cover Kit for residential units and hotel suites.

END OF SECTION 264313.13

PROCUREMENT SUBSTITUTION REQUEST FORM 002600A

To: DLR Group inc.
1000 Louisiana Street, Suite 1100
Houston, Texas 77002
TEL: (713) 561-3925

PROJECT: Klein ISD Schindewolf Gym Addition

We hereby submit for your consideration the following product as substitute for specified item for the above project:

Section	Page	Paragraph/Line	Specified Item
107113	3	2.2A	AVAdek
107080	4	2.4A	AVAdek

Proposed Substitution:

Attach complete product description, drawings, photographs, performance and test data, warranty, information and other information necessary for evaluation. Identify specific model numbers, finishes, options, etc.

A. Will changes be required to building design or drawing dimensions in order to properly install proposed substitution? Yes__ No X. If yes, explain.

B. Will the undersigned pay for changes to the building design, including engineering and drawings costs, caused by requested substitution? Yes__ No X. None needed.

C. Differences between proposed substitution and specified item.
ARK provides the same system, it is fabricated by ARK instead of AVAdek.

D. What affect does substitution have on other trades? None

E. Does manufacturer's warranty of the proposed substitution differ from that specified? Yes__ No X.

If yes, explain

Submitted by:

Signature

ARK Metal Builders, LLC
Firm

3441 Bacor Rd., Houston, TX 77084
Address

Date: 1/15/2025

Telephone: 281-639-6263

For Architect's Use Only:

✓ Accepted __Accepted as Noted

___Not Accepted ___Received Too Late

By: Matthew Paul Kenney
Date: 01/17/2025
Remarks:

PROCUREMENT SUBSTITUTION REQUEST FORM 002600A

To: DLR Group inc.
1000 Louisiana Street, Suite 1100
Houston, Texas 77002
TEL: (713) 561-3925

PROJECT: Klein ISD - Schindewolf Gym Addition

We hereby submit for your consideration the following product as substitute for specified item for the above project:

Section	Page	Paragraph/Line	Specified Item
096566	4	2.2 A	Gerflor Taraflex Sport M Plus 7.5mm

Proposed Substitution: DynaCourt® 8mm

Attach complete product description, drawings, photographs, performance and test data, warranty, information and other information necessary for evaluation. Identify specific model numbers, finishes, options, etc.

A. Will changes be required to building design or drawing dimensions in order to properly install proposed substitution? Yes__ No✓. If yes, explain.

B. Will the undersigned pay for changes to the building design, including engineering and drawings costs, caused by requested substitution? Yes✓ No__.

C. Differences between proposed substitution and specified item.
Proposed substitution is equal to the specified product.

D. What affect does substitution have on other trades? Substitution has no affect on other trades.

E. Does manufacturer's warranty of the proposed substitution differ from that specified? Yes__ No✓.

If yes, explain _____

Submitted by: Robert Wolesensky

Robert Wolesensky
Signature

Dynamic Sports Construction, Inc.
Firm

4338 W. Highway 82
Address

Gainesville, TX 76240

Date: 1/15/2025

Telephone: 512-260-6722

For Architect's Use Only:

✓ Accepted __Accepted as Noted

___Not Accepted ___Received Too Late

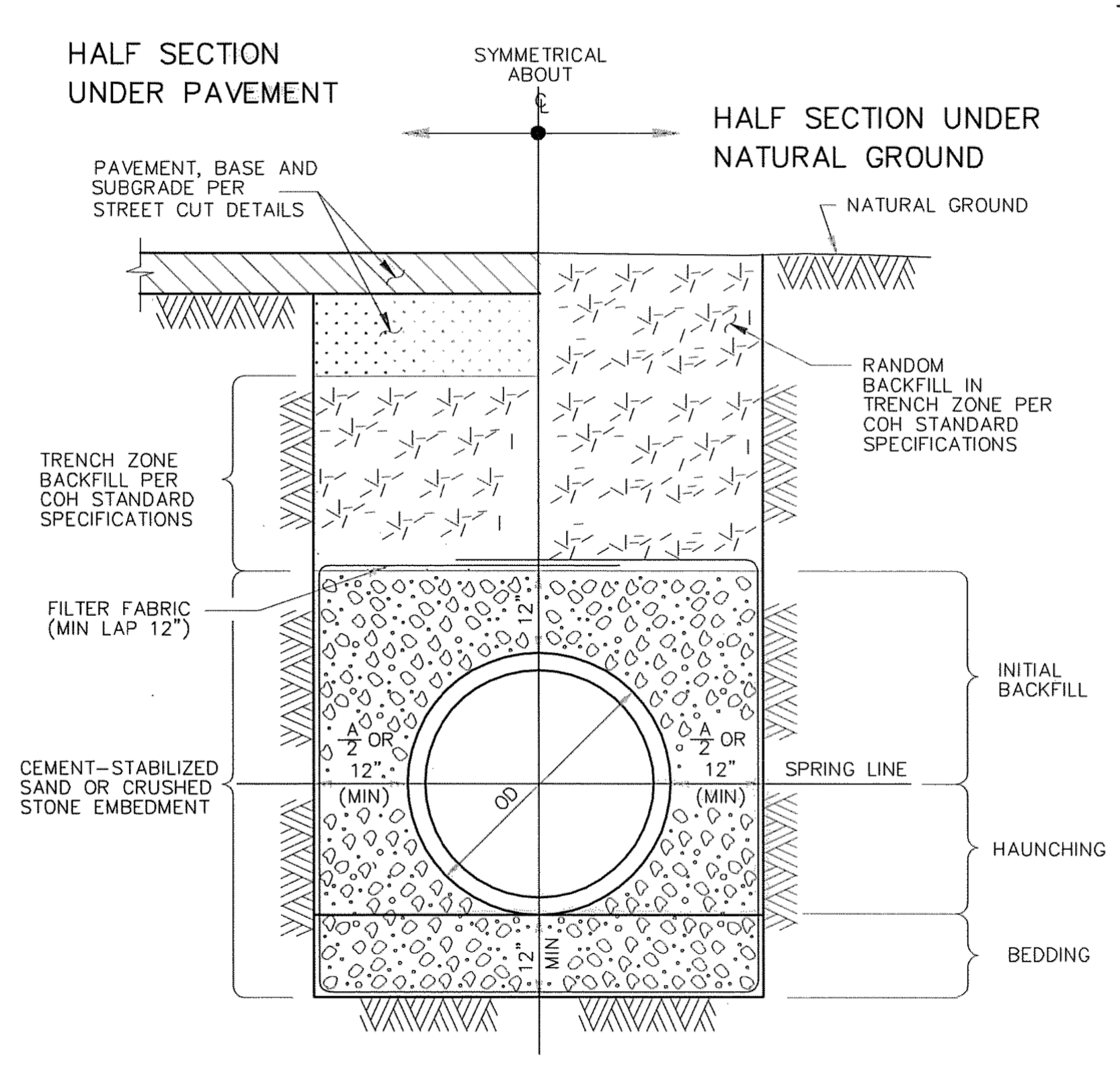
By: Matthew Paul Kenney
Date: 01/17/2025
Remarks: _____

Pre-Bid | RFI Log

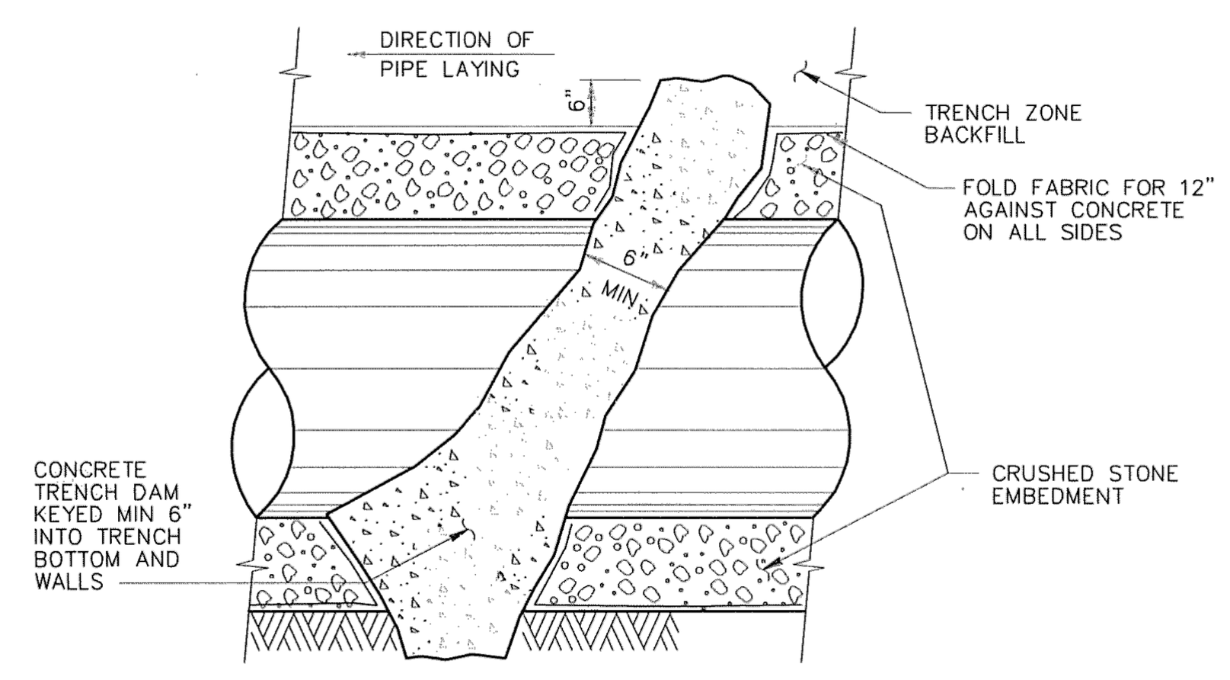
Project Name	Schindewolf Gymnasium Addition	**Prepared By**	DLR Group
Date	1/17/2025	**Project No.**	39-25107
Purpose	RFI Log		
Location	Schindewolf Intermediate School		

RFIs:

1. ***QUESTION:*** In going through the specs, the only forms I have found requested for submission are as follows: AIA A305 & Document 004113 Bid Form.
    - ***a. RESPONSE:*** For the initial submission that is correct – however, please review the section 002113 in the project manual for additional requirements.
2. ***QUESTION:*** Is sheet C11.3 missing?
    - ***a. RESPONSE:*** Yes, it was missing from when the files were compiled. This sheet has been re-issued as part of Addendum #001..
3. ***QUESTION:*** Drawing T010 Note 7 calls for us to replace the equipment and amplifier in the main MDF however it doesn't show on the plan for us to do anything with the speakers throughout the school. However, on drawing T500 the schedule under detail 4 appears to be calling for us to replace all of the speakers throughout the school. Please confirm what the exact scope is for this, is this meant to be a replacement of all intercom devices throughout the entire school and if so, are these IP based speakers needing power and data?
    - ***a. RESPONSE:*** The project scope includes the replacement of the PA system head end equipment in the MDF and additional speakers/zone in the new gymnasium addition. The speaker schedule in Detail 4/T500 includes all speaker models typically used by the owner, but not all devices on the schedule are used in this project. The schedule does not provide any changes or alterations to the project scope.
4. ***QUESTION:*** The plans call out for 7-tier wooden bleachers in the gym but I was unable to find the spec on bleachers.
    - a. ***RESPONSE:*** A basis of design specification has been included in Addendum #001 for section 11 items.
5. ***QUESTION:*** There are Kane Security Screens on one of the Aluminum doors (A105). I can not find any specs detailing the level for the security screens.
    - a. ***RESPONSE:*** Door A105 should NOT contain a security screen, this is a typo.
6. ***QUESTION:*** On the structural foundation plan there are several columns that are shown to be W8x48, but the base plate schedule only shows up to a W8x40.
    - a. ***RESPONSE:*** The base plate schedule contains a typo and has been amended in Addendum #001.
7. ***QUESTION:*** The architectural site plan does not reflect the detention pond, can you confirm there is no fencing around this detention pond area?
    - a. ***RESPONSE:*** As of 1/17/25 there is no proposed fencing.



TYPICAL CROSS-SECTION



LONGITUDINAL SECTION ALONG PIPE ℄
AT EMBEDMENT TRENCH DAM

NOTES:

1. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

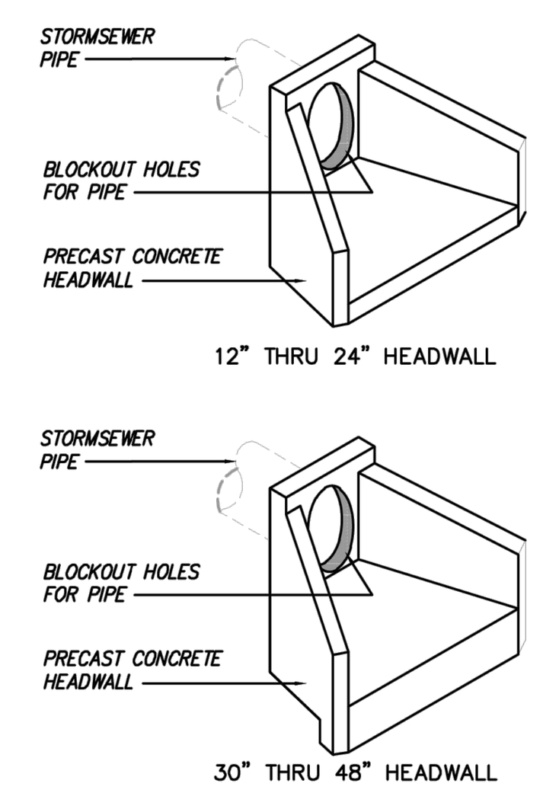
2. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
3. TRENCH DAM MAY BE FORMED OR UNFORMED.ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
4. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT AWAY FROM ANY PIPELINE STRUCTURE.SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
5. PLACE TRENCH DAMS IN CLASS I EMBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.
6. CEMENT-STABILIZED SAND IS PREFERRED FOR EMBEDMENT, BUT CRUSHED STONE MAY BE USED ONLY WHEN SPECIFIED ON THE PLANS.

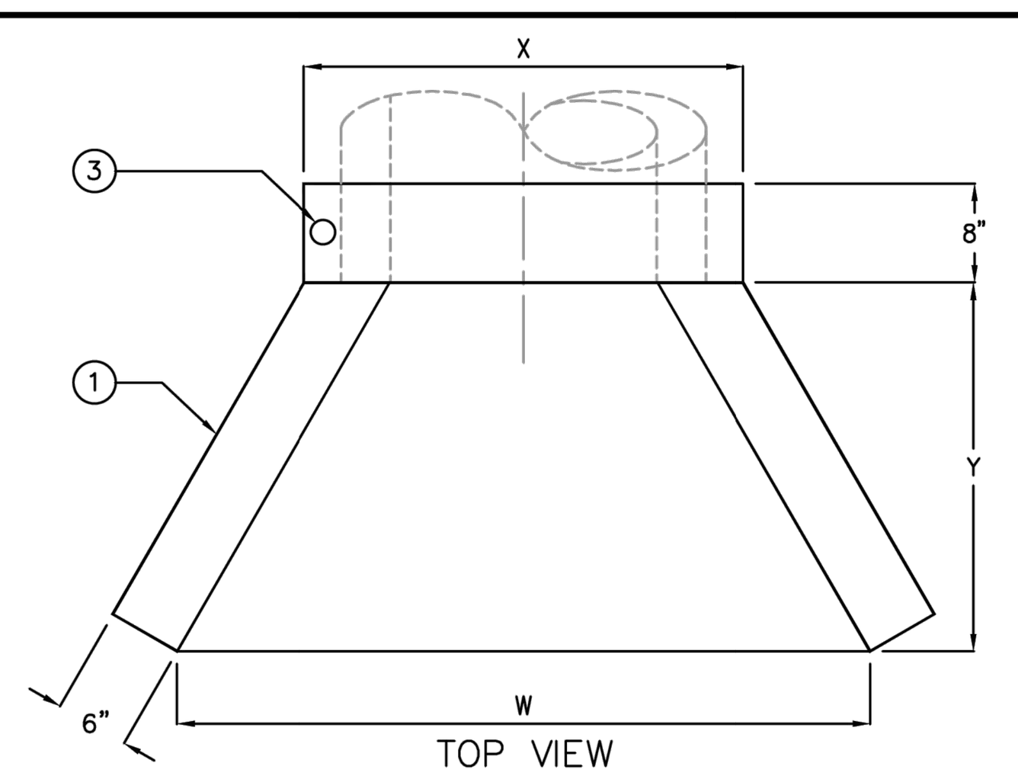
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER EMBEDMENT AND TRENCH ZONE BACKFILL FOR DRY OR WET STABLE TRENCH

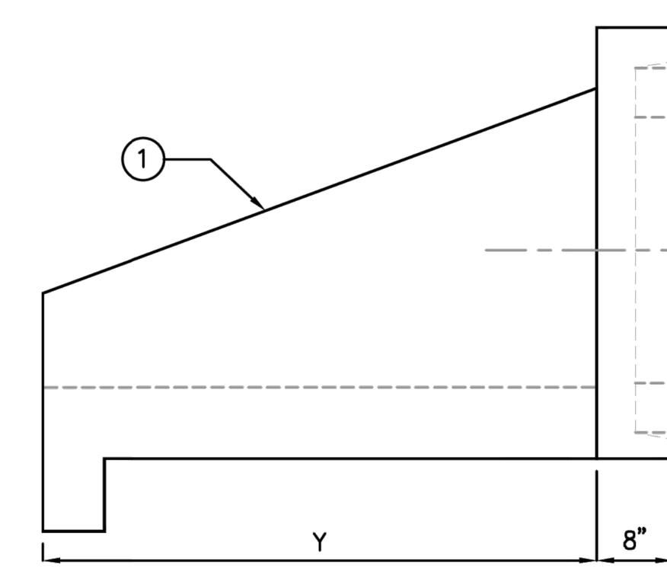
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2016	DWG NO: 02317-01

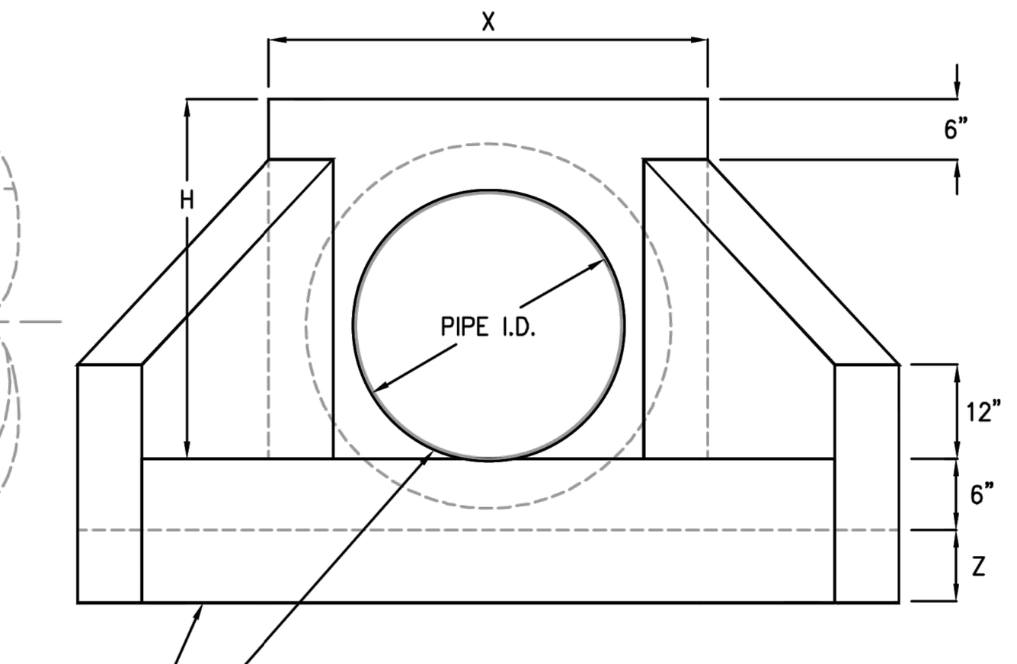




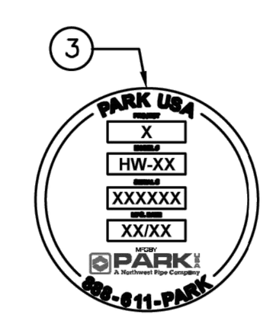
TOP VIEW



SIDE VIEW



FRONT VIEW



NAME PLATE

MODEL	PIPE DIA	DIMENSIONS					
		H	W	X	Y	Z	WEIGHT (LBS)
HW-12	12"	2'-6"	4'-3"	3'-0"	2'-0"	N/A	2,700
HW-15	15"	2'-6"	4'-3"	3'-0"	2'-0"	N/A	2,700
HW-18	18"	2'-6"	4'-3"	3'-0"	2'-0"	N/A	2,600
HW-21	21"	3'-0"	5'-10"	3'-2"	3'-0"	N/A	4,300
HW-24	24"	3'-0"	5'-10"	3'-2"	3'-0"	N/A	4,200
HW-30	30"	3'-6'	7'-6"	4'-1"	4'-0"	9"	6,200
HW-36	36"	4'-1"	9'-3"	4'-8"	5'-0"	9"	8,100
HW-42	42"	4'-11"	12'-6"	5'-10"	6'-0"	12"	11,000
HW-48	48"	4'-11"	12'-6"	5'-10"	6'-0"	12"	11,000

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KEYED NOTES

MARK	QTY	DESCRIPTION
1	1	PRECAST CONCRETE HEADWALL
2	1	BLOCKOUT HOLE FOR PIPE
3	1	NAMEPLATE PARKUSA 888-611-PARK WWW.PARKUSA.COM MODEL HW-1

SPECIFICATIONS

CONCRETE: Class II concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction including walls and floor.

REINFORCEMENT: Grade 60 reinforced. No. 4 steel rebar to conform to ASTM A615 on required centers or equal. Bar bending and placement shall with the latest ACI standards.

CONCRETE HEADWALL
FOR STORMWATER PIPING

PM	PC	DRN	ENG	DWG. NO.	REV.
.	.	.	.	HW-1	A
DATE	2023				

DLR GROUP
© DLR Group

01/17/2025
STATE OF TEXAS
RASHARD D. HARRIS
142467
LICENSED PROFESSIONAL ENGINEER

KLEIN ISD
PROMISE 2 PURPOSE

SCHINDEWOLF GYM ADDITION
KLEIN INDEPENDANT SCHOOL DISTRICT

20003 ELLA BLVD
SPRING, TEXAS 77388

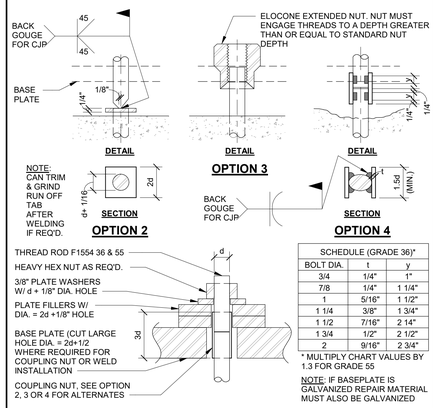
100% CONSTRUCTION DOCUMENTS
01/17/2025
REVISIONS
1 - ADDENDUM 1 1/17/2025

39-25107-00

CONSTRUCTION DETAILS (4 OF 4)

C11.3

Autodesk Docs://39-25107-00 Klein ISD - Schindewolf Gym Addition/39-25107-00 Klein ISD - Schindewolf Gym Addition_AR_2024.rvt
11/20/2024 1:34:19 PM



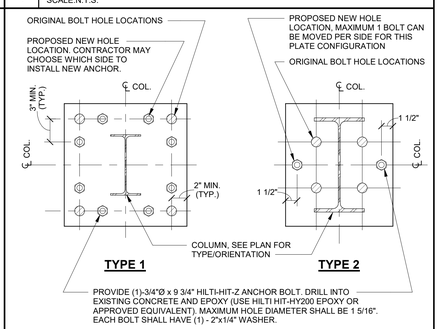
SCHEDULE (GRADE 36)*		
BOLT DIA.	t	y
3/4	1/4"	1"
7/8	1/4"	1 1/4"
1	5/16"	1 1/2"
1 1/4	3/8"	1 3/4"
1 1/2	7/16"	2 1/4"
1 3/4	1/2"	2 1/2"
2	9/16"	2 3/4"

* MULTIPLY CHART VALUES BY 1.3 FOR GRADE 55

NOTE: IF BASEPLATE IS GALVANIZED REPAIR MATERIAL MUST ALSO BE GALVANIZED

4 TYPICAL DETAIL REPAIR AT ANCHOR BOLT

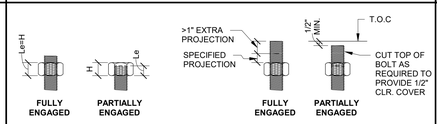
SCALE:N.T.S.



NOTES:
1. THIS DETAIL SHALL NOT BE USED AT BRACE FRAMES OR MOMENT FRAMES. ENGINEER APPROVAL IS REQUIRED PRIOR TO INSTALLATION FOR EA. LOCATION WITH DAMAGED ANCHOR BOLTS.
2. CUT AWAY DAMAGED ANCHOR BOLTS AND PROVIDE NEW HOLES FOR EPOXY ANCHOR.
3. HIT-Z-R ANCHORS SHALL BE USED IN LIEU OF HIT-Z ANCHORS AT COLUMNS EXPOSED TO WEATHER.

3 TYPICAL DETAIL REPAIR AT GRAVITY BASE PLATE

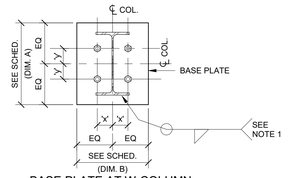
SCALE: N.T.S.



NOTES:
1. WHERE ANCHOR BOLT PROJECTION IS TOO LONG, SUBMIT RFI TO EOR FOR APPROVAL AS THE BOTTOM OF ANCHOR BOLT ELEVATION MAY NOT BE ADEQUATE. CUT TOP OF BOLT DOWN AS REQUIRED TO PROVIDE COVER. FOR GRAVITY BASE PLATES CONTRACTOR MAY REPLACE OUT OF PLACE ANCHOR WITH EPOXY ANCHOR AS SHOWN IN DETAIL 3/S3.21.
2. WHERE ANCHOR BOLT PROJECTION IS LOWER THAN SPECIFIED BUT FULL THREAD ENGAGEMENT WAS ACHIEVED THE BOLT IS ACCEPTABLE. WHERE PROJECTION IS SUCH THAT THE NUT IS PARTIALLY ENGAGED, SUBMIT RFI TO EOR WITH Le AND H DIMENSIONS AS WELL AS THE COLUMN LOCATION.
3. AT DAMAGED ANCHOR BOLTS OR PARTIALLY THREADED FASTENERS DEEMED UNACCEPTABLE BY THE EOR, CONTRACTOR MAY REPAIR BOLT PER DETAIL 4 / S3.21 IN LIEU OF REPAIR, AT GRAVITY BASE PLATE CONTRACTOR MAY REPLACE BOLT WITH DRILLED AND EPOXIED ANCHOR PER DETAIL 3/S3.21.

6 TYPICAL DETAIL REPAIR AT ANCHOR BOLT

SCALE:N.T.S.



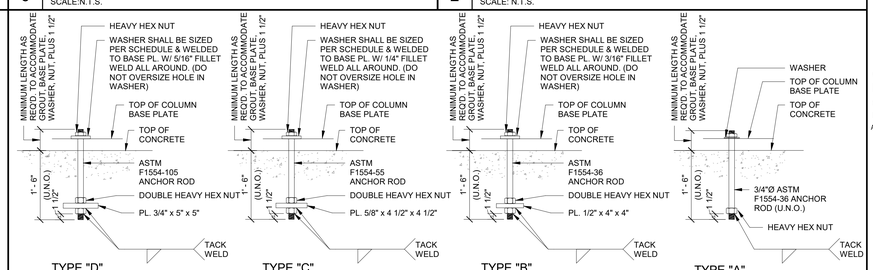
BASE PLATE AT W COLUMN

BASE PLATE SCHEDULE				
COLUMN	BASE PLATE A x B x THICKNESS	ANCHOR BOLTS	'X'	'Y'
W8x24 ~ W8x48 (1)	10"x10"x3/4"	(4)-3/4"DIA TYPE A	2"	2"

NOTES:
1. MINIMUM FILLET WELD ACCORDING TO AISC (1/4" MIN.). WELDING INSIDE RADIUS AND AROUND TOES OF FLANGES UP TO ONE WELD SIZE FROM EDGE NOT REQUIRED U.N.O.
2. USE OVERSIZED HOLES FOR ANCHOR RODS ACCORDING TO AISC.
3. WASHERS SHALL BE INSTALLED OVER OVERSIZED HOLES.
4. CONTRACTOR SHALL PROVIDE 1/8" THICK TEMPLATE FOR ANCHOR ROD INSTALLATION.

2 TYPICAL DETAIL BASE PLATE AT WIDE FLANGE COLUMNS

SCALE: N.T.S.



NOTE:
1. ASTM 1554 ANCHORS ARE REQUIRED TO BE COLOR CODED TO ALLOW FOR EASY IDENTIFICATION IN THE FIELD.
THE CODES ARE AS FOLLOWS:
GRADE 36 NONE OR BLUE
GRADE 55 YELLOW
GRADE 105 RED

TYPE "B" WASHER SCHEDULE		
ANCHOR ROD DIA.	WASHER SIZE*	MIN. WASHER THICKNESS
3/4"	2"	1/4"
7/8"	2 1/2"	5/16"
1"	3"	3/8"
1 1/4"	3 1/2"	1/2"
1 1/2"	4"	1/2"
1 3/4"	4 1/2"	5/8"
2"	5"	3/4"
2 1/2"	5 1/2"	7/8"

NOTE:
1. USE TYPE "B" ANCHOR BOLTS AT COLUMNS WITH DIAGONAL BRACES, MOMENT CONNECTIONS, & AT CANOPY COLUMNS. SOME ANCHOR TYPES SHOWN MAY NOT BE USED AT THIS PROJECT.

*CIRCULAR OR SQUARE WASHERS MEETING WASHER SIZE ARE ACCEPTABLE

TYPICAL DETAIL ANCHOR BOLT

5 SCALE: N.T.S.

DLR GROUP Brayton Hughes
© DLR Group
Matrix Structural Engineers
TBPE Firm Registration No. F-2640
STATE OF TEXAS
KHALIL TABAJA
117127
LICENSED
PROFESSIONAL ENGINEER
01/17/2025

KLEIN ISD PROMISE + PURPOSE

SCHINDEWOLF GYM ADDITION

KLEIN INDEPENDANT SCHOOL DISTRICT

20903 ELLA BLVD
SPRING, TEXAS 77388

100% CONSTRUCTION DOCUMENTS
01/08/2025
REVISIONS
Addendum #001 01/17/2025

.....

ANCHOR BOLTS AND BASE PLATE DETAILS

S3.21

MECHANICAL KEYED NOTES

M1.2 PROVIDE SIDEWALL RETURN AIR TRANSFER BOOT. SIZE AS INDICATED. EXACT LOCATION AND ELEVATION SHALL BE COORDINATED WITH ARCHITECT PRIOR TO INSTALLATION. RE: DETAIL 5/M6.01.

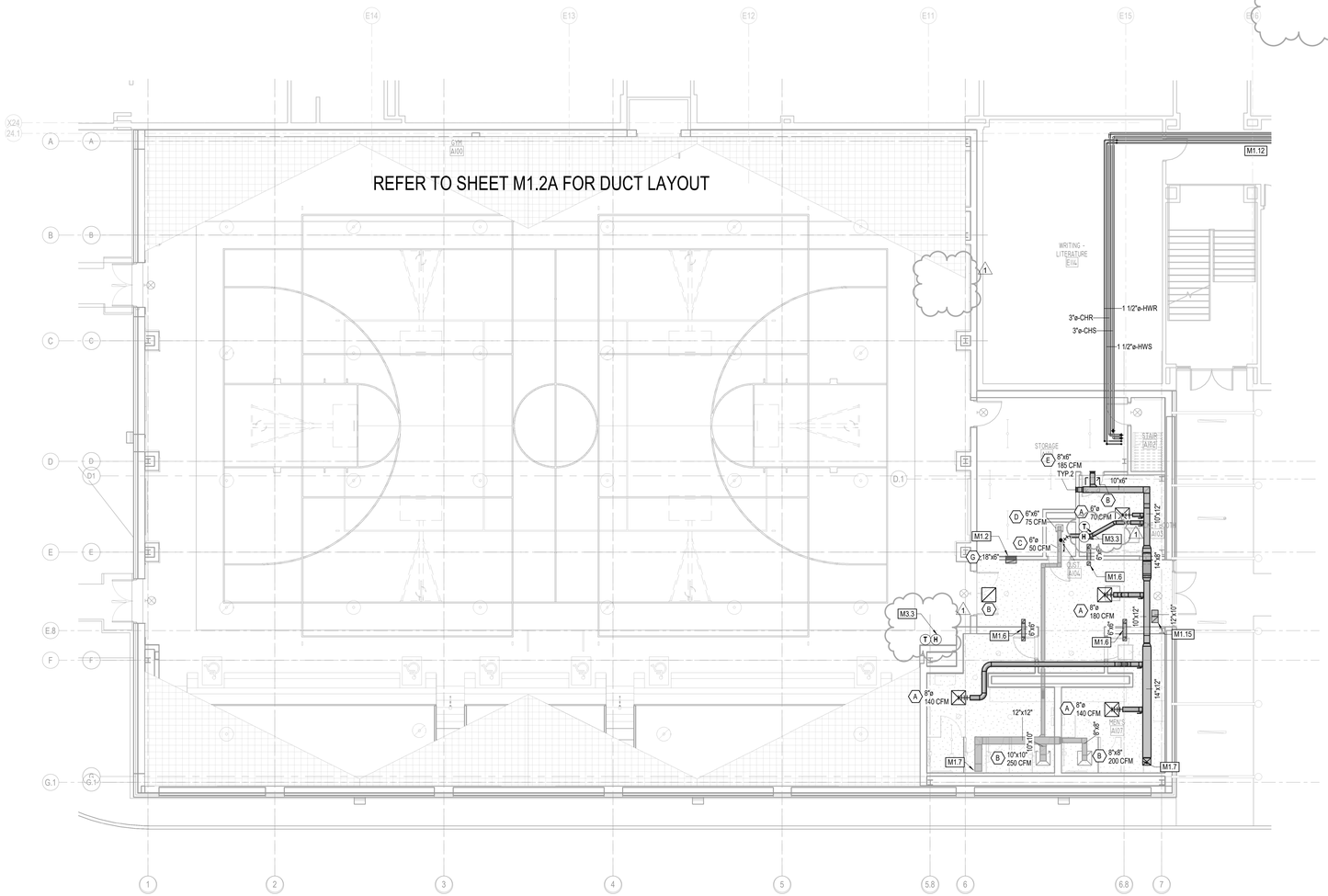
M1.6 PROVIDE RETURN AIR TRANSFER BOOT. SIZE AS INDICATED. RE: DETAIL 12/M6.01.

M1.7 REFER TO M1.2A FOR DUCT CONTINUATION TO MEZZANINE.

M1.12 REFER TO M1.1 FOR PIPE CONTINUATION.

M1.15 PROVIDE RETURN AIR TRANSFER BOOT TO MECHANICAL MEZZANINE ABOVE. SIZE AS INDICATED. RE: DETAIL 6/M6.01.

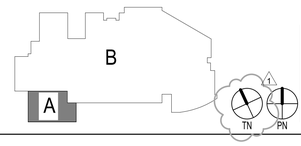
M3.3 PROVIDE COMBINATION TEMPERATURE/HUMIDITY SENSOR AT APPROXIMATE LOCATION SHOWN. SENSOR SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.



1 MECHANICAL PLAN LEVEL 1 - AREA A

1/8" = 1'-0"

KEY PLAN



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KEVIN A. PFEIFFER 96819 LICENSED PROFESSIONAL ENGINEER

KLEIN ISD PROMISE + PURPOSE

SCHINDEWOLF GYM ADDITION

KLEIN INDEPENDENT SCHOOL DISTRICT

20903 ELLA BLVD
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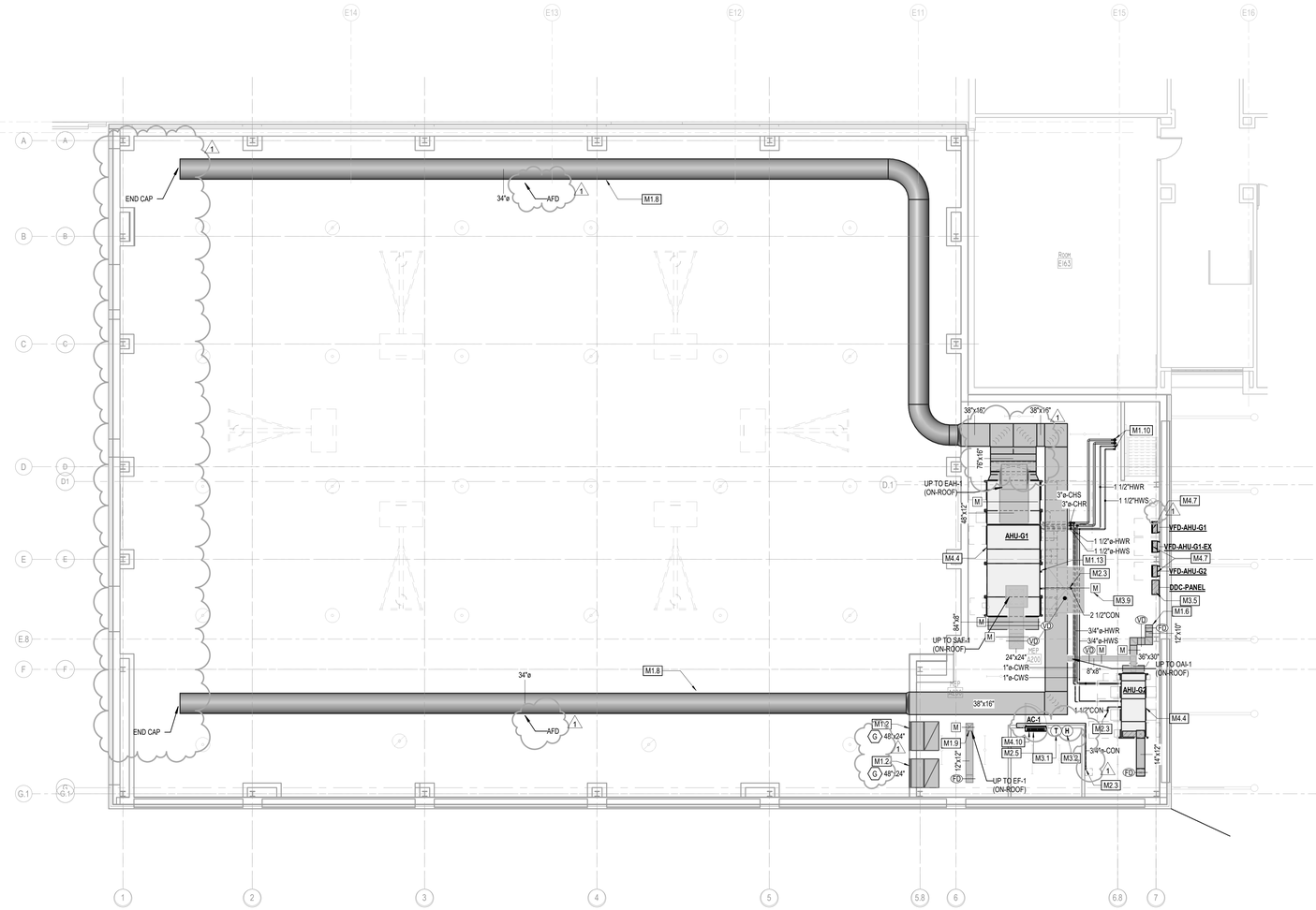
MECHANICAL PLAN LEVEL 1 - AREA A

M1.1A



1 MECHANICAL PLAN LEVEL 2 - AREA A

1/8" = 1'-0"

MECHANICAL KEYED NOTES

M1.2 PROVIDE SIDEWALL RETURN AIR TRANSFER BOOT. SIZE AS INDICATED. EXACT LOCATION AND ELEVATION SHALL BE COORDINATED WITH ARCHITECT PRIOR TO INSTALLATION. RE: DETAIL 5/M6.01.

M1.6 PROVIDE RETURN AIR TRANSFER BOOT. SIZE AS INDICATED. RE: DETAIL 12/M6.01.

M1.8 PROVIDE DUCTSOX SEDONA XM FABRIC DUCT AS SHOWN. PROVIDE LINEAR VENTS AND AN INTERNAL HOOP SYSTEM PER MANUFACTURER'S RECOMMENDATIONS. MOUNT DUCT HIGH TIGHT TO STRUCTURE. ENSURE BOTTOM OF DUCT MAINTAINS 22'-4" CLEAR HEIGHT WITHIN GYM. COORDINATE EXACT ELEVATION AND COLOR WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.

M1.9 REFER TO MEP2.31 FOR DUCT CONTINUATION TO ROOF.

M1.10 REFER TO M1.1A FOR PIPE DROP CONTINUATION.

M1.13 AHU BYPASS DAMPER SHALL BE CLEAR OF ANY OBSTRUCTIONS.

M2.3 ROUTE COOLING COIL CONDENSATE DRAIN LINE TO FLOOR DRAIN WITHIN MECHANICAL ROOM. SIZE AS INDICATED ON DRAWING. COORDINATE WITH PLUMBING FOR EXACT LOCATION OF FLOOR DRAIN. RE: DETAIL 11/M6.01.

M2.5 ROUTE REFRIGERANT PIPING FROM WALL MOUNTED DUCTLESS FAN COIL UNIT TO ASSOCIATED AIR COOLED CONDENSING UNIT. REFRIGERANT PIPING SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. FIELD COORDINATE EXACT ROUTING. RE: DETAIL 17/M6.01.

M3.1 PROVIDE THERMOSTAT AT APPROXIMATE LOCATION SHOWN. THERMOSTAT SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.2 PROVIDE HUMIDISTAT AT APPROXIMATE LOCATION SHOWN. HUMIDISTAT SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.5 PROVIDE DDC CONTROLS PANEL. COORDINATE EXACT LOCATION WITH CONTROLS AND ELECTRICAL CONTRACTORS.

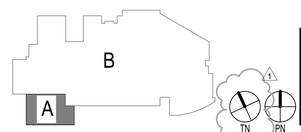
M3.9 PROVIDE MOTORIZED DAMPER AT LOCATION SHOWN. DAMPER SHALL BE INTERLOCKED SUCH THAT IT IS NORMALLY CLOSED AND ONLY OPEN WHEN AHU-G1 ENTERS ECONOMIZER MODE.

M4.4 PROVIDE AIR HANDLING UNIT AT APPROXIMATE LOCATION SHOWN. PROVIDE ALL CLEARANCES AS REQUIRED BY EQUIPMENT MANUFACTURER. INSTALL UNIT ON 6" HIGH HOUSEKEEPING PAD. PROVIDE FIELD FABRICATED MIXING BOX PLENUM ON AHU WITH RETURN AIR AND OUTSIDE AIR CONNECTIONS AS SHOWN. PLENUM BOX SHALL BE THE SAME HEIGHT AND WIDTH AS THE AHU RETURN AIR CONNECTION AND A MINIMUM DEPTH AS INDICATED.

M4.7 PROVIDE VARIABLE FREQUENCY DRIVE AT APPROXIMATE LOCATION SHOWN. COORDINATE FINAL LOCATION WITH ELECTRICAL AND CONTROLS CONTRACTORS.

M4.10 PROVIDE WALL MOUNTED DUCTLESS FAN COIL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT AS HIGH AS POSSIBLE ON WALL.

KEY PLAN



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DLR GROUP

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MECHANICAL PLAN LEVEL 2 - AREA A

M1.2A

Autodesk Docs://39-25107-00 Klein ISD - Schindelwolf Gym Addition/240253_KISD Schindelwolf - Gym Addition_MEP24.rvt
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SINGLE ZONE AHU / FCU POINT LIST

APPLIES TO UNITS: AHU-G2

POINT DESCRIPTION	EXISTING	REQD.	OVRIDE	TYPE	DEVICE	ALARM	NOTES
OA DAMPER		X		BO	ACTUATOR		
OA DAMPER				AO	ACTUATOR		
OA AIRFLOW				AI	AFMS		
OA RH		X		AI	DUCT SENSOR		
OA TEMP		X		AI	AVG SENSOR, PROBE		
RA DAMPER				AO	ACTUATOR		
RA FLOW				AI	AFMS		
RA TEMP		X		AI	AVG SENSOR, PROBE		
RA RH		X		AI	DUCT SENSOR		
RA CO2				AI	DUCT SENSOR		
MIXED AIR TEMP				AI	AVG SENSOR, PROBE		
START/STOP		X	X	DO	CONTROL RELAY		
FAN SPEED		X		AO	VFD / SPEED CONTROLLER		
AHU STATUS		X		DI	CURRENT SWITCH		
FREEZE STAT				BI	LOW LIMIT TEMP SWITCH		
CHW VALVE		X	X	AO	ACTUATOR		
CHW DISCHARGE TEMP		X		AI	AVG SENSOR, PROBE		
RHC VALVE		X	X	AO	ACTUATOR		
RHC DISCHARGE TEMP		X		AI	AVG SENSOR, PROBE		
DISCHARGE AIR TEMP		X		AI	AVG SENSOR, PROBE		
SA FLOW				AI	AFMS		
SPACE TEMP		X		AI	SPACE T-STAT		
SPACE CO2				AI	SPACE CO2		
SPACE RH		X		AI	SPACE SENSOR		

SINGLE ZONE AHU / FCU POINT LIST

AHU-G1

POINT DESCRIPTION	EXISTING	REQD.	OVRIDE	TYPE	DEVICE	ALARM	NOTES
OA DAMPER				BO	ACTUATOR		
OA DAMPER		X	X	AO	ACTUATOR		
OA AIRFLOW		X		AI	AFMS		
OA TEMP		X		AI	AVG SENSOR, PROBE		
RA DAMPER		X		AO	ACTUATOR		
RA FLOW				AI	AFMS		
RA TEMP		X		AI	AVG SENSOR, PROBE		
RA RH				AI	DUCT SENSOR		
RA CO2				AI	DUCT SENSOR		
EX DAMPER		X		AO			
EX DAMPER				AO			
EX AIR FLOW		X		AI			
EX TEMP				AI			
EX LAT TEMP		X		AI			
EX EAT TEMP				AI			
MIXED AIR TEMP		X		AI	AVG SENSOR, PROBE		
START/STOP		X	X	DO	CONTROL RELAY		
FAN SPEED		X		AO	VFD / SPEED CONTROLLER		
AHU STATUS		X		DI	CURRENT SWITCH		
EXHAUST START/STOP		X	X	DO	CONTROL RELAY		
EXHAUST FAN SPEED		X		AO	VFD / SPEED CONTROLLER		
EXHAUST FAN STATUS		X		DI	CURRENT SWITCH		
FREEZE STAT		X		BI	LOW LIMIT TEMP SWITCH		
HRU DISCHARGE TEMP		X		AI	AVG SENSOR, PROBE		
CHW VALVE		X		AO	ACTUATOR		
CHW DISCHARGE TEMP		X		AI	AVG SENSOR, PROBE		
RHC VALVE		X	X	AO	ACTUATOR		
RHC DISCHARGE TEMP		X		AI	AVG SENSOR, PROBE		
DISCHARGE AIR TEMP		X		AI	AVG SENSOR, PROBE		
SA FLOW		X		AI	AFMS		
SPACE TEMP		X		AI	SPACE T-STAT		
SPACE CO2				AI	SPACE CO2		
SPACE RH		X		AI	SPACE SENSOR		

Systems, Sequences, Points, and Interlocks Coordination Table

Group 1: Zoned HVAC Systems (New Eqpt Tag)	System Type	Sequence1	Application Notes	Points List2	Hardwired Interlock3	Software Interlock4
AHU-G1	Block Air to Air HE	2.4.1	AHU With Energy recovery serving GYM addition	*See Design Drawings*		
AHU-G2	SZU	1.1.1	AHU serving storage rooms and restrrorms.	*See Design Drawings*		
AC-1	SZU	1.1.1	Mini-split system serving IDF-A201 in GYM addition.	*See Design Drawings*		24 / 7
Group 2: Fresh Air & Exhaust Systems	**System Type**	**Sequence1**	**Application Notes**	**Points List2**	**Hardwired Interlock3**	**Software Interlock4**
SAF-1	Packaged Fresh Air & Exhaust	2.1.1	Area A, new	*See Design Drawings*	Damper	Associated AHU & General OA Schedule
EF-1	Restroom Exhaust Fan	2.2.1	Area A; new	*See Design Drawings*	Damper	Associated AHU & General OA Schedule
EAH-1 (Damper)	AHU Outside Air, Return Air, Relief Air Dampers	2.1.2	Area A; new	*See Design Drawings*	Damper	Associated AHU & General OA Schedule
OAI-1 (Damper)	AHU Outside Air, Return Air, Relief Air Dampers	2.1.2	Area A; new	*See Design Drawings*	Damper	Associated AHU & General OA Schedule
Group 3: Central Plant Systems	**System Type**	**Sequence1**	**Application Notes**	**Points List2**	**Hardwired Interlock3**	**Software Interlock4**
Main Chiller Plant	Type 2A	3.1.2A	Existing equipment	*See Design Drawings*		
Main Boiler Plant	Type 2	3.2.2	Existing equipment; new CO monitor to be added for boiler shutdown only, No BMCS interface.	*See Design Drawings*		
Group 4: Lighting Control Systems	**System Type**	**Sequence1**	**Application Notes**	**Points List2**	**Hardwired Interlock3**	**Software Interlock4**
Exterior Lighting	Parking Lot, Canopy, Wall Packs, Marquee, etc.	4.1	none	*See Design Drawings*	TLO momentary switch located in Main Office (indirect)	TOD Schedule, Daylight Schedule, TLO
Interior Lighting	NA	NA	none	*NA*	NA	NA
Group 5: Miscellaneous Systems	**System Type**	**Sequence1**	**Application Notes**	**Points List2**	**Hardwired Interlock3**	**Software Interlock4**
MDF / IDF Temperatures	Typical		none	*See Design Drawings*		24 / 7
HVAC Shutdown Switch	Typical	5.2	none	*See Design Drawings*	Push on, pull off switch located in Main Office (indirect)	NA

NOTES

1. The number listed indicates sequence specification section that includes detailed sequence of operation instructions for the specific equipment type listed. All sequence specification sections that apply to the project may not be listed here. The programmer should read and include applicable functionality from associated sections that are not listed here, including but not necessarily limited to Introduction, Definitions, General, etc. sections. The sequence should be used with the detailed drawings, point lists, and graphical specifications to include all programming and configuration necessary to fulfill the functionality requirements.

2. The number listed indicates the point list specification section that applies to each system type. The point list is intended to include primarily physical points and I/O and associated alarming requirements. All point list specification sections that apply to the project may not be included here. The point list should be used with the detailed drawings, sequences, and graphical specifications to include all points necessary to fulfill the functionality requirements.

3. General hardwired interlocks that apply to the scope of this project are listed in the table. Refer to applicable equipment schedules and the sequence of operations for more detailed interlock information. Required life-safety interlocks such as fire/smoke interlocks are not listed here.

4. General enable/disable software interlocks that apply to this project are listed here, the list may not include all software interlocks required to achieve required functionality. Refer to the sequence of operations for more detailed software interlock information.

EXHAUST AND SUPPLY FANS

APPLIES TO UNITS: EF-1, SAF-1

POINT DESCRIPTION	REQD.	OVRIDE	TYPE	DEVICE	ALARM	NOTES
START/STOP	X	X	DO	CONTROL RELAY		
DAMPER	X	X	DO	ACUTATOR		HARDWIRE INTERLOCK TO FAN START/STOP, WHERE SHOWN ON PLANS WITH "M" SYMBOL
SPACE TEMPERATURE			DI	TEMP SENSOR (LINE VOLTAGE)		
Status	X		AI	CURRENT TRANSDUCER	X	

NOTE: REFER TO EXH. FAN SCHEDULE FOR SPECIFIC INTERLOCK REQUIREMENTS

EXTERIOR LIGHTING CONTROLS

TOTAL NUMBER OF LIGHTING ZONES = SEE ELECTRICAL PLANS

POINT DESCRIPTION	REQD.	OVRIDE	TYPE	DEVICE	ALARM	NOTES
LIGHTING CONTACTOR	X	X	DO	CONTROL RELAY		EXTERIOR LIGHTING (QTY. 1), AND MARQUEE/GROUND LIGHTING (QTY. 1)
EXTERIOR LTG. OVERRIDE	X		DI	EXTERIOR OVERRIDE STATION		

MDF/IDF TEMPERATURES

POINT DESCRIPTION	REQD.	OVRIDE	TYPE	DEVICE	ALARM	NOTES
MDF/IDF TEMPERATURES	X		AI	SPACE THERMISTOR		
MDF/IDF HUMIDITY	X		AI	SPACE HUMIDITY		

GRAVITY HOODS

APPLIES TO UNITS: EF-1, SAF-1

POINT DESCRIPTION	REQD.	OVRIDE	TYPE	DEVICE	ALARM	NOTES
DAMPER	X	X	DO	ACTUATOR	X	
OA DAMPER OPEN POSITION	X		BI	DAMPER END SWITCH		MONITOR CLOSED POSITION

HVAC SHUTDOWN

POINT DESCRIPTION	REQD.	OVRIDE	TYPE	DEVICE	ALARM	NOTES
HVAC SHUTDOWN	X		DI	SHUTDOWN STATION	X	CRITICAL PRIORITY WHEN ACTIVATED

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MECHANICAL CONTROLS POINTS AND SEQUENCES

M4.01

AIR DEVICE SCHEDULE

MARK	MFR. & MODEL	TYPE	REMARKS
A	TITUS TDC-AA	LOUVERED FACE SUPPLY AIR DIFFUSER	24"x24" FACE, ALUMINUM CONSTRUCTION WITH FRAME TO MATCH CEILING TYPE.
B	TITUS PAR-AA	PERFORATED FACE RETURN / EXHAUST AIR GRILLE	24"x24" FACE, ALUMINUM CONSTRUCTION WITH FRAME TO MATCH CEILING TYPE. PROVIDE 22"x22" NECK UNLESS OTHERWISE NOTED. PROVIDE O.B.D. FOR DUCTED EXHAUST.
C	TITUS TDC-AA	LOUVERED FACE SUPPLY AIR DIFFUSER	12"x12" FACE, ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR HARD CEILING, DEPENDING ON CEILING TYPE.
D	TITUS PAR-AA	PERFORATED FACE RETURN / EXHAUST AIR GRILLE	12"x12" FACE, ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR HARD CEILING, DEPENDING ON CEILING TYPE. PROVIDE 10"x10" NECK UNLESS OTHERWISE NOTED ON DRAWINGS. PROVIDE O.B.D. FOR DUCTED EXHAUST OR RETURN.
E	TITUS 300FL	SIDEWALL SUPPLY AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 3/4" BLADE SPACING, DOUBLE DEFLECTION WITH FRONT BLADES PARALLEL TO LONG DIMENSION. PROVIDE O.B.D.
F	TITUS 350FL	SIDEWALL RETURN AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 3/4" BLADE SPACING, 35° DEFLECTION WITH BLADES PARALLEL TO LONG DIMENSION. PROVIDE O.B.D. FOR DUCTED EXHAUST.
G	TITUS 33RL	HEAVY DUTY RETURN AIR GRILLE	STEEL HEAVY DUTY CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 1/2" BLADE SPACING 38° DEFLECTION WITH HORIZONTAL BLADES.

NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR FINISH.
2. REFER TO MECHANICAL FLOOR PLAN FOR NECK SIZES.

EXHAUST FAN SCHEDULE

MARK	EF-1
SERVES	RESTROOMS / CUST.
TYPE/DRIVE	CENT/DIRECT
INTERLOCK	EMCS
CFM (MIN./MAX.)	525
EXT. S.P. (IN. W.G.)	0.50
HORSEPOWER	1/10
FAN SPEED (RPM)	1,620
SONES (MAX.)	7.9
VOLTS/PHASE/HERTZ	120 / 1 / 60
MANUFACTURER	GREENHECK
MODEL NUMBER	G-090-VG
NOTES	ALL

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE WITH 12" PREFABRICATED ROOF CURB, WEATHERPROOF DISCONNECT SWITCH, AND ALUMINUM BIRD SCREEN.
3. PROVIDE WITH MOTORIZED DAMPER INTERLOCKED WITH FAN OPERATION SUCH THAT DAMPER SHALL OPEN WHEN FAN IS ENERGIZED AND SHUT WHEN FAN IS DE-ENERGIZED. DAMPER SHALL BE INSTALLED IN ACCESSIBLE LOCATION.
4. PROVIDE WITH DIRECT DRIVE, ELECTRONICALLY COMMUTATED FAN MOTOR (ECM).

SUPPLY FAN SCHEDULE

MARK	SAF-1
SERVES	AHU-G1
TYPE/DRIVE	CENT/DIRECT
INTERLOCK	EMCS
CFM (MIN./MAX.)	4,850
EXT. S.P. (IN. W.G.)	0.60
HORSEPOWER	5
FAN SPEED (RPM)	1,393
SONES (MAX.)	26.0
VOLTS/PHASE/HERTZ	460/3/60
MANUFACTURER	GREENHECK
MODEL NUMBER	KSQ-20-M2-VG
NOTES	ALL

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE WITH 12" PREFABRICATED ROOF CURB, WEATHERPROOF DISCONNECT SWITCH, AND ALUMINUM BIRD SCREEN.
3. PROVIDE WITH MOTORIZED DAMPER INTERLOCKED WITH FAN OPERATION SUCH THAT DAMPER SHALL OPEN WHEN FAN IS ENERGIZED AND SHUT WHEN FAN IS DE-ENERGIZED. DAMPER SHALL BE INSTALLED IN ACCESSIBLE LOCATION.
4. PROVIDE WITH DIRECT DRIVE, ELECTRONICALLY COMMUTATED FAN MOTOR (ECM).

SINGLE ZONE AIR HANDLING UNIT SCHEDULE

	MARK	AHU-G2
FAN	SERVES	ADMIN
	TYPE	SZ
	UNIT CONFIGURATION	HORIZONTAL
	DISCHARGE	VERTICAL
	DESIGN SUPPLY AIR (CFM)	975
	MINIMUM SUPPLY AIR (CFM)	390
	DESIGN OUTDOOR AIR (CFM)	175
	EXT. S.P. (IN. W.G.)	0.50
	FAN MOTOR HORSEPOWER (HP / # OF FANS)	1 / 1
	VOLTS/PHASE/HERTZ	480 / 3 / 60
	MAX. FAN RPM	1,800
	FULL LOAD AMPS (FLA)	1.5
REHEAT COIL	MAX. COIL FACE VELOCITY (FPM)	500
	MINIMUM COIL ROWS	2
	MAX. FINS PER INCH	11
	COIL CFM	975
	EAT (°F)	48.8
	LAT (°F)	85.0
	EWT/LWT (°F)	180 / 140
	HEATING CAPACITY (MBH)	38.1
	COIL WATER FLOW (GPM)	1.9
	HW BRANCH PIPING SIZE	3/4"
	MAX. WATER P.D. (FT. HD.)	15.0
COOLING COIL	MAX. COIL FACE VELOCITY (FPM)	500
	MINIMUM COIL ROWS	4
	MAX. FINS PER INCH	11
	COIL CFM	975
	EAT DB/WB (°F)	76.5 / 65.8
	LAT DB/WB (°F)	55 / 54
	TOTAL COOLING CAPACITY (MBH)	36.5
	SENSIBLE COOLING CAPACITY (MBH)	22.6
	EWT/LWT (°F)	44 / 58
	COIL WATER FLOW (GPM)	5.2
	CHW BRANCH PIPING SIZE	1"
	MAX. WATER P.D. (FT. HD.)	15.0
MANUFACTURER		DAIKIN
MODEL NUMBER		CAH005GDGM
OPERATING WEIGHT (LBS.)		1327
NOTES		ALL

NOTES:
1. PROVIDE UNIT WITH DISCHARGE PLENUM, FAN SECTION, HOT WATER REHEAT COIL SECTION, CHILLED WATER COIL SECTION, AND MERV 13 PLEATED FILTER RETURN SECTION.
2. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE LOSSES DUE TO COILS, FILTERS, AND CASING.
3. PROVIDE CHILLED WATER COIL(S) WITH 2-WAY AUTOMATIC CONTROL VALVE.
4. PROVIDE HOT WATER COIL(S) WITH 2-WAY AUTOMATIC CONTROL VALVE.
5. SPECIFY WITH DOUBLE-WALLED CONSTRUCTION WITH METAL INTERIOR, METAL FILTER FRAMES, ANGLED FILTERS, AND STAINLESS STEEL HEADER.

AIR HANDLING UNIT SCHEDULE

MARK		AHU-G1
TYPE		HORZONTAL - DRAW THRU - SZ
SUPPLY FAN	DISCHARGE AIR CONFIGURATION	FRONT
	SUPPLY AIR (CFM)	10,040
	MINIMUM SUPPLY AIR (CFM)	4,850
	OUTSIDE AIR (CFM)	4,850 (1)
	FAN TYPE	DIRECT DRIVE PLENUM
	FAN CONTROL	FIELD SUPPLIED VFD
	FAN RPM	1,800
	EXT. S.P. (IN. W.G.)	1.00 (1)
	TOTAL S.P. (IN. W.G.)	4.95 (1)
	VOLTS/PHASE/HERTZ	480 / 3 / 60
	FAN MOTOR BRAKE HORSEPOWER	11.28 (1)
	FAN MOTOR HORSEPOWER	15.00
	FAN FULL LOAD AMPS (FLA)	18.1
EXHAUST FAN	DISCHARGE AIR CONFIGURATION	TOP (1)
	EXHAUST AIR (CFM)	3,995
	FAN TYPE	FORWARD CURVE / BELT
	FAN CONTROL	FIELD SUPPLIED VFD
	FAN RPM	1800
	EXT. S.P. (IN. W.G.)	0.50 (1)
	TOTAL S.P. (IN. W.G.)	2.01 (1)
	VOLTS/PHASE/HERTZ	480 / 3 / 60
	FAN MOTOR BRAKE HORSEPOWER	1.87 (1)
	FAN MOTOR HORSEPOWER	3.00
	FAN FULL LOAD AMPS (FLA)	4.2
CORE ERV	VENTILATOR TYPE	STATIC PLATE, HEAT AND HUMIDITY TRANSFER
	DISCHARGE AIR CONFIGURATION	HORIZONTAL
	OUTDOOR AIR (CFM)	4,850 (1)
	EXHAUST AIR (CFM)	3,995 (1)
	SUMMER OUTDOOR DB (°F)	93.1
	SUMMER OUTDOOR WB (°F)	79.9
	SUMMER INDOOR AIR DB (°F)	75.0
	SUMMER INDOOR AIR WB (°F)	62.5
	SUMMER INDOOR AIR RELATIVE HUMIDITY (%)	50.0
	WINTER OUTDOOR DB (°F)	20.0
	WINTER OUTDOOR WB (°F)	18.0
	WINTER INDOOR AIR DB (°F)	73.0
	WINTER INDOOR AIR WB (°F)	60.9
	WINTER INDOOR AIR RELATIVE HUMIDITY (%)	50.0
	SUMMER LEAVING AIR TEMPERATURE FROM ERV DB (°F)	78.0
	SUMMER LEAVING AIR TEMPERATURE FROM ERV WB (°F)	72.1
	SUMMMER SAVING TOTAL LOAD WITH ERV (BTUH)	170,477
	SUMMMER TOTAL EFFECTIVENESS (%)	54.1%
	WINTER LEAVING AIR TEMPERATURE FROM ERV DB (°F)	52.7
	WINTER LEAVING AIR TEMPERATURE FROM ERV WB (°F)	45.2
	WINTER SAVING TOTAL LOAD WITH ERV (BTUH)	251,401
	WINTER TOTAL EFFECTIVENESS (%)	62.97%
MAIN COOLING COIL	MAX. COIL FACE VELOCITY (FPM)	500
	MIN. ROWS/MAX. FINS PER INCH	4 / 11
	COIL CFM	10,040
	EAT DB/WB (°F)	78.3 / 69.5
	LAT DB/WB (°F)	55 / 54
	MINIMUM TOTAL COOLING CAPACITY (MBH)	497.4
	MINIMUM SENSIBLE COOLING CAPACITY (MBH)	252.6
	EWT/LWT (°F)	44 / 58
	COIL WATER FLOW (GPM)	71.1
	ACTUAL WATER P.D. (FT. HD.)	10.9
	MAX. WATER P.D. (FT. HD.)	10
MAIN HEATING COIL	MAX. COIL FACE VELOCITY (FPM)	700
	MIN. ROWS/MAX. FINS PER INCH	4 / 11
	COIL CFM	10,040
	EAT DB (°F)	52.7
	LAT DB (°F)	85
	MINIMUM SENSIBLE CAPACITY (MBH)	350.2
	EWT/LWT (°F)	180 / 140
	COIL WATER FLOW (GPM)	17.5
	ACTUAL WATER P.D. (FT. HD.)	4.2
	MAX. WATER P.D. (FT. HD.)	10
MANUFACTURER		DAIKIN
MODEL NUMBER		CAH022GDGM
UNIT SIZE (LENGTH" X WIDTH" X HEIGHT")		(274 X 88 X 100) (1)
UNIT WEIGHT (LBS)		7,529
NOTES		ALL (1)

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. SUPPLY FAN SHALL BE SIZED FOR WORST CASE OF RETURN AIR STREAM PRESSURE DROP OR OUTSIDE AIR STREAM PRESSURE DROP. A 1.25 IN. W.G. PRESSURE DROP CREDIT SHALL BE APPLIED TO THE OUTSIDE AIR STREAM DUE TO THE EXTERNAL OUTSIDE AIR FAN.
3. PROVIDE UNIT WITH PREMIUM EFFICIENCY TEFC MOTOR AND FIELD MOUNTED VARIABLE FREQUENCY DRIVE FOR SUPPLY FAN.
4. PROVIDE CHILLED WATER AND HOT WATER COILS WITH 2-WAY AUTOMATIC CONTROL VALVES FURNISHED AND INSTALLED BY INSTALLING CONTROLS CONTRACTOR.
5. UNITS TO BE PROVIDED WITH 2" MERV 13 FLAT FILTERS FOR OUTSIDE AIRSTREAM.
6. IN ADDITION TO STANDARD FILTER PRESSURE DROP, INCLUDE 0.50" OF DIRTY FILTER ALLOWANCE FOR FILTERS.
7. PROVIDE FAN MOTORS WITH INTEGRAL SHAFT GROUNDING RINGS.
8. PROVIDE WITH INTEGRAL ENERGY RECOVERY VENTILATOR. ERV SHALL HAVE 2" MERV 11 ANGLED FILTER FOR RETURN AIRSTREAM, ENERGY RECOVERY VENTILATOR BYPASS SECTION WITH CONTROL DAMPER, PREMIUM EFFICIENCY TEFC MOTOR WITH SHAFT GROUNDING RINGS AND FIELD MOUNTED VARIABLE FREQUENCY DRIVE FOR DIRECT DRIVE PLENUM EXHAUST FAN.
9. INSTALLING CONTROLS CONTRACTOR TO FURNISH AND INSTALL MOTORIZED CONTROL DAMPERS AND ACTUATORS FOR RETURN AIR AND OUTSIDE AIR IN THE DUCT.

GRAVITY HOOD SCHEDULE

MARK	EAH-1	OAI-1	OAI-2
SERVES	AHU-G1	AHU-G2	AHU-G1
DESIGN AIRFLOW (CFM)	4365	175	10040
MAX. P.D. (IN. W.G.)	0.02	0.02	0.02
TYPE	EXHAUST	INTAKE	INTAKE
THROAT SIZE (INCHES x INCHES)	42 X 42	12 X 12	60 X 76
ROOF OPENING SIZE (INCHES x INCHES)	42 X 42	12 X 12	60 X 76
MODEL	WRH-42X42	WIH-12X12	WIH-60X76
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK
NOTES	ALL	ALL	ALL

NOTES:
1. PROVIDE WITH PREFABRICATED 12" ROOF CURB AND INTEGRAL ALUMINUM BIRD SCREEN.
2. PROVIDE WITH MOTORIZED DAMPER.

DUCTLESS SPLIT A/C SCHEDULE

	MARK	AC-1
INDOOR UNIT	SERVES	IDF ROOM
	MAX SUPPLY AIR (CFM)	450
	TOTAL COOLING CAPACITY (MBH)	18.0
	MCA	1
	FAN MOTOR FLA	0.19
	VOLTS/PHASE/HERTZ	208/1/60
	MODEL NUMBER	PKA-A18LA
	NOTES	1, 2, 3
OUTDOOR UNIT	MARK	CU-1
	SERVES	AC-1
	GRAND TOTAL COOLING (MBH)	18
	AMBIENT TEMP. (°F)	105
	S.E.E.R.	20.2
	E.E.R.	10.7
	MCA	14 (1)
	MOCP	30 (1)
	VOLTS/PHASE/HERTZ	208/1/60
	MODEL NUMBER	PUY-A15NKA7
	NOTES	ALL
	MANUFACTURER	MITSUBISHI

NOTES:
1. PROVIDE WITH SINGLE POINT POWER TO INCLUDE CONDENSING UNIT AND REMOTE THERMOSTAT. INDOOR UNIT SHALL BE POWERED FROM OUTDOOR UNIT.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
3. REFRIGERANT LINES TO BE SIZED BY MANUFACTURER.
4. PROVIDE SINGLE CIRCUIT CONDENSING UNIT.
5. PROVIDE CONDENSING UNIT WITH EPOXY COATED COILS.

WATER COOLED CHILLER SCHEDULE

MARK	CH-3
COMPRESSOR TYPE	SCREW
COOLING CAPACITY (TONS)	100
NUMBER OF COMPRESSORS	2
IPLV (KW / TON)	0.56
FL (KW/TON)	0.72
EVAPORATOR DATA	
DESIGN FLOW RATE (GPM)	200
ENTERING WATER TEMPERATURE (°F)	56.0
LEAVING WATER TEMPERATURE (°F)	44.0
MAX PRESSURE DROP (FT. H2O W.G.)	10.0
FOULING FACTOR (HR-SQFT-F/BTU)	0.0001
NUMBER OF PASSES	3
REFRIGERANT TYPE	R-513a
CONDENSER DATA	
DESIGN FLOW RATE (GPM)	300
ENTERING WATER TEMPERATURE (°F)	86.0
LEAVING WATER TEMPERATURE (°F)	96.0
MAX PRESSURE DROP (FT. H2O W.G.)	10.5
FOULING FACTOR (HR-SQFT-F)/BTU	0.00025
NUMBER OF PASSES	2 (1)
ELECTRICAL DATA	
MCA (MINIMUM CIRCUIT AMPACITY)	139
MOCP (MAX. OVER CURRENT PROTECTION)	200
MOTOR STARTER	WYE-DELTA
VOLTS/PHASE/HERTZ	480 / 3 / 60
MANUFACTURER	CARRIER
MODEL NUMBER	30HXC106
OPERATING WEIGHT (LBS.)	6197
NOTES	ALL

NOTES:
1. ALTERNATE 3: WATER COOLED CHILLER SHALL NOT BE INCLUDED IN BASE BID. REFER TO SPECIFICATION 23 64 26 FOR ALTERNATE MANUFACTURERS.
2. PROVIDE WITH INTEGRAL DISCONNECT SWITCH AND MAIN CIRCUIT BREAKER RATED AT 65,000 AIC.
3. PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION AND CONTROL POWER TRANSFORMER.
4. PROVIDE WITH FACTORY INSTALLED RE-SEATING RELIEF VALVES PER ASHRAE 15.
5. PROVIDE WITH PREMIUM EFFICIENCY COMPRESSOR MOTOR.
6. PROVIDE WITH FACTORY MOUNTED WYE-DELTA STARTER FOR COMPRESSOR MOTOR.
7. PROVIDE WITH CONTROLLER BY MANUFACTURER. CONTROLLER SHALL BE CAPABLE OF BACNET COMMUNICATION FOR INTEGRATION WITH EMCS.
8. ANY MANUFACTURERS OTHER THAN THE BASIS OF DESIGN SHALL MEET THE SAME MOCP RATING TO REUSE THE SPACE IN THE MAIN SWITCHBOARD. ANY DEVIATION IN MOCP REQUIRING ADDITIONAL ELECTRICAL WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE AND CAPTURE DURING BIDDING.

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SCHINDEWOLF GYM ADDITION
KLEIN INDEPENDENT SCHOOL DISTRICT
20903 ELLA BLVD
SPRING, TEXAS 77388

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MECHANICAL SCHEDULES

M5.01

OUTSIDE AIR CALCULATIONS - AHU-GYM

ZONE NUMBER	ROOM NAME	OCCUPANCY CATEGORY	ZONE FLOOR AREA Az	ZONE DISCHARGE AIRFLOW Vdz	OCCUPANCY DENSITY #/1000 FT2	ZONE POPULATION Pz	PEOPLE OUTDOOR AIR RATE Rp	AREA OUTDOOR AIR RATE Ra	BREATHING ZONE OUTDOOR AIRFLOW Vbz	ZONE AIR DIST. EFF. Ez	ZONE OUTDOOR AIRFLOW Voz [Vbz/Ez]	ZONE OUTDOOR AIRFLOW PROVIDED
AHU-G1	A100 GYM	GYM, STADIUMS, ARENA (PLAY AREA)	4,188	2,386	0	18.0	0	0.3	1256	1.0	1256	1260
	GYM WALKWAY - N	CORRIDORS	2,808	1,623	0	0.0	0	0.06	168	1.0	168	170
	GYM WALKWAY - S	CORRIDORS	1,352	919	0	0.0	0	0.06	81	1.0	81	85
	SPECTATOR	SPECTATATOR AREAS	2,165	5,109	150	427	7.5	0.06	3332	1.0	3332	3335
											SUM	**4850**

CONDITIONED ANALYZED	HEATING
VENTILATION CODE	2021 IMC

OUTSIDE AIR CALCULATIONS - AHU-ADMIN

ZONE NUMBER	ROOM NAME	OCCUPANCY CATEGORY	ZONE FLOOR AREA Az	ZONE DISCHARGE AIRFLOW Vdz	OCCUPANCY DENSITY #/1000 FT2	ZONE POPULATION Pz	PEOPLE OUTDOOR AIR RATE Rp	AREA OUTDOOR AIR RATE Ra	BREATHING ZONE OUTDOOR AIRFLOW Vbz	ZONE AIR DIST. EFF. Ez	ZONE OUTDOOR AIRFLOW Voz [Vbz/Ez]	ZONE OUTDOOR AIRFLOW PROVIDED
AHU-G2	A101 STORAGE	STORAGE ROOMS	365	370	0	4.0	0	0.12	44	0.8 (1)	55	**55** (1)
	A103 TICKET BOOTH	SALES	144	70	15	4.0	7.5	0.12	47	1.0	47	**50** (1)
	A104 CUST.	STORAGE ROOMS	21	75	0	4.0	0	0.12	3	1.0	3	**15** (1)
	A105 ENTRY VEST.	CORRIDORS	266	180	0	4.0	0	0.06	16	1.0	16	**20**
	A106 WOMENS / A107 MENS	CORRIDORS	565	280	0	4.0	0	0.06	34	1.0	34	**35**
											SUM	175

CONDITIONED ANALYZED	HEATING
VENTILATION CODE	2021 IMC

(1)

BUILDING PRESSURIZATION CALCULATION

ZONE	TAG	MAX OA CFM	MIN OA CFM	EXHAUST CFM	ZONE NET CFM	ZONE NET PRESSURIZATION%
GYM	AHU-G1 AHU-G1-EX	4850	2155	- 3995	855	17.6%
ADMIN	AHU-G2 EF-1	175 -	- -	- 525	-350	-200.0%

BUILDING PRESSURIZATION	BUILDING POSITIVE %
505	10.0%

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OUTSIDE AIR & BUILDING PRESSURE CALCULATION (1)

M5.02

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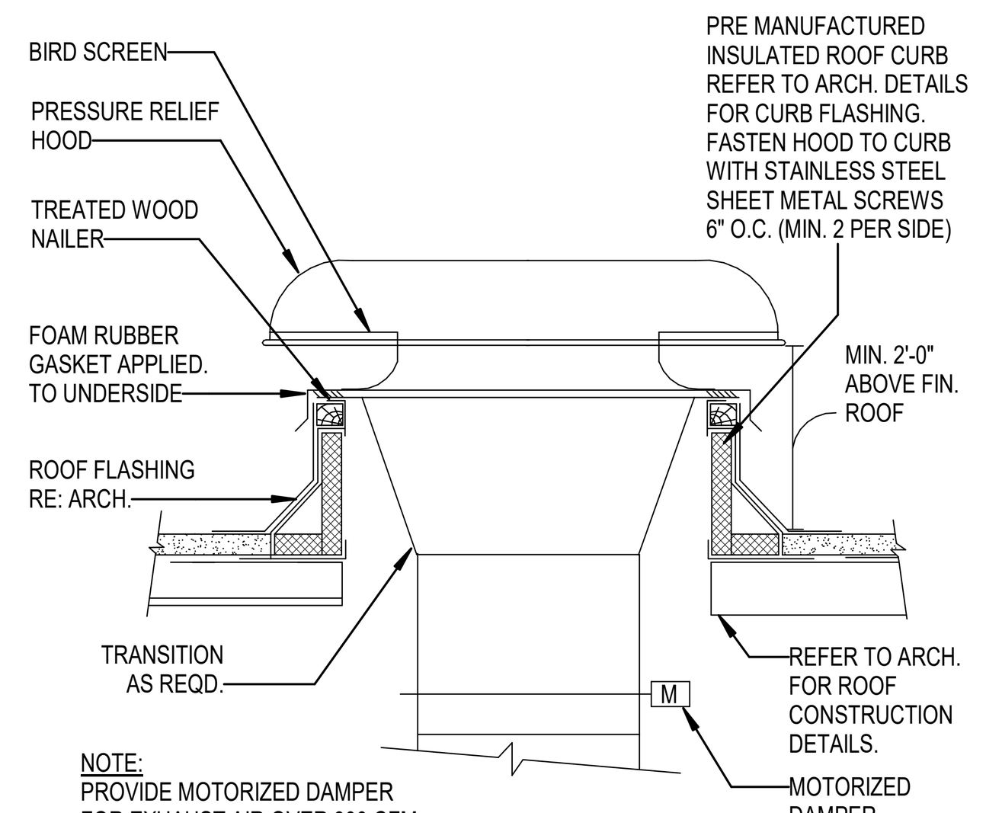
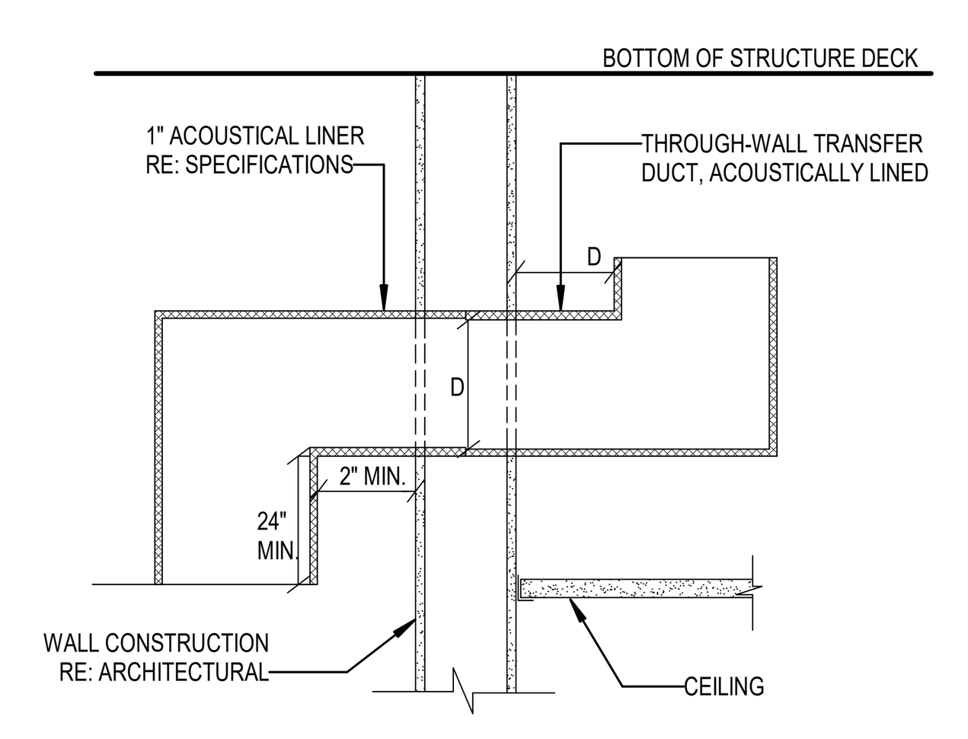
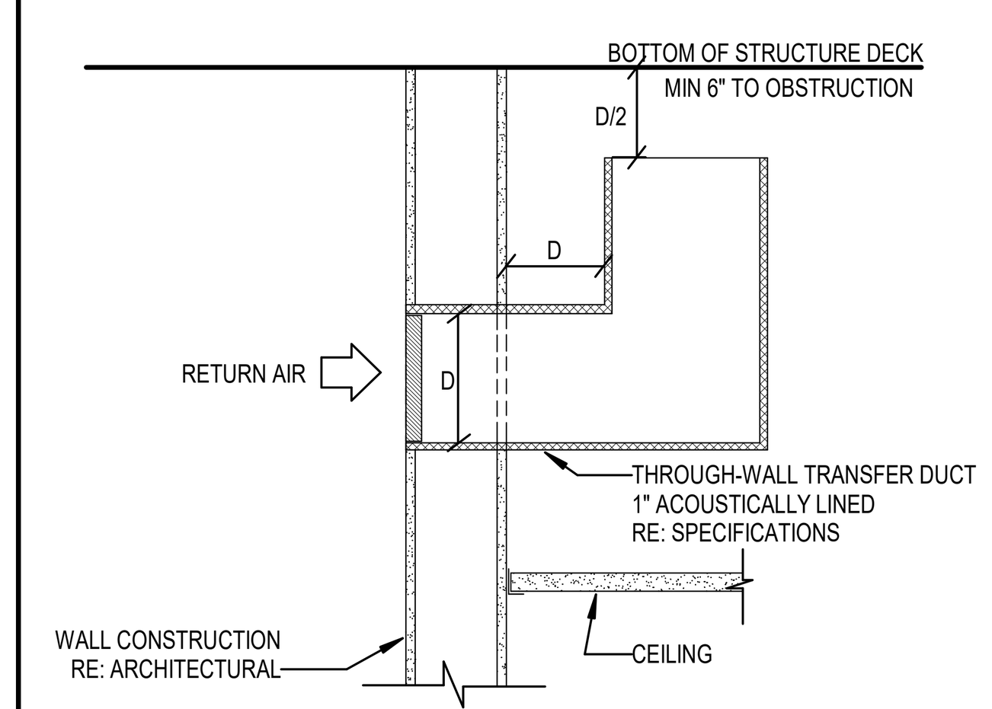


NOTE:
PROVIDE MOTORIZED DAMPER FOR EXHAUST AIR OVER 300 CFM. INTERLOCK DAMPER WITH EXHAUST FAN. DAMPER SHALL BE INSTALLED IN READILY ACCESSIBLE LOCATION.

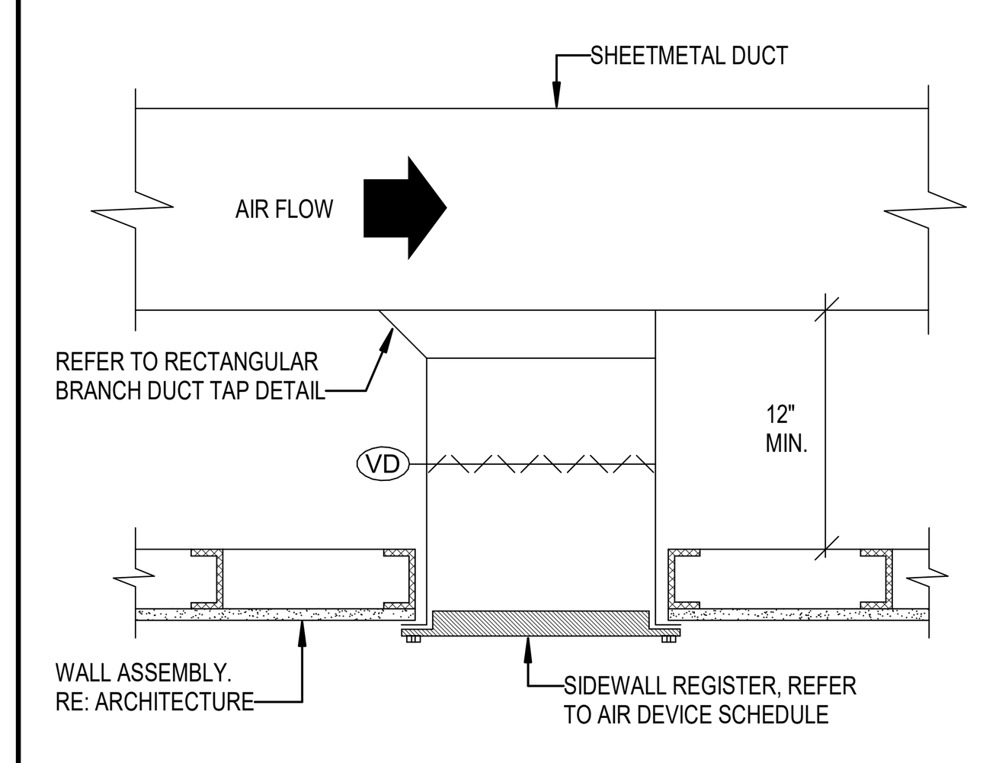
7 EXHAUST AIR HOOD
NOT TO SCALE



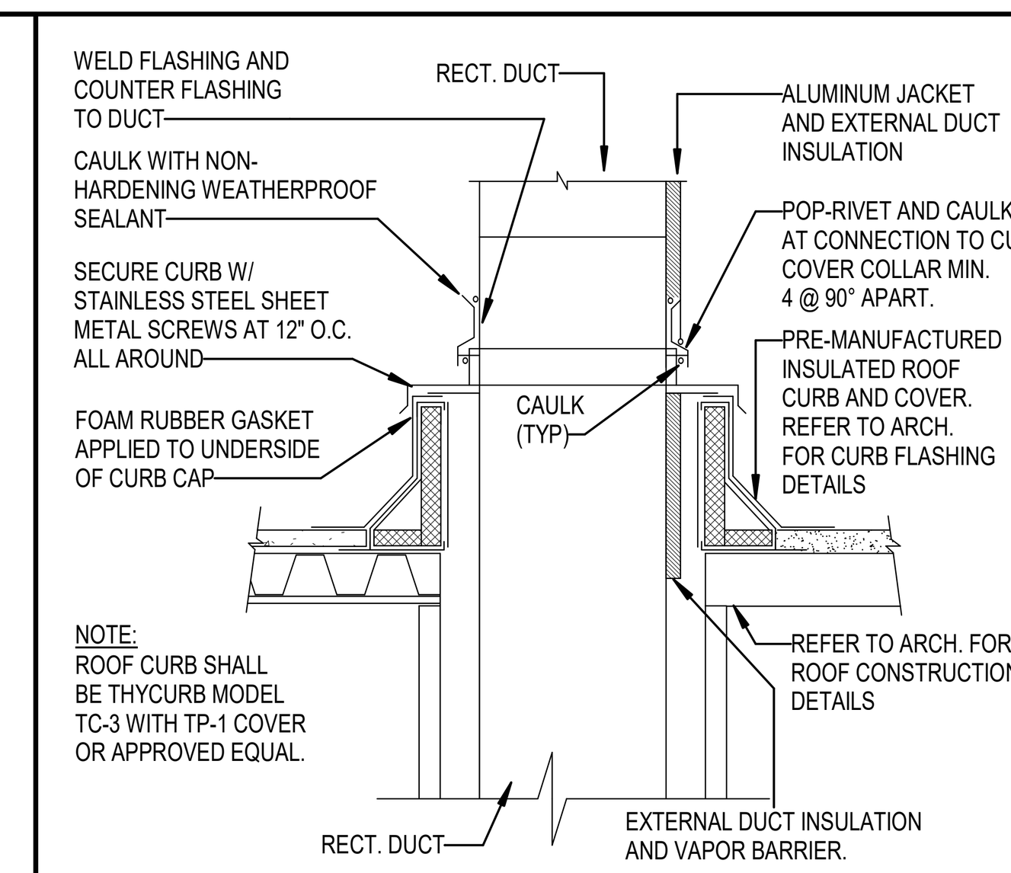
6 MECHANICAL ROOM R/A BOOT
NOT TO SCALE



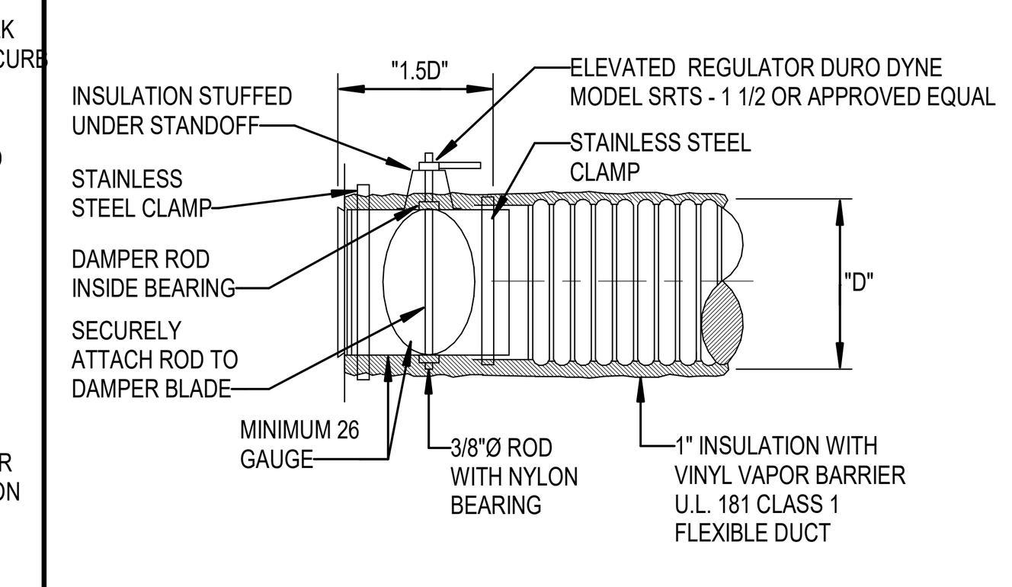
5 SIDEWALL REGISTER RETURN AIR BOOT
NOT TO SCALE



4 SIDEWALL SUPPLY REGISTER DETAIL
NOT TO SCALE

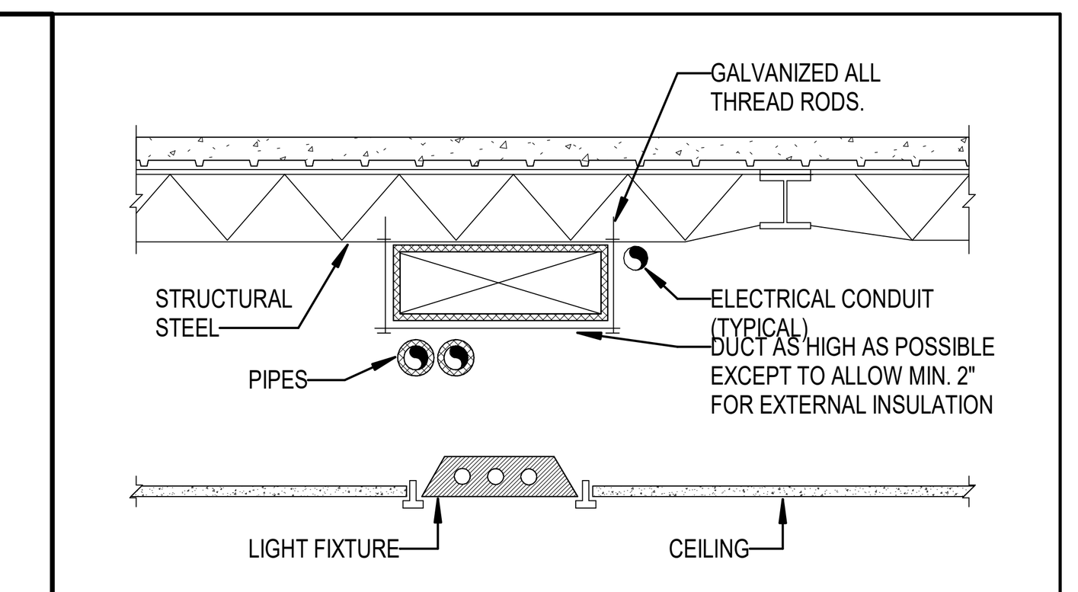


3 RECTANGULAR DUCT ROOF CURB PEN. DETAIL
NOT TO SCALE



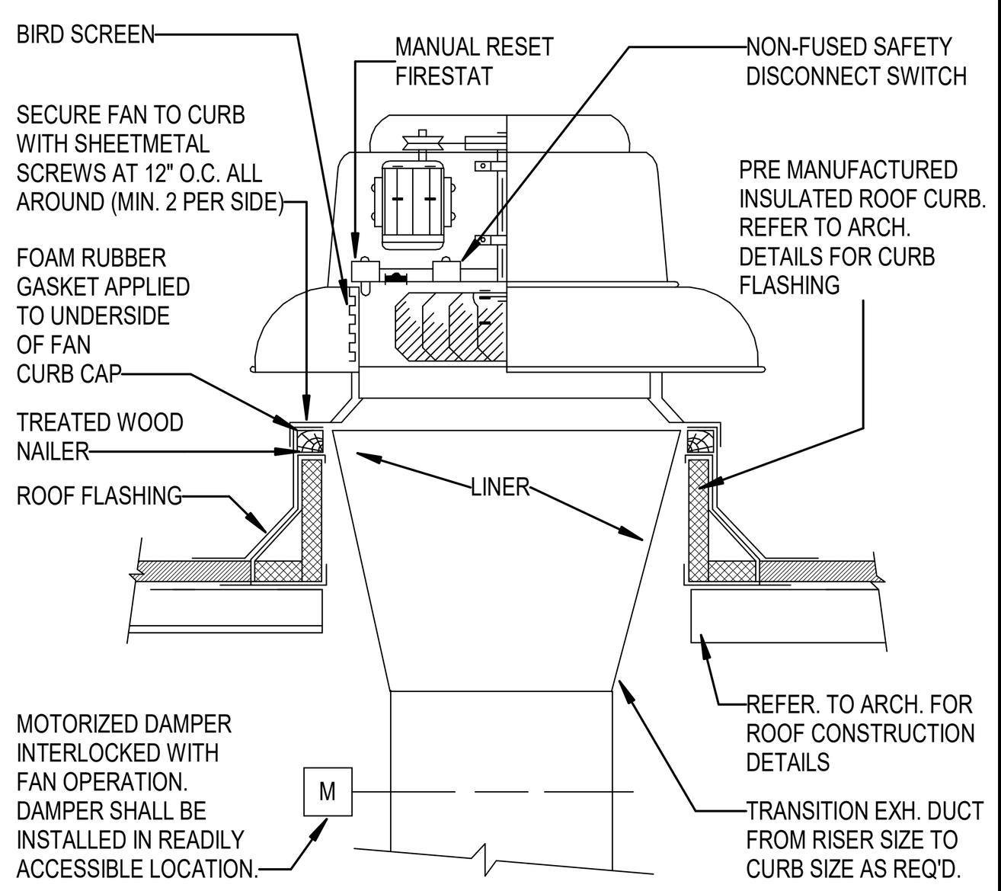
NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3'-0" AND MAXIMUM 6'-0"
2. TYPICAL OF ROUND DUCT CONNECTIONS TO RECTANGULAR DUCTS
3. ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

2 SPIN-IN DETAIL
NOT TO SCALE

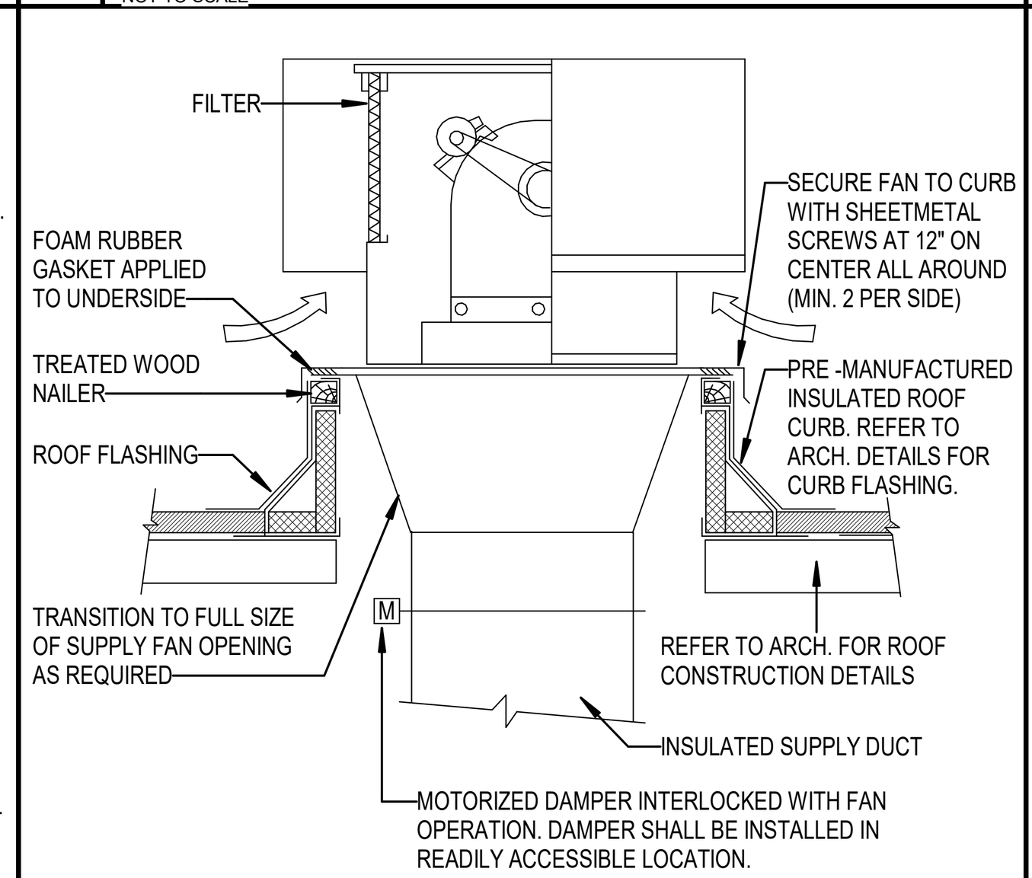


NOTES:
1. PIPES (INCLUDING SPRINKLER PIPING) AND ELECTRICAL CONDUIT CAN BE ROUTED BETWEEN JOISTS OR THROUGH JOIST WEB SPACE AS REQUIRED. DUCT SHALL BE LOCATED AS HIGH AS POSSIBLE.
2. U.L. DESIGN ASSEMBLY NUMBERS ARE SHOWN ON ARCHITECTURAL PLANS WHEN REQUIRED.
3. INSTALLATION OF ALL SERVICES MUST BE COORDINATED BY THE CONTRACTOR.

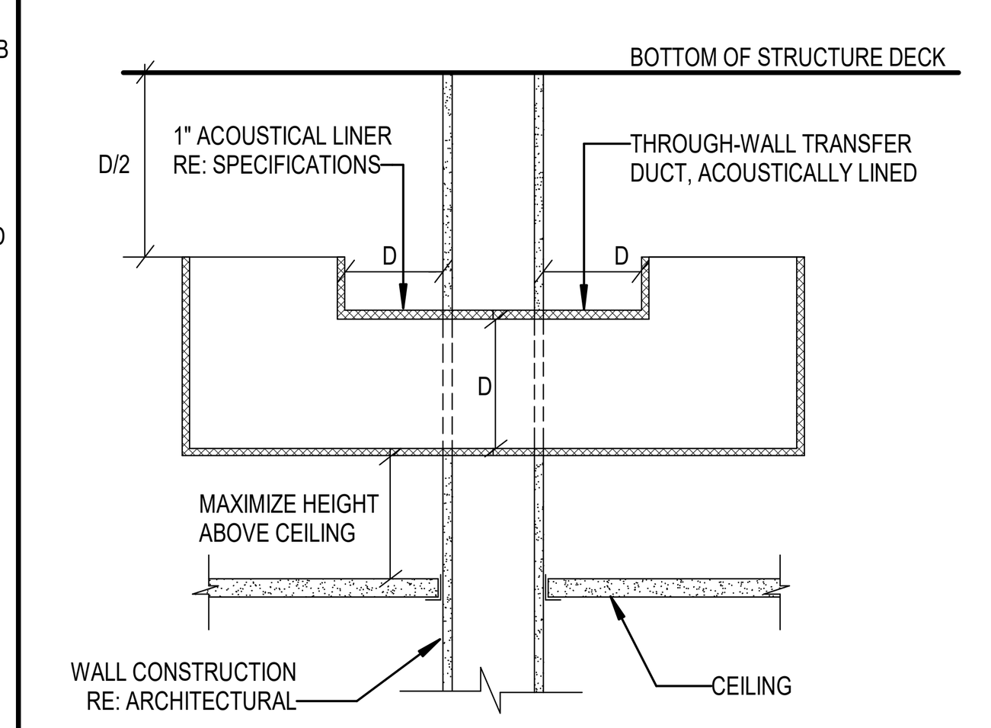
1 TYP. MEP INSTALLATION DETAIL
NOT TO SCALE



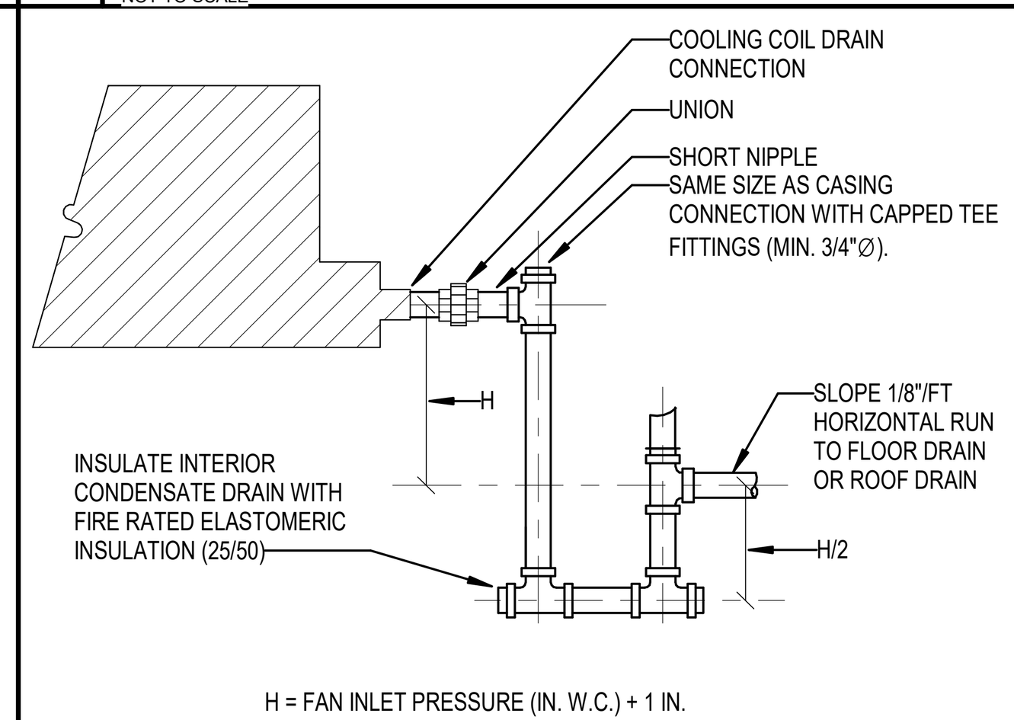
14 CENTRIFUGAL ROOF EXHAUST FAN
NOT TO SCALE



13 CENTRIFUGAL ROOF SUPPLY FAN
NOT TO SCALE

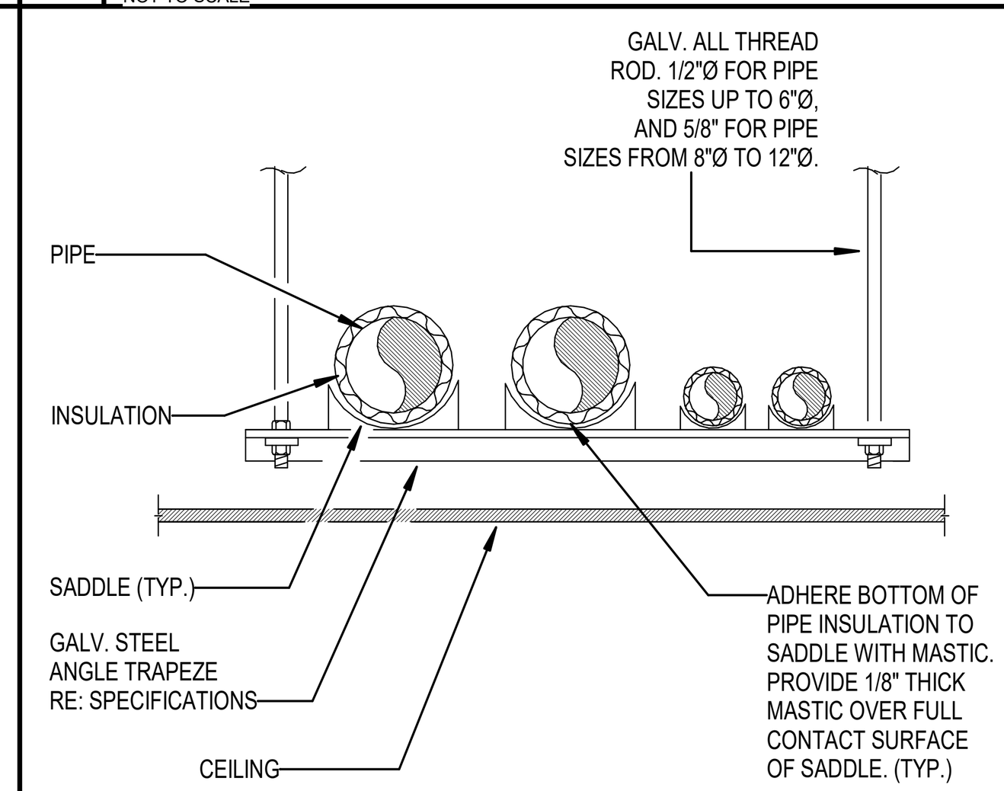


12 RETURN AIR BOOT THRU WALL
NOT TO SCALE



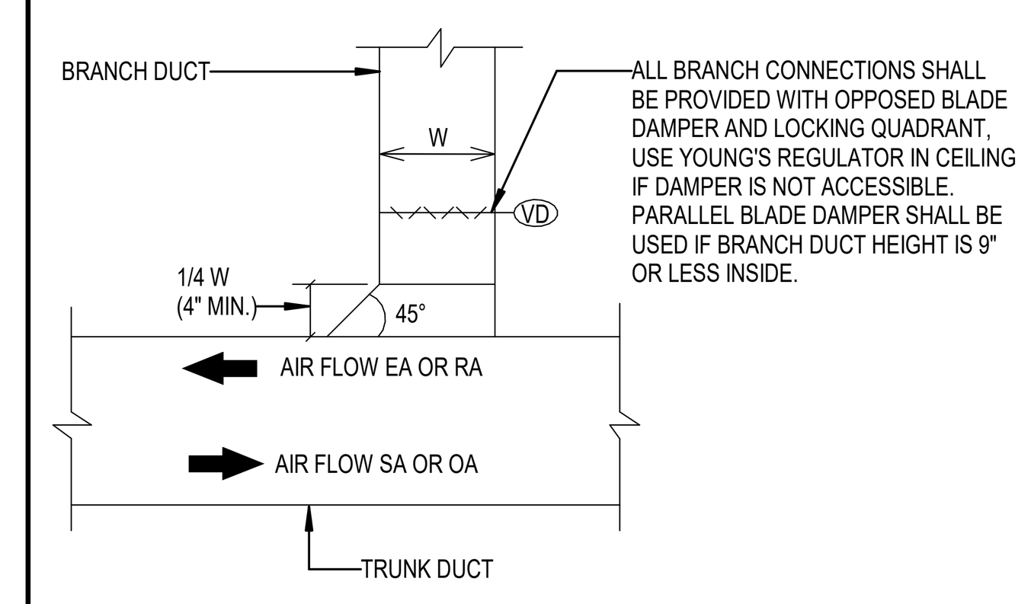
NOTE:
1. MAINTAIN MINIMUM 1" AIR GAP AT FLOOR DRAIN, FLOOR SINK, OR ROOF DRAIN.
2. ALL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 GALVANIZED WITH MALLABLE IRON SCREWED FITTINGS.

11 CLNG. COIL COND. DRAIN (DRAW-THRU UNIT)
NOT TO SCALE



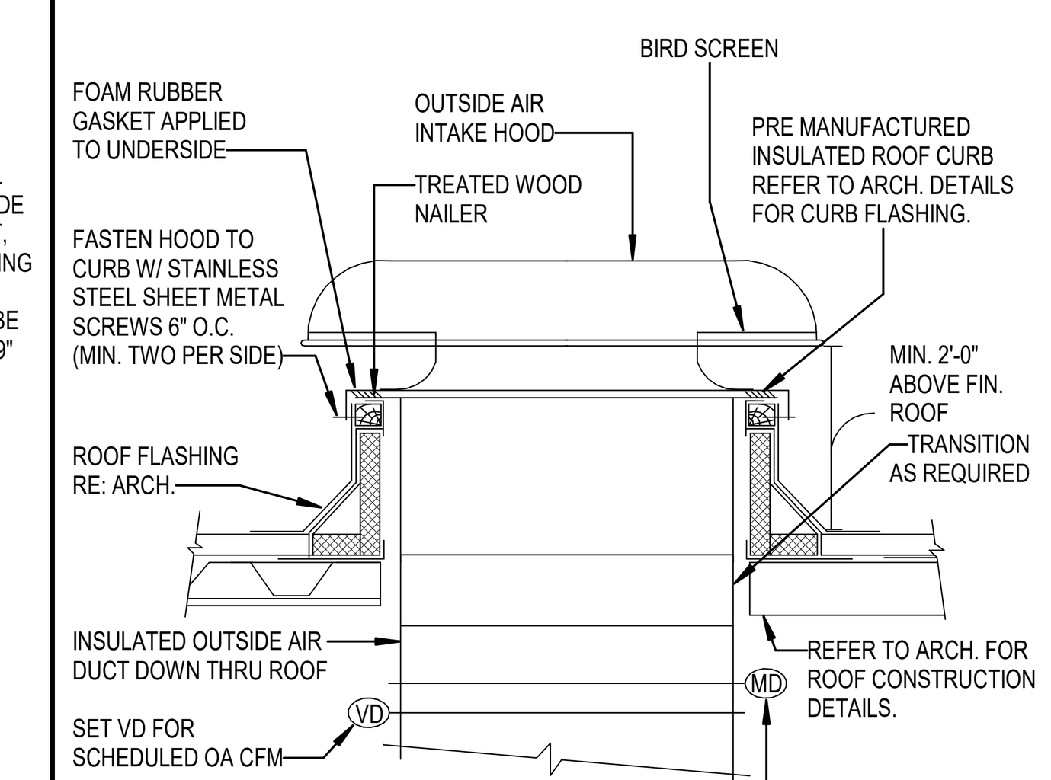
NOTE: CONTRACTOR SHALL SECURE STRUCT. ENG. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS AT CONCRETE OR STEEL STRUCTURE.

10 PIPE HANGER DETAIL (4-PIPE)
NOT TO SCALE



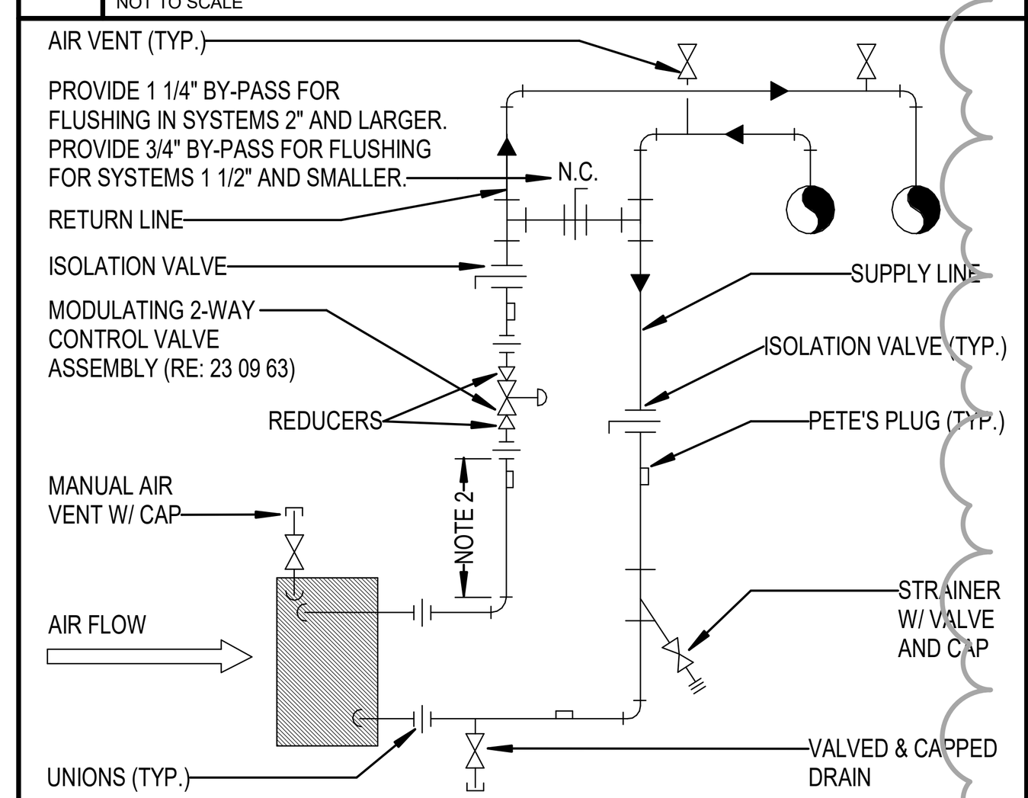
NOTES:
THIS CONNECTION SHALL BE TYPICAL FOR ALL RECTANGULAR BRANCH DUCT CONNECTIONS TO RECTANGULAR TRUNK DUCTS, INCLUDING SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DUCTS.

9 RECTANGULAR BRANCH DUCT TAP
NOT TO SCALE



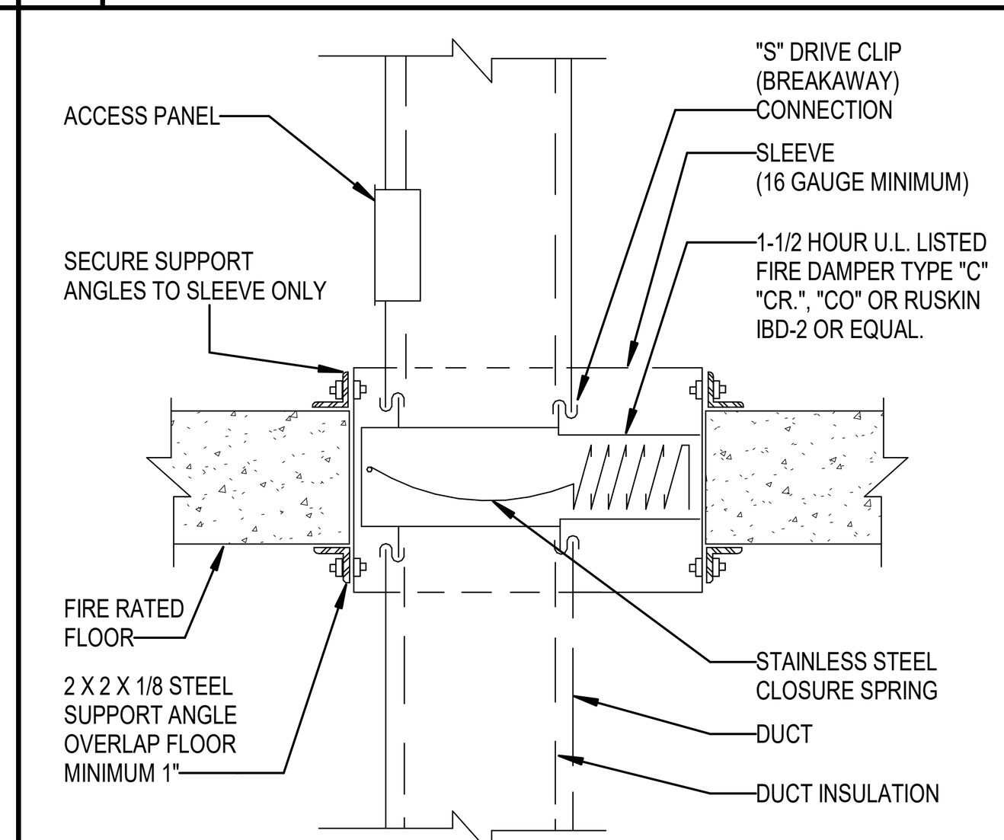
PROVIDE MOTORIZED DAMPER FOR OUTSIDE AIR OVER 300 CFM. INTERLOCK DAMPER WITH THE RESPECTIVE A/C UNIT IT SERVES. DAMPER SHALL BE INSTALLED IN READILY ACCESSIBLE LOCATION.

8 OUTSIDE AIR INTAKE HOOD
NOT TO SCALE



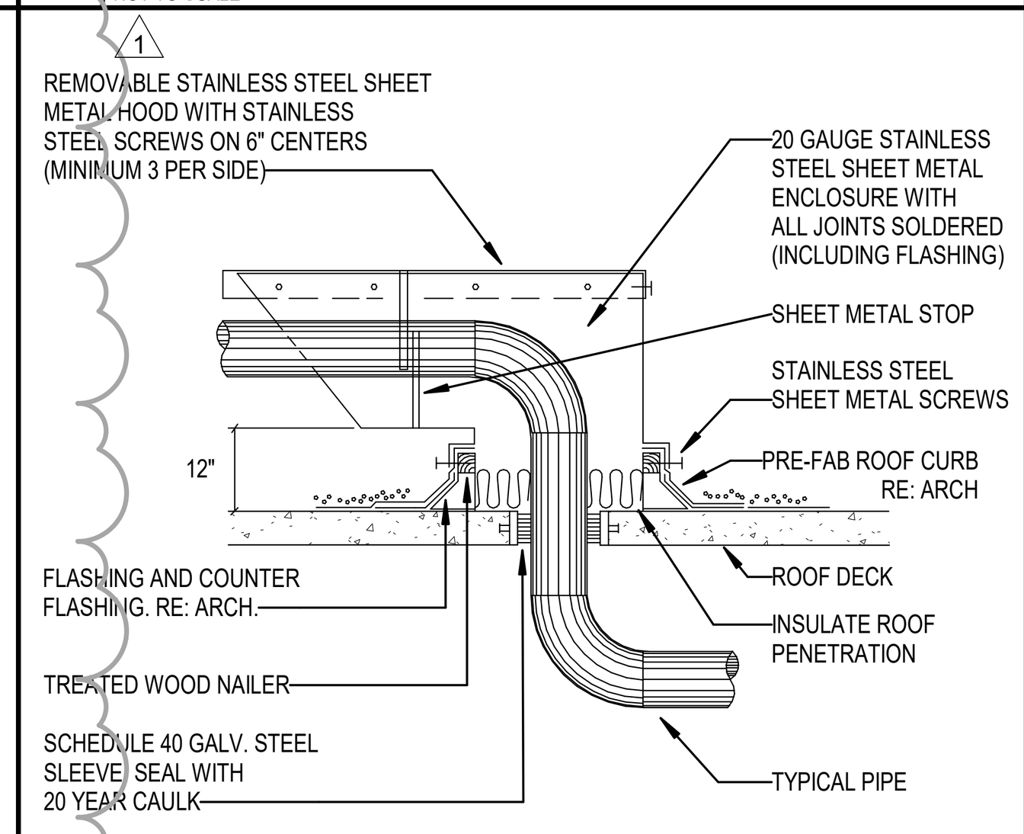
NOTES:
1. INSTALL 2-WAY CONTROL VALVE ORIENTATION PER MFGR. INSTALLATION INSTRUCTIONS.
2. PROVIDE STRAIGHT PIPE LENGTH 5 TIMES NOMINAL PIPE DIA. UPSTREAM OF CTRL. VALVE.

21 2-WAY CONTROL VALVE AND COIL PIPING
NOT TO SCALE



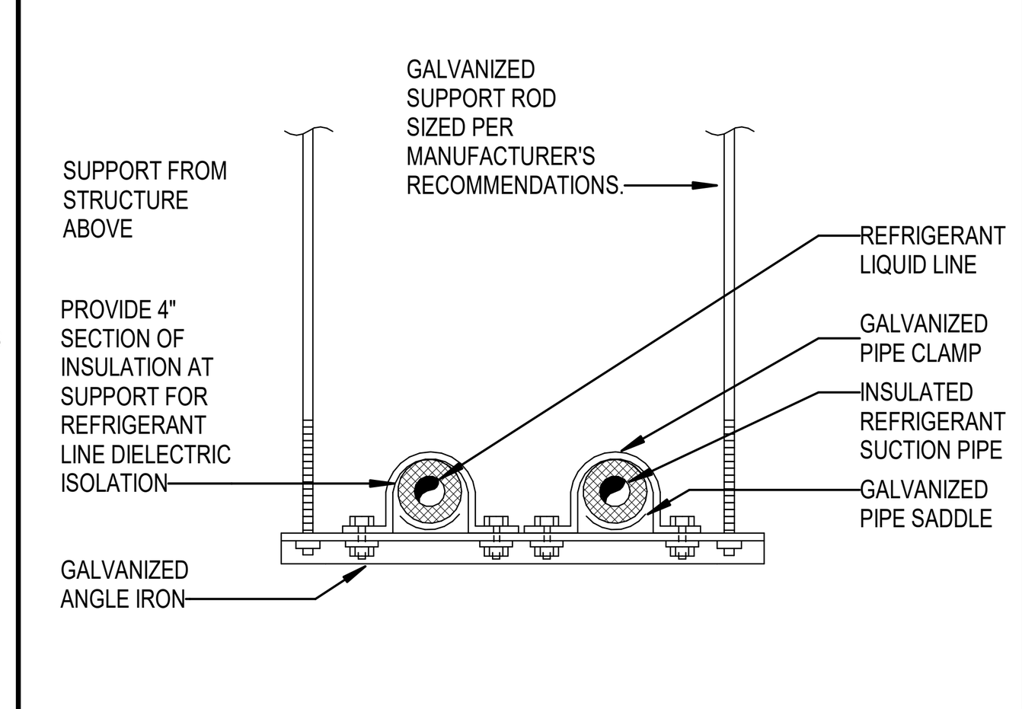
NOTE:
INSTALL FIRE DAMPERS AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

20 VERTICAL FIRE DAMPER
NOT TO SCALE



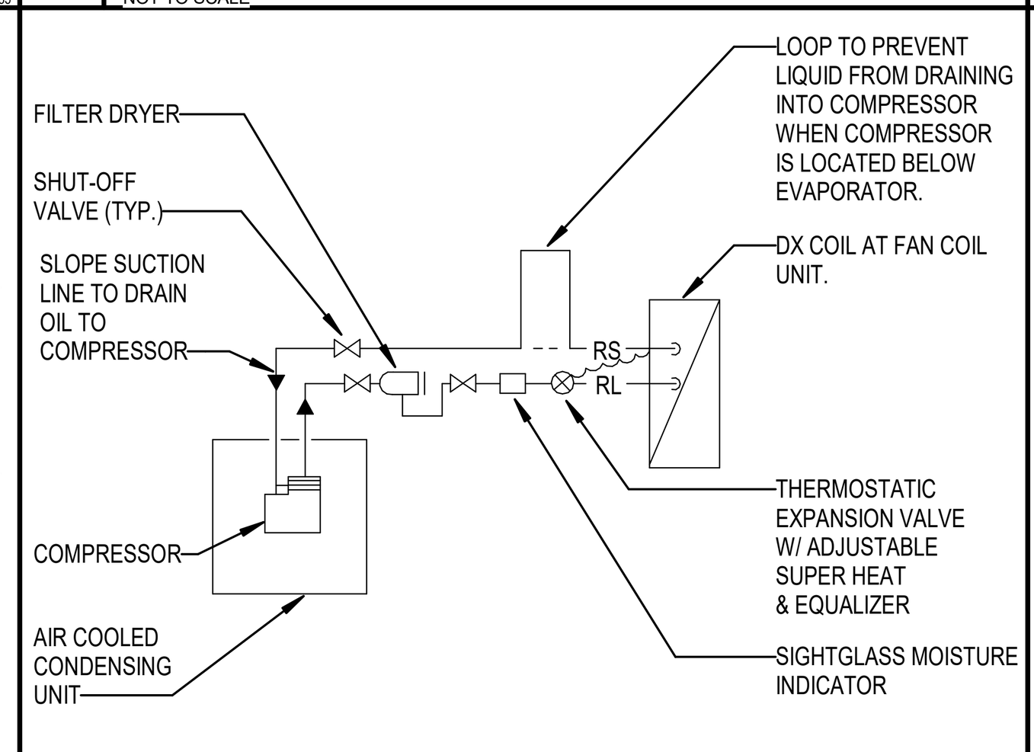
NOTE: REFER TO ARCHITECTURAL DRAWINGS FOR ROOF CONSTRUCTION AND FLASHING DETAILS.

19 PIPING ROOF PENETRATION
NOT TO SCALE



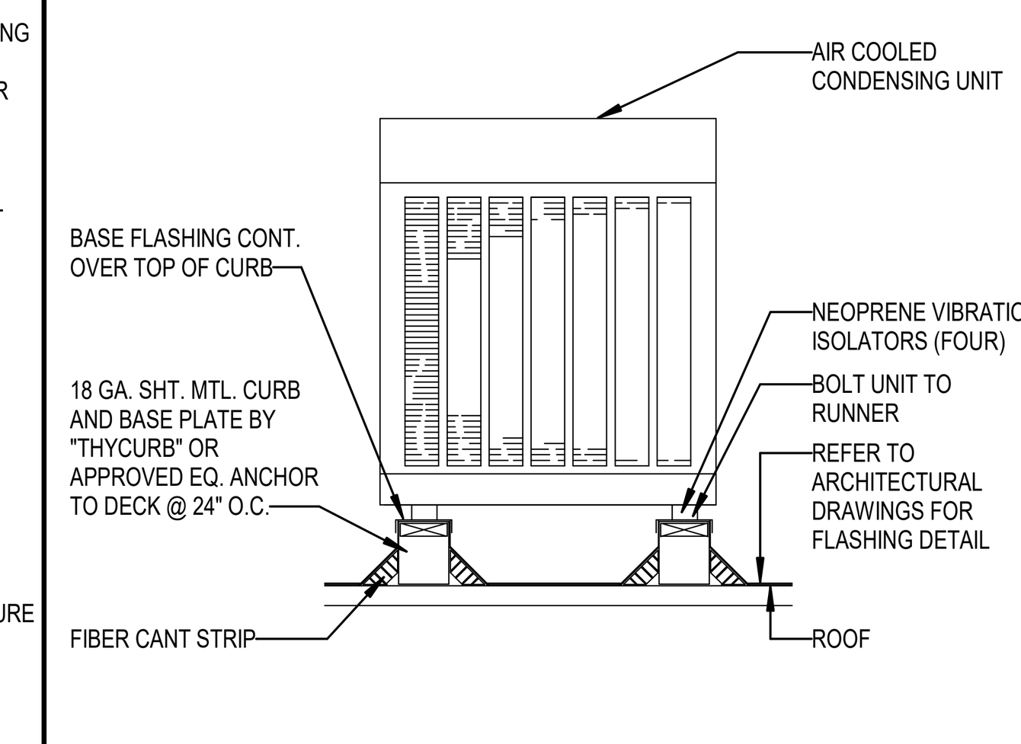
NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER MAX. AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

18 REFRIGERANT PIPE HANGER
NOT TO SCALE



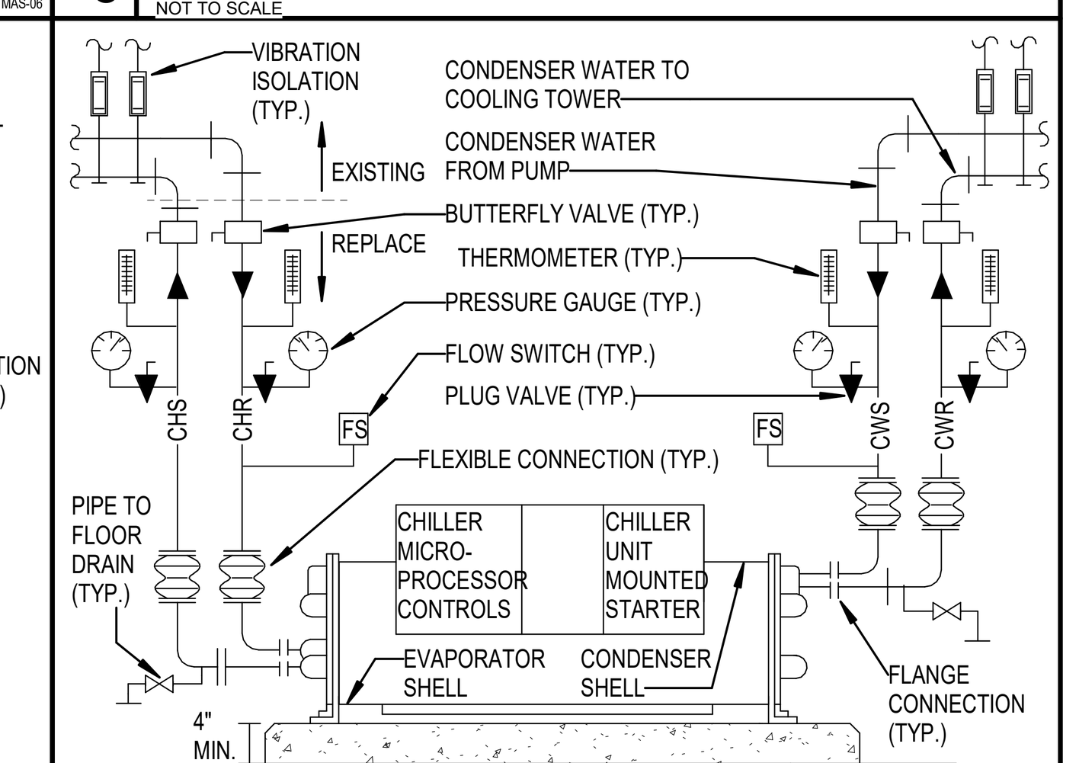
NOTE:
1. COMPLY WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
2. TYPICAL FOR EACH SEPARATE REFRIGERANT CIRCUIT.
3. PROVIDE FILTER DRYER ON ALL SYSTEMS.
4. USE "ACR" HARD DRAWN COPPER REFRIGERANT PIPE.

17 REFRIGERANT PIPING SCHEMATIC
NOT TO SCALE



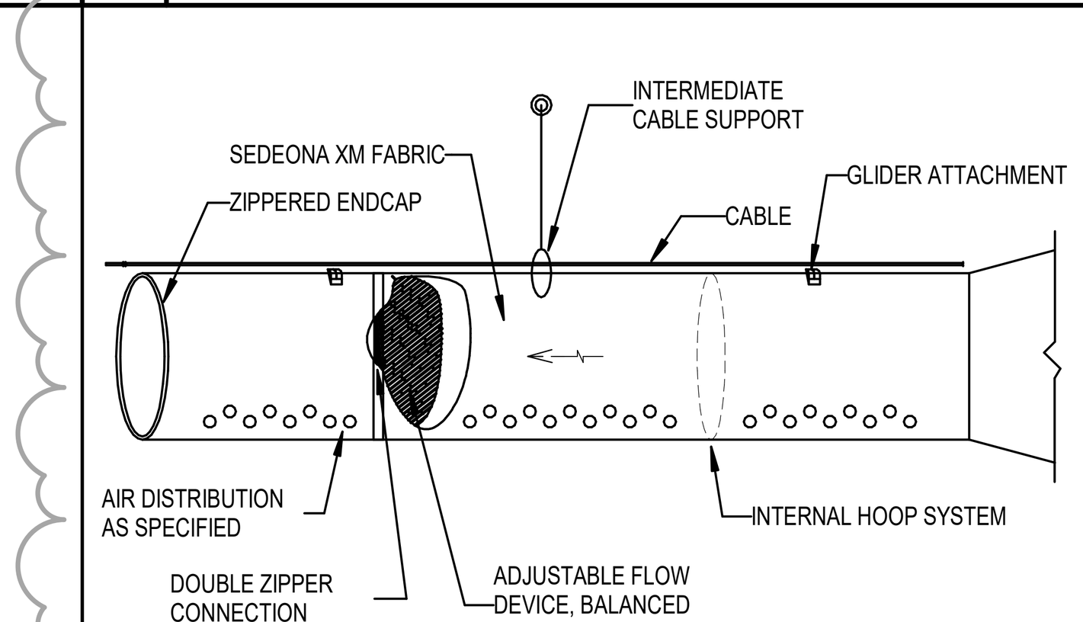
NOTE:
1. PROVIDE CLEARANCE AROUND UNIT FOR AIRFLOW AND SERVICE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

16 CONDENSING UNIT ROOF MOUNTED
NOT TO SCALE



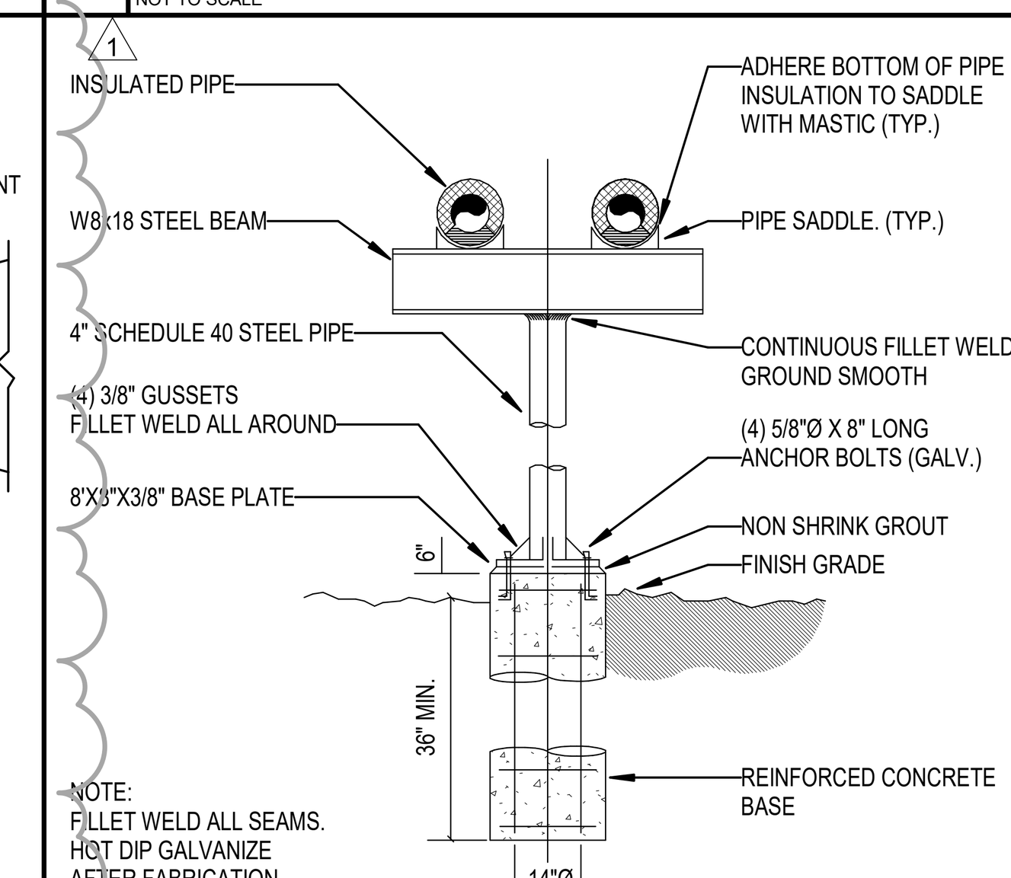
1. PIPE ALL REFRIGERANT RELIEF DEVICES DIRECTLY AND INDEPENDENTLY OUTDOORS.
2. PIPE OIL PUMP COOLER AS REQUIRED. (PROVIDE ACCESS FOR REMOVAL.)
3. PROVIDE ELASTOMERIC ISOLATION PADS.
4. CHILLER AND ALL APPURTENANCES SHALL BE INSTALLED PER MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.

15 WATER COOLED CHILLER
NOT TO SCALE

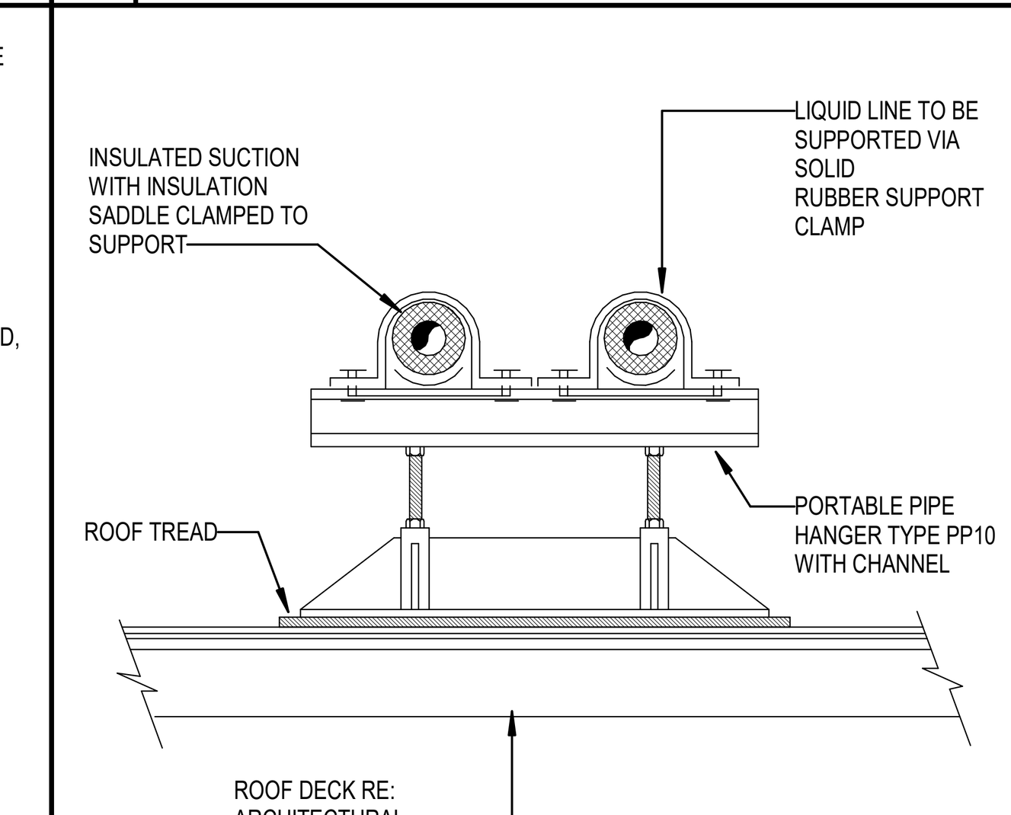


NOTE:
1. 1 ROW CABLE SUSPENSION AT 12 O'CLOCK HOOPS (IHS) CABLE.
2. HOOPS PLACED 5' APART.
3. ADJUSTABLE FLOW DEVICE (AFD) INSTALLED AT ZIPPER LOCATION AT INLET OR AS SPECIFIED IN OTHER LOCATIONS.
4. REFER TO MANUFACTUER FOR SUSPENSION DETAIL.

24 DUCTSOX DETAIL
NOT TO SCALE



23 PIPE SUPORT AT GRADE
NOT TO SCALE



22 ROOF MTD. REFR. PIPE SUPPORT
NOT TO SCALE

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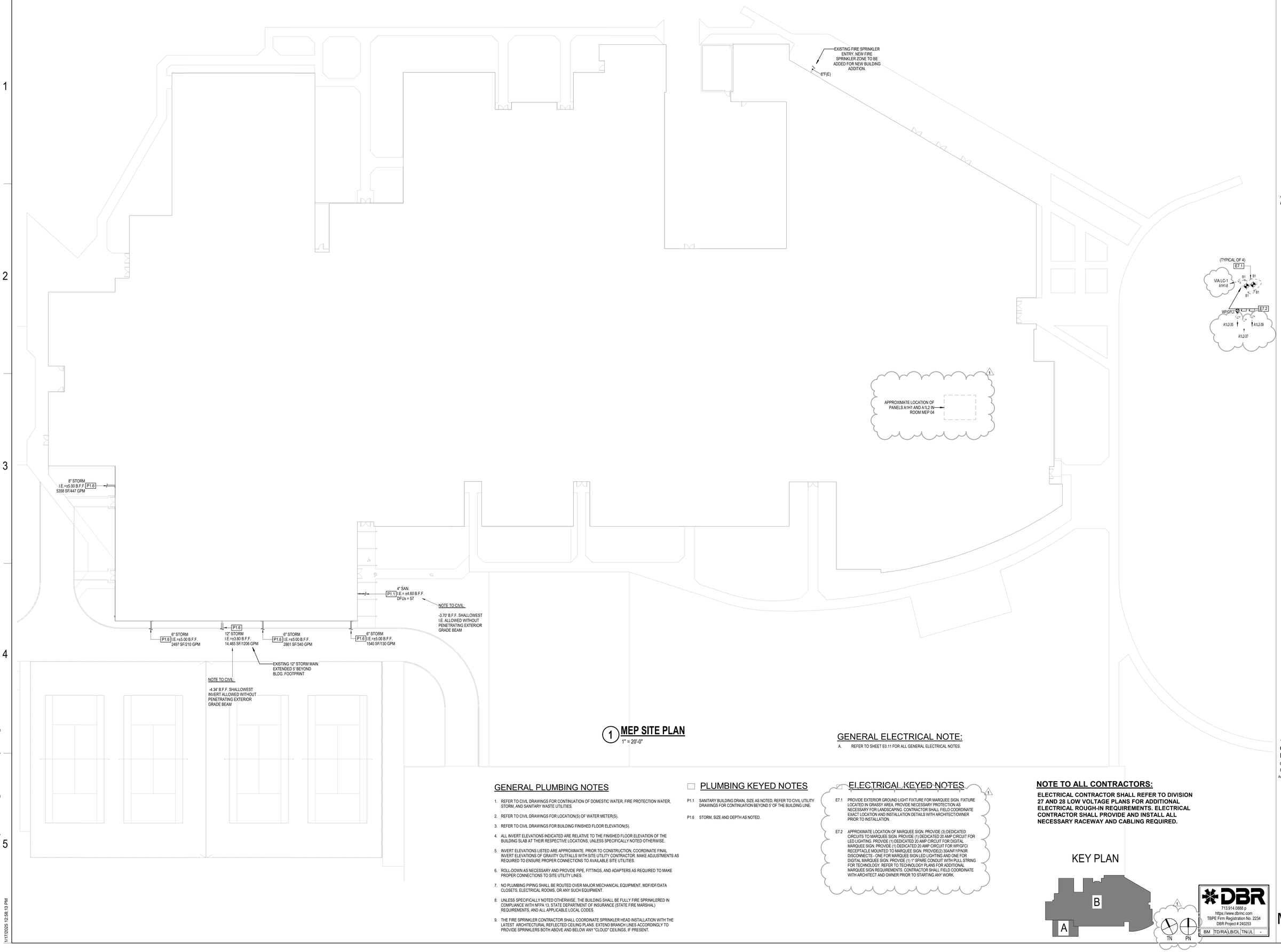

1 MEP SITE PLAN
1" = 20'-0"

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

GENERAL PLUMBING NOTES

1. REFER TO CIVIL DRAWINGS FOR CONTINUATION OF DOMESTIC WATER, FIRE PROTECTION WATER, STORM, AND SANITARY WASTE UTILITIES.
2. REFER TO CIVIL DRAWINGS FOR LOCATION(S) OF WATER METER(S).
3. REFER TO CIVIL DRAWINGS FOR BUILDING FINISHED FLOOR ELEVATION(S).
4. ALL INVERT ELEVATIONS INDICATED ARE RELATIVE TO THE FINISHED FLOOR ELEVATION OF THE BUILDING SLAB AT THEIR RESPECTIVE LOCATIONS, UNLESS SPECIFICALLY NOTED OTHERWISE.
5. INVERT ELEVATIONS LISTED ARE APPROXIMATE. PRIOR TO CONSTRUCTION, COORDINATE FINAL INVERT ELEVATIONS OF GRAVITY OUTFALLS WITH SITE UTILITY CONTRACTOR. MAKE ADJUSTMENTS AS REQUIRED TO ENSURE PROPER CONNECTIONS TO AVAILABLE SITE UTILITIES.
6. ROLL-DOWN AS NECESSARY AND PROVIDE PIPE, FITTINGS, AND ADAPTERS AS REQUIRED TO MAKE PROPER CONNECTIONS TO SITE UTILITY LINES.
7. NO PLUMBING PIPING SHALL BE ROUTED OVER MAJOR MECHANICAL EQUIPMENT, MDF/IDF/DATA CLOSETS, ELECTRICAL ROOMS, OR ANY SUCH EQUIPMENT.
8. UNLESS SPECIFICALLY NOTED OTHERWISE, THE BUILDING SHALL BE FULLY FIRE SPRINKLERED IN COMPLIANCE WITH NFPA 13, STATE DEPARTMENT OF INSURANCE (STATE FIRE MARSHAL) REQUIREMENTS, AND ALL APPLICABLE LOCAL CODES.
9. THE FIRE SPRINKLER CONTRACTOR SHALL COORDINATE SPRINKLER HEAD INSTALLATION WITH THE LATEST ARCHITECTURAL REFLECTED CEILING PLANS. EXTEND BRANCH LINES ACCORDINGLY TO PROVIDE SPRINKLERS BOTH ABOVE AND BELOW ANY "CLOUD" CEILINGS, IF PRESENT.

PLUMBING KEYED NOTES

P1.1 SANITARY BUILDING DRAIN, SIZE AS NOTED. REFER TO CIVIL UTILITY DRAWINGS FOR CONTINUATION BEYOND 5' OF THE BUILDING LINE.

P1.6 STORM, SIZE AND DEPTH AS NOTED.

ELECTRICAL KEYED NOTES

E7.1 PROVIDE EXTERIOR GROUND LIGHT FIXTURE FOR MARQUEE SIGN. FIXTURE LOCATED IN GRASSY AREA. PROVIDE NECESSARY PROTECTION AS NECESSARY FOR LANDSCAPING. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATION AND INSTALLATION DETAILS WITH ARCHITECT/OWNER PRIOR TO INSTALLATION.

E7.2 APPROXIMATE LOCATION OF MARQUEE SIGN. PROVIDE (3) DEDICATED CIRCUITS TO MARQUEE SIGN. PROVIDE (1) DEDICATED 20 AMP CIRCUIT FOR LED LIGHTING. PROVIDE (1) DEDICATED 20 AMP CIRCUIT FOR DIGITAL MARQUEE SIGN. PROVIDE (1) DEDICATED 20 AMP CIRCUIT FOR WP/GFCI RECEPTACLE MOUNTED TO MARQUEE SIGN. PROVIDE(2) 30A/NF/1P/1NSR DISCONNECTS - ONE FOR MARQUEE SIGN LED LIGHTING AND ONE FOR DIGITAL MARQUEE SIGN. PROVIDE (1) 1" SPARE CONDUIT WITH PULL STRING FOR TECHNOLOGY. REFER TO TECHNOLOGY PLANS FOR ADDITIONAL MARQUEE SIGN REQUIREMENTS. CONTRACTOR SHALL FIELD COORDINATE WITH ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK.

NOTE TO ALL CONTRACTORS:

ELECTRICAL CONTRACTOR SHALL REFER TO DIVISION 27 AND 28 LOW VOLTAGE PLANS FOR ADDITIONAL ELECTRICAL ROUGH-IN REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY RACEWAY AND CABLING REQUIRED.

KEY PLAN

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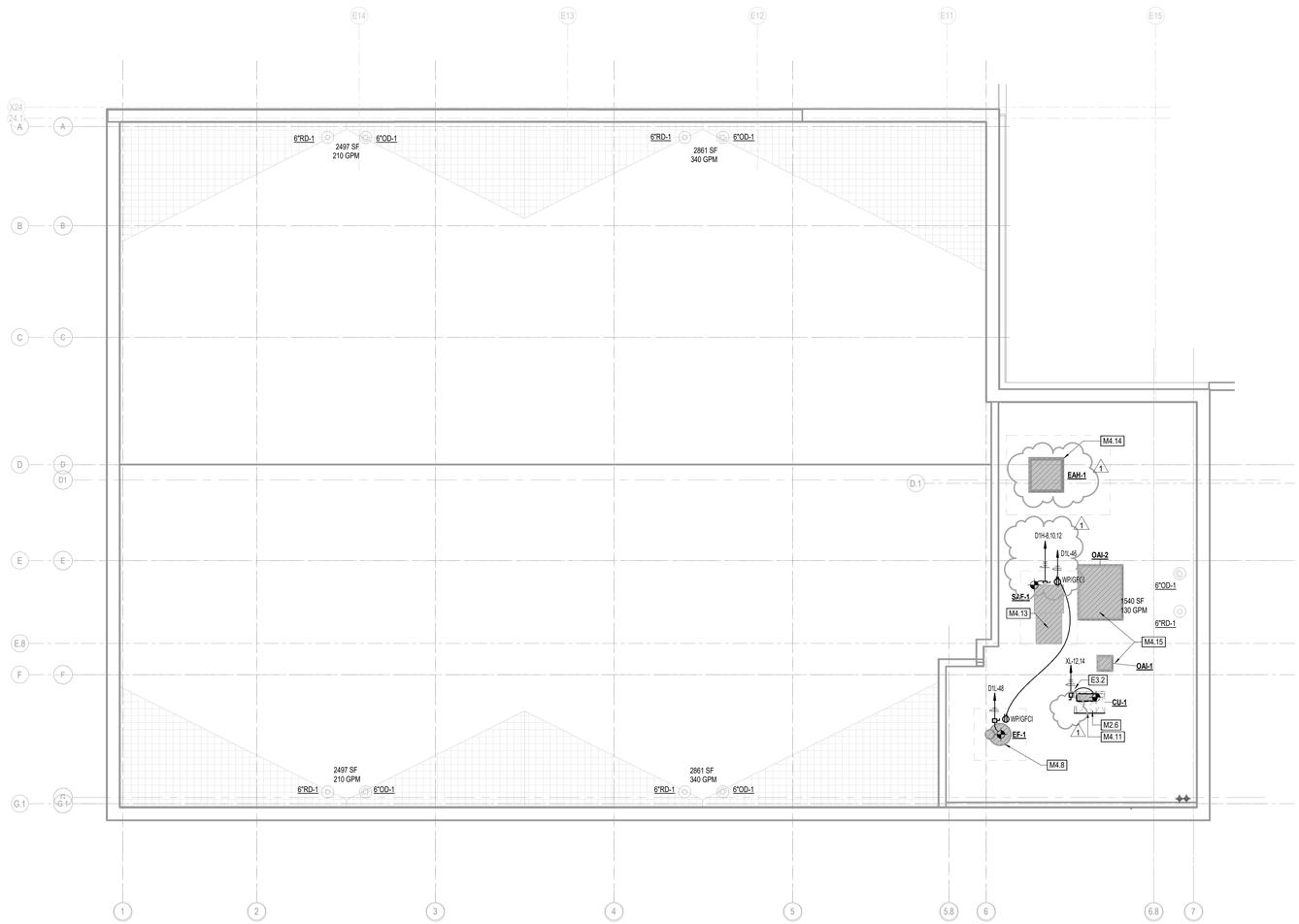
MEP SITE PLAN

MEP0.21



1 MEP ROOF PLAN
1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. ALL PRIMARY AND OVERFLOW ROOF DRAIN AND STORM PIPE SIZING IS BASED ON A RAINFALL RATE OF EIGHT (8) INCHES PER HOUR.
2. CONFIRM FINAL DRAIN LOCATIONS WITH LATEST ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION. MAKE ADJUSTMENTS AS REQUIRED.
3. UNLESS NOTED OTHERWISE, THE ROOF EDGE IS TO PROVIDE A MEANS OF RAINWATER OVERFLOW IN AREAS WHERE NO OVERFLOW DRAINS ARE INDICATED.
4. UNLESS NOTED OTHERWISE, ROOF AREAS WITH NO ROOF DRAINS SHOWN ARE TO SHEET FLOW TO AND DRAIN VIA THE BUILDING EDGE. REFER TO ARCHITECTURAL DRAWINGS FOR ROOF CONSTRUCTION AND FOR ANY DETAILS REGARDING GUTTERS AND/OR DOWNSPOUTS.
5. IF VENT TERMINAL LOCATIONS ARE NOT SHOWN ON THIS DRAWING, REFER TO INDIVIDUAL FLOOR PLANS AND COORDINATE ACCORDINGLY.
6. ALL VENT TERMINALS SHALL BE LOCATED NO LESS THAN FIFTEEN (15) FEET AWAY FROM ANY OPERABLE WINDOW, DOOR, OUTSIDE AIR INTAKE, OR SUPPLY AIR FAN.
7. ALL VERTICAL STORM CONDUCTORS WITHIN THE BUILDING SHALL BE LOCATED AND ROUTED CONCEALED FROM PUBLIC VIEW WITHIN CHASES/FURR-OUTS PROVIDED. REFER TO LATEST ARCHITECTURAL DRAWINGS. COORDINATE IN FIELD AND MAKE ADJUSTMENTS AS REQUIRED.

MECHANICAL KEYED NOTES

M2.6 ROUTE REFRIGERANT PIPING FROM AIR COOLED CONDENSING UNIT DOWN THROUGH ROOF TO INDOOR FAN COIL UNIT. REFRIGERANT PIPING SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. FIELD VERIFY EXACT PIPING ROUTING. RE: DETAIL 17,18,19/M6.01.

M4.8 PROVIDE ROOF MOUNTED EXHAUST FAN AT APPROXIMATE LOCATION SHOWN. PROVIDE FAN WITH ROOF CURB TO MATCH ROOF SLOPE. RE: 14/M6.01.

M4.11 PROVIDE ROOF MOUNTED AIR COOLED CONDENSING UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT ON ROOF CURB SUPPORTS. PROVIDE ALL CLEARANCES AROUND CONDENSER AS REQUIRED BY EQUIPMENT MANUFACTURER. RE: DETAIL 16/M6.01.

M4.13 PROVIDE ROOF MOUNTED SUPPLY FAN AT APPROXIMATE LOCATION SHOWN. PROVIDE FAN WITH ROOF CURB TO MATCH ROOF SLOPE. RE: DETAIL 13/M6.01.

M4.14 PROVIDE ROOF MOUNTED EXHAUST AIR HOOD AT APPROXIMATE LOCATION SHOWN. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS. RE: DETAIL 7/M6.01.

M4.15 PROVIDE ROOF MOUNTED INTAKE AIR HOOD AT APPROXIMATE LOCATION SHOWN. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS. RE: DETAIL 8/M6.01.

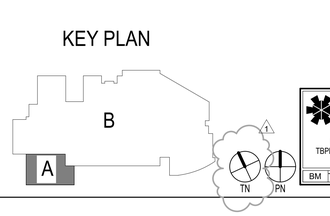
GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

ELECTRICAL KEYED NOTES

E3.2 PROVIDE SINGLE POINT OF POWER AT CONDENSING UNIT FOR SPLIT DX SYSTEM INDOOR UNIT SHALL BE POWERED FROM OUTSIDE UNIT. PROVIDE DISCONNECTING MEANS FOR BOTH PIECES OF EQUIPMENT. REFERENCE DUCTLESS SPLIT ELECTRICAL CONNECTION DETAIL.

KEY PLAN



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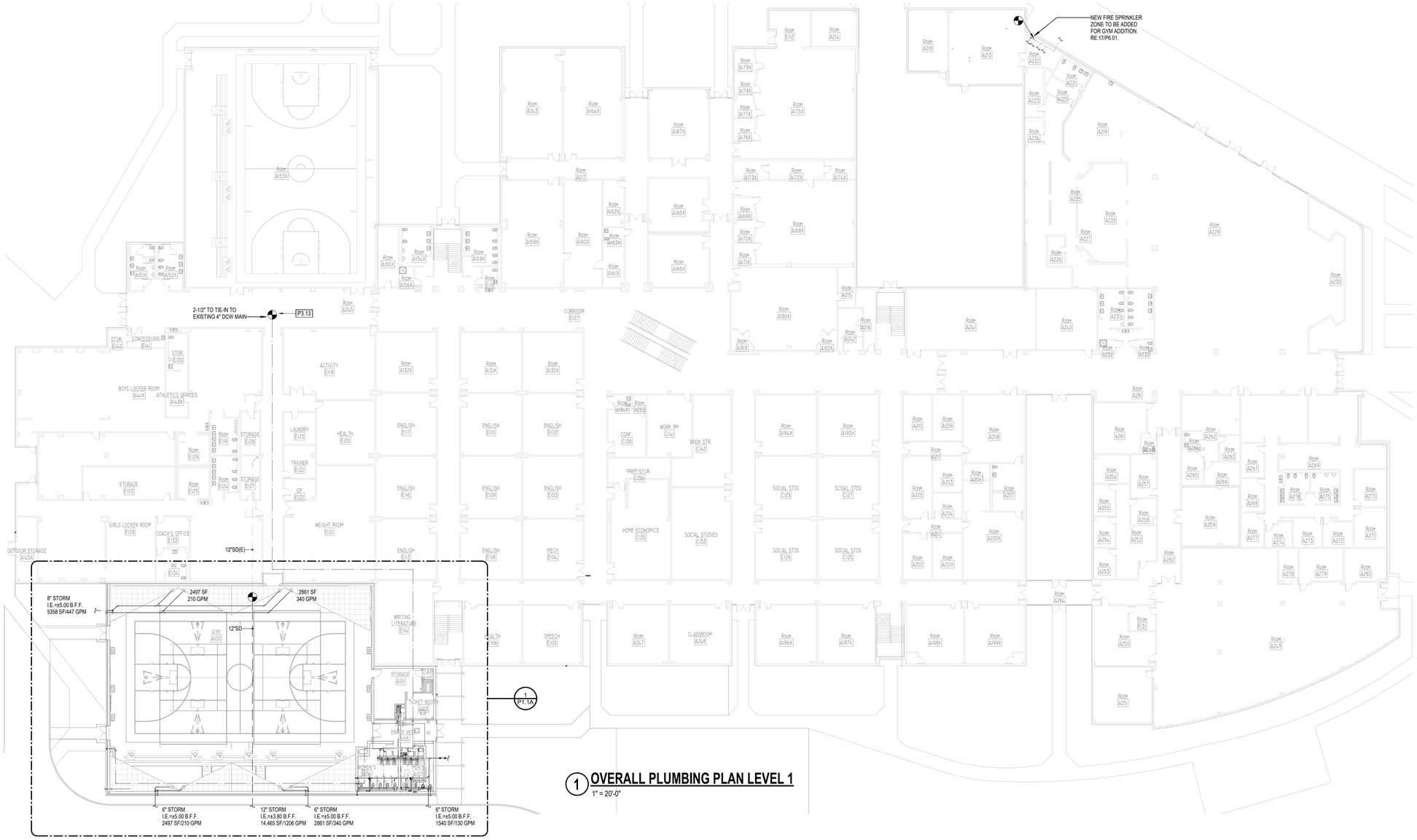
MEP ROOF PLAN

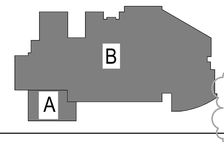
MEP2.31



PLUMBING KEYED NOTES

P3.13 NEW 2-1/2" SHALL TIE-IN TO EXISTING 4" COLD WATER MAIN IN APPROXIMATE LOCATION.

KEY PLAN



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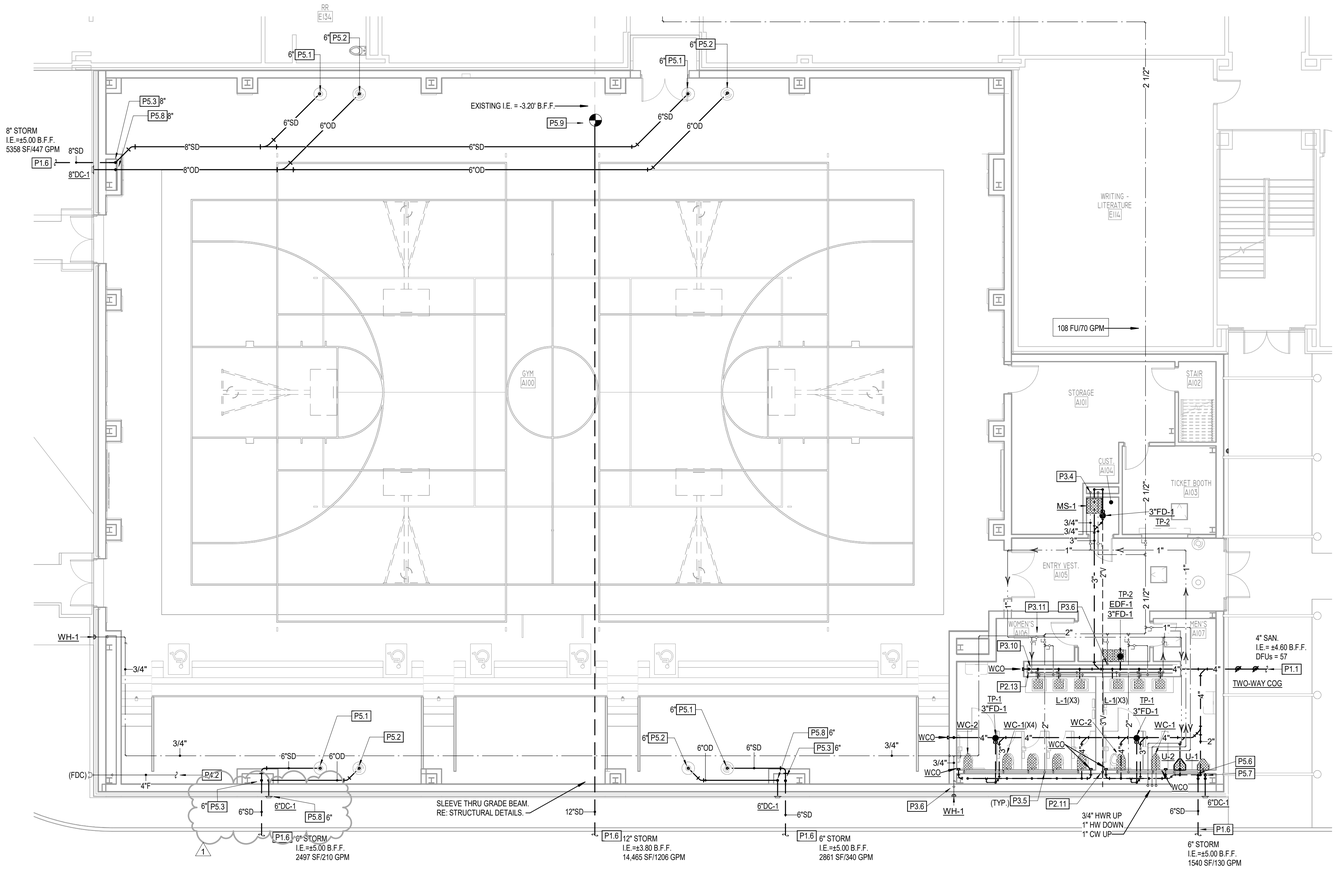
OVERALL PLUMBING PLAN LEVEL 1

P1.1



1 PLUMBING PLAN LEVEL 1 - AREA A

1/8" = 1'-0"

PLUMBING KEYED NOTES

P1.1 SANITARY BUILDING DRAIN, SIZE AS NOTED, REFER TO CIVIL UTILITY DRAWINGS FOR CONTINUATION BEYOND 5' OF THE BUILDING LINE.

P1.6 STORM, SIZE AND DEPTH AS NOTED.

P2.11 3" SANITARY VENT UP TO LEVEL ABOVE.

P2.13 4" WASTE DOWN FROM LEVEL ABOVE.

P3.4 DROP AND EXTEND 3/4" HOT AND COLD WATER TO SERVE FIXTURE(S).

P3.5 DROP AND EXTEND 2" COLD WATER TO SERVE FIXTURE(S).

P3.6 DROP AND EXTEND 3/4" COLD WATER TO SERVE FIXTURE(S).

P3.10 HOT WATER DROP DOWN TO, RISE UP FROM, AND CIRCULATED HOT WATER LINE INSIDE WALL/CHASE AND WITHIN 2'-0" OF HOT WATER ROUGH-IN TO LAVATORY FOR 2015 IECC COMPLIANCE. SIZE AS NOTED.

P3.11 PROVIDE NORMALLY CLOSED BYPASS VALVE ON HOT WATER LOOP.

P4.2 FOR CONTINUATION REFER TO LICENSED FIRE SPRINKLER CONSULTANT SHOP DRAWINGS.

P5.1 STORM DOWN FROM ROOF DRAIN ABOVE, SIZE AS NOTED.

P5.2 STORM DOWN FROM OVERFLOW DRAIN ABOVE, SIZE AS NOTED.

P5.3 STORM DRAIN DOWN TO BELOW GRADE, SIZE AS NOTED.

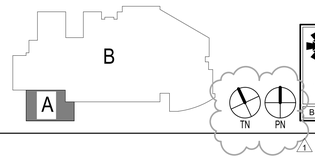
P5.6 STORM FROM ABOVE AND DOWN TO BELOW, SIZE AS NOTED.

P5.7 OVERFLOW FROM ABOVE AND DOWN TO DOWNSPOUT COVER, SIZE AS NOTED.

P5.8 DROP TO DOWNSPOUT COVER, SIZE AS NOTED.

P5.9 EXTEND EXISTING 12" STORM PIPING BELOW GRADE BEYOND NEW BUILDING FOOTPRINT. EXISTING INVERT ELEVATION LISTED IS BASED ON EXISTING DRAWINGS. PRIOR TO CONSTRUCTION, COORDINATE FINAL INVERT ELEVATIONS OF GRAVITY OUTFALLS WITH SITE UTILITY CONTRACTOR. MAKE ADJUSTMENTS AS REQUIRED TO ENSURE PROPER CONNECTIONS TO AVAILABLE SITE UTILITIES.

KEY PLAN



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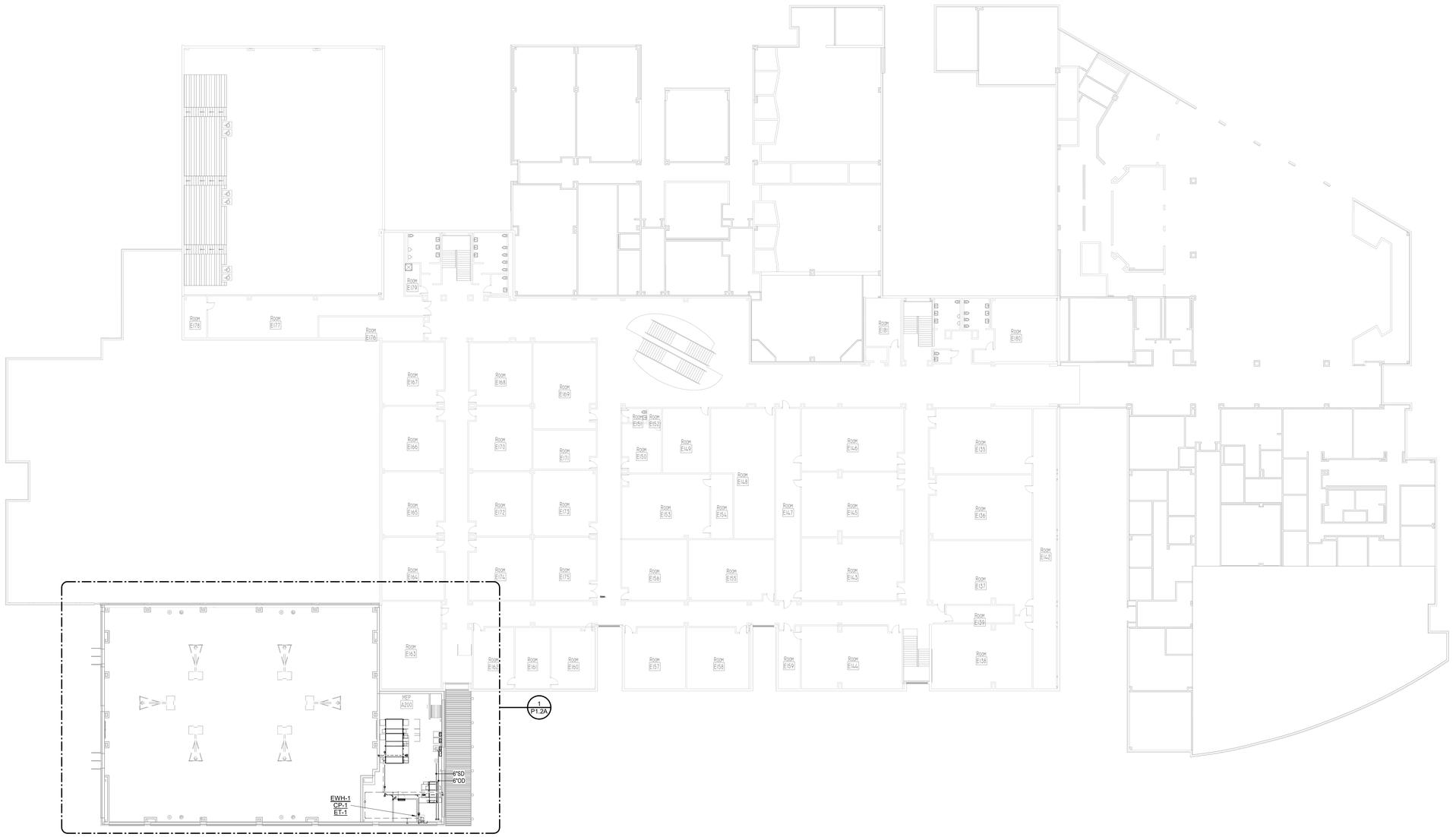
PLUMBING PLAN LEVEL 1 - AREA A

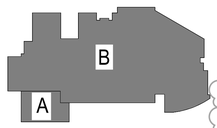
P1.1A



1 OVERALL PLUMBING PLAN LEVEL 2

1" = 20'-0"

KEY PLAN



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OVERALL PLUMBING PLAN LEVEL 2

P1.2

PLUMBING KEYED NOTES

P2.12 4" WASTE DOWN TO LEVEL BELOW.

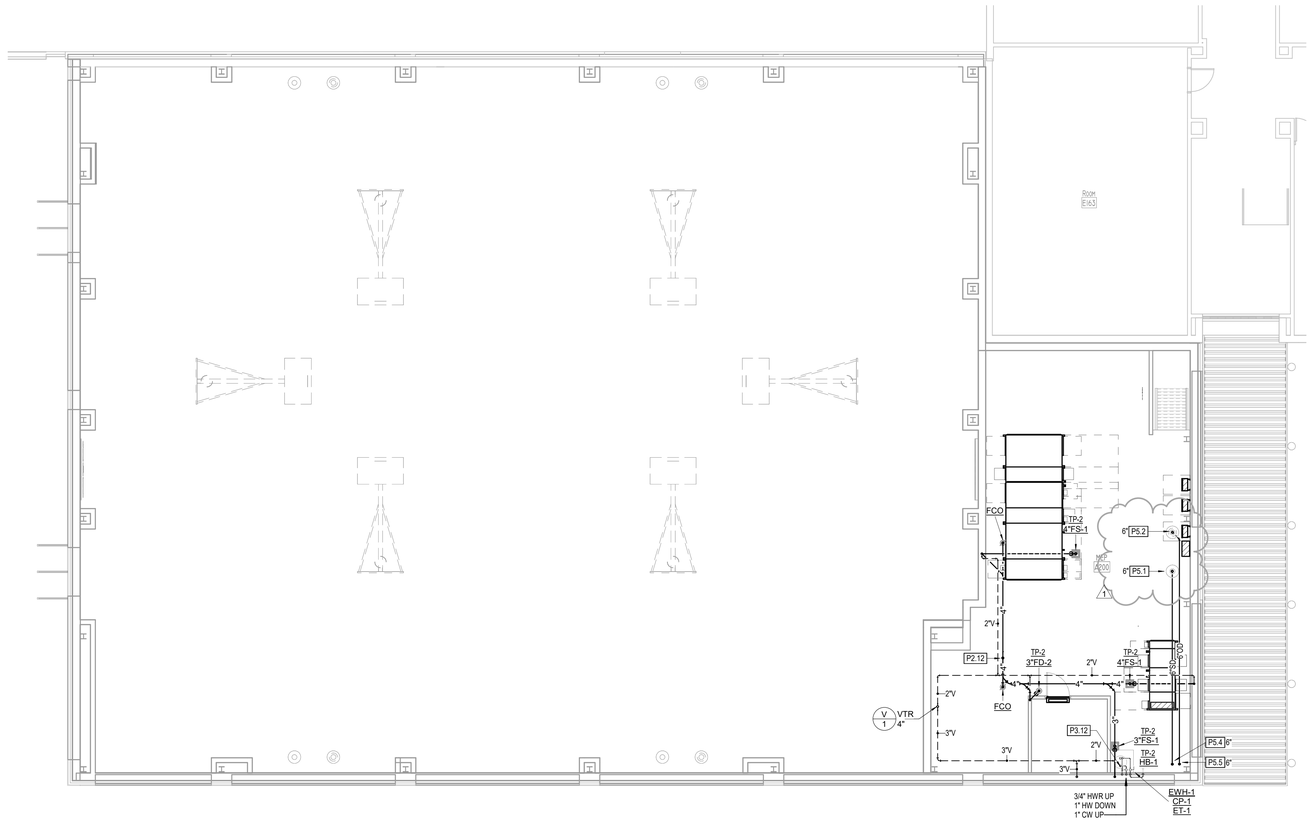
P3.12 HOT WATER RETURN BALANCING VALVE. SET @ 1 GPM WITH A TEMP OF 120 DEGREES F.

P5.1 STORM DOWN FROM ROOF DRAIN ABOVE, SIZE AS NOTED.

P5.2 STORM DOWN FROM OVERFLOW DRAIN ABOVE, SIZE AS NOTED.

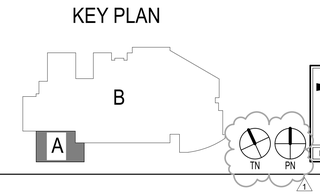
P5.4 STORM DOWN TO BELOW, SIZE AS NOTED.

P5.5 OVERFLOW STORM DOWN TO BELOW, SIZE AS NOTED.



1 PLUMBING PLAN LEVEL 2 - AREA A

1/8" = 1'-0"



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PLUMBING PLAN LEVEL 2 - AREA A

P1.2A

1 DEMOLITION OVERALL PLUMBING PLAN LEVEL 1

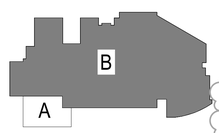
1" = 20'-0"

PLUMBING KEYED NOTES

P10.1 EXISTING WALL HYDRANT SHALL BE REMOVED, CAP PIPING BACK TO MAIN.

P10.2 EXISTING 12" STORM DRAIN LINE BELOW GRADE. CONTRACTOR SHALL BE AWARE OF EXISTING STORM DRAINAGE AND ADJUST/REWORK AS REQUIRED. REFER TO CIVIL PLANS BEYOND 5' OUTSIDE OF BUILDING.

KEY PLAN



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DEMOLITION OVERALL PLUMBING PLAN LEVEL 1

P1.3

PLUMBING FIXTURE SCHEDULE

PLAN MARK	MINIMUM ROUGH-IN SIZES				DESCRIPTION
	WASTE & VENT		CW	HW	
WATER CLOSET WC-1	4"	2"	1-1/2"	---	AMERICAN STANDARD No. 2859.128 "AFWALL" WHITE V.C. ELONGATED SIPHON JET WALL HUNG (1.28 GPF) BOWL WITH TOP SPUD, LESS EVERCLEAN.
FLUSH VALVE					SLOAN ROYAL No.111-1.28 FLUSH VALVE LOW CONSUMPTION (MANUAL) VALVE. POLISHED CHROME FINISH.
ACCESSORIES					OLSONITE MODEL: 95SSCT ELONGATED, EXTRA HEAVY-DUTY, BLACK, OPEN FRONT TOILET SEAT, LESS COVER WITH SELF-SUSTAINING STAINLESS STEEL CHECK HINGE. PROVIDE ZURN OR EQUAL FLOOR MOUNTED CARRIER. FOR FULL DESCRIPTION REFER TO PROJECT SPECIFICATIONS. REFER TO ARCHITECTS PLANS FOR MOUNTING HEIGHT.
WATER CLOSET WC-2 ADA	4"	2"	1-1/2"	---	AMERICAN STANDARD No. 2257.101"AFWALL" SAME AS ABOVE EXCEPT WITH TRIM AS REQUIRED FOR ADA USE. REFER TO ARCHITECTS PLANS FOR MOUNTING HEIGHT.
URINAL U-1	2"	2"	3/4"	---	AMERICAN STANDARD No. 6590.001 "WASHBROOK" WHITE V.C. WASHOUT FIXTURE (0.125 GPF) WITH WALL HANGERS, MOUNTING BRACKET, S.S. STRAINER 047068-0070A, TOP SPUD
FLUSH VALVE					SLOAN ROYAL No.186-0.13 FLUSH VALVE TOP SPUD 0.125 GPF EXPOSED MANUAL DUAL FILTER DIAPHRAGM URINAL FLUSH VALVE.
ACCESSORIES					ZURN Z1222 - PLATE TYPE SYSTEM WITH BEARING PLATE. REFER TO ARCHITECTS PLANS FOR MOUNTING HEIGHT.
URINAL U-2 ADA	2"	2"	3/4"	---	AMERICAN STANDARD No. 6590.001 "WASHBROOK" SAME AS ABOVE EXCEPT WITH TRIM AS REQUIRED FOR ADA USE. REFER TO ARCHITECTS PLANS FOR MOUNTING HEIGHT.
LAVATORY L-1	2"	2"	3/4"	3/4"	AMERICAN STANDARD MODEL: 0614.000 UNDERMOUNT WHITE V.C. LAVATORY WITH FRONT OVERFLOW AND FAUCET HOLES DRILLED ON 4" CENTER FAUCET HOLES.
			1/2"TW (110°)		
FAUCET					CHICAGO No. 857-665PSHCP (2.0 GPM) VANDAL RESISTANT PUSH HANDLE METERING FAUCET WITH COVER PLATE.
ACCESSORIES					REFER TO PLUMBING SUPPLIES AND TRIM SCHEDULE. PROVIDE ZURN OR EQUAL FLOOR MOUNTED CONCEALED ARM CARRIER, REFER TO ARCHITECTS PLANS FOR MOUNTING HEIGHTS. PROVIDE TMV-1.
ELECTRIC DRINKING FOUNTAIN EDF-1 ADA	2"	2"	3/4"	---	ELKAY MODEL LVRCTLDDMWSK EZH2O BOTTLE FILLING STATION & BI-LEVEL HIGH EFFICIENCY VANDAL RESISTANT FILTERED NON REFRIGERATED STAINLESS. FEATURES SHALL INCLUDE ANTIMICROBIAL*, FILTERED, GREEN TICKER, HANDS FREE, HIGH EFFICIENCY, LAMINAR FLOW, REAL DRAIN, VANDAL RESISTANT, VISUAL FILTER MONITOR. FURNISHED WITH VANDAL RESISTANT STREAMSAVER ™ BUBBLER. ELECTRONIC BOTTLE FILLER SENSOR WITH MECHANICAL FRONT BUBBLER BUTTON ACTIVATION. PRODUCT SHALL BE WALL MOUNT (ON WALL), FOR INDOOR APPLICATIONS, SERVING 2 STATION(S). UNIT SHALL BE CERTIFIED TO UL 399 AND CAN/CSA C22.2 NO. 120.
ELECTRICAL REQUIREMENTS					1/5 HP, 4.0 FL. AMPS. WIRED FOR POWER AS SCHEDULED ON ELECTRICAL DRAWINGS.
ACCESSORIES					REFER TO PLUMBING SUPPLY AND TRIM SCHEDULE. PROVIDE ZURN OR EQUAL FLOOR MOUNTED CONCEALED ARM CARRIER, REFER TO ARCHITECTS PLANS FOR MOUNTING HEIGHTS.
THERMOSTATIC MIXING VALVE TMV-1	---	---	1/2"	1/2"	POWERS MODEL: LFe480 ADJUSTABLE POINT-OF-USE LEAD FREE THERMOSTATIC MIXING VALVE, ASSE 1070 WITH INLET CHECK STOPS TO LIMIT HOT WATER TEMPERATURE. SET TEMPERATURE AT 105°. PROVIDE WITH MOUNTING BRACKET.
FLOOR DRAIN FD-1	3"	2"	---	---	ZURN No. ZN-415 CAST IRON DRAIN WITH 6" DIAMETER TYPE 'B' STRAINER AND 1/2" IPS TRAP PRIMER CONNECTION. FOR FLOOR DRAIN BODY POURED IN CONCRETE SLAB PROVIDE ZURN Z1023 TRAP PRIMER EXTENSION.
FLOOR DRAIN FD-2	3"	2"	---	---	ZURN No. ZN-415 CAST IRON DRAIN WITH 7" DIAMETER TYPE 'E' STRAINER, TRAP PRIMER CONNECTION AND 4" DIAMETER FUNNEL GRATE. FOR FLOOR DRAIN BODY POURED IN CONCRETE SLAB PROVIDE ZURN Z1023 TRAP PRIMER EXTENSION.
FLOOR SINK FS-1	4"	2"	---	---	ZURN No. ZN-1902-2-25-K, 12" SQUARE, 10" DEEP CAST IRON DRAIN WITH ENAMELED INTERIOR, SEDIMENT BUCKET STRAINER AND SECURED HALF NICKEL BRONZE GRATE. FOR FLOOR DRAIN BODY POURED IN CONCRETE SLAB.
TRAP PRIMER TP-1	---	---	1/2"	---	SLOAN No. VBF-72-A1 FLUSH VALVE VACUUM BREAKER TRAP REFILL SUPPLY. AFFIX UNIT TO WATER CLOSET NEAREST TO THE FLOOR DRAIN SUPPLIED. ALL EXPOSED TO BE CHROME PLATED; CONCEALED DRAIN TUBING SHALL BE 1/2" TYPE "K" SOFT COPPER.
TRAP PRIMER TP-2	---	---	1/2"	---	PRECISION PLUMBING PRODUCTS, INC. "OREGON" No. 1 FULLY AUTOMATIC TRAP PRIMER VALVE. INSTALL CONCEALED IN ACCESSIBLE LOCATION, BEHIND APPROVED ACCESS PANEL OR EXPOSED IN MECHANICAL EQUIPMENT AREAS WITH APPROVED TRAP PRIMER DISTRIBUTION UNIT. INSTALL AT MINIMUM 15" A.F.F.
MOP SINK MS-1	3"	2"	3/4"	3/4"	STERN WILLIAMS No. MTB-SS-2424-BP FLOOR MOUNTED 24 X 24 X 13-1/4 STAINLESS STEEL BASIN WITH S.S. CAPS AND SPLASH CATCHER PANELS.
FAUCET					CHICAGO No. 540-LD897SWXFXKCP WALL MOUNT SERVICE SINK FAUCET WITH 6" VACUUM BREAKER SPOUT, 4" WRIST BLADE HANDLES, WITH 3/4" HOSE END AND BRACE.
ACCESSORIES					STERN WILLIAMS No. T-40 MOP BRACKET, STERN WILLIAMS No. T-35 BRACKET AND HOSE.
HOSE BIBB HB-1 (MECHANICAL ROOMS)	---	---	3/4"	---	CHICAGO FAUCETS No. 998-RCF SILL FAUCET WITH NON-REMOVABLE VACUUM BREAKER AND LOOSE KEY OPERATING HANDLE. MOUNTING HEIGHT FOR 36" A.F.F. IN MECHANICAL ROOMS.
WALL HYDRANT WH-1	---	---	3/4"	---	ZURN MODEL: Z1320XL NON-FREEZE AUTOMATIC DRAINING WALL HYDRANT FOR FLUSH INSTALLATION. INTEGRAL BACKFLOW PREVENTER WITH ANTI-SIPHON TECHNOLOGY, COPPER CASING, ALL-BRONZE INTERIOR COMPONENTS. HYDRANT FURNISHED WITH TYPE 304 STAINLESS STEEL HOUSING WITH LOCKING HINGED COVER STAMPED “WATER” AND INCLUDES OPERATING KEY
ROOF DRAIN RD-1	---	---	---	---	ZURN NO. ZC-100-E-R-C 15" CAST IRON DRAIN AND DOME STRAINER WITH FLASHING CLAMPING COLLAR, UNDERDECK CLAMP ROOF SUMP RECEIVER, CAULKED OR NO-HUB OUTLET. DRAIN TO BE INSTALLED WITH MINIMUM OF 36" ADJACENT ROOF DRAIN.
OVERFLOW DRAIN OD-1	---	---	---	---	ZURN NO. ZC-100-E-R-C 15" CAST IRON DRAIN AND DOME STRAINER WITH FLASHING CLAMPING COLLAR, UNDERDECK CLAMP ROOF SUMP RECEIVER AND 2" HIGH INTERNAL WATER DAM, CAULKED OR NO-HUB OUTLET. DRAIN TO BE INSTALLED WITH MINIMUM OF 36" ADJACENT ROOF DRAIN.
DOWNSPOUT DC-1 COVER	---	---	---	---	ZURN No. ZS-199-DC STAINLESS STEEL DOWNSPOUT COVER WITH FABRICATED SECURED PERFORATED STAINLESS STEEL HINGED STRAINER, MOUNTED 12" A.F.F. UNLESS NOTED OTHERWISE.
WALL CLEANOUT WCO	---	---	---	---	ZURN No. ZN-1440 DURO-COATED CAST IRON CLEANOUT TEE WITH COUNTER-SUNK GASKET, WATERTIGHT THREADED PLUG AND ZURN 1460 SQUARE SMOOTH ACCESS COVER WITH VANDAL PROOF SCREWS.
FLOOR CLEANOUT FCO	---	---	---	---	ZURN No.ZS-1400 CAST IRON CLEANOUT EXTRA-HEAVY DUTY AND ROUND SCORIATED TOP FOR PURPOSE TRAFFIC AREAS (SUCH AS WAREHOUSE/FORK-LIFT). PROVIDE VARIATION AS REQUIRED FOR FLOOR FINISH WHERE INSTALLED. SEE ARCHITECT DWG'S FOR FLOOR TYPES.
GRADE CLEANOUT COG	---	---	---	---	ZURN No. Z-1402 DURO-COATED CAST IRON CLEANOUT WITH WATERTIGHT COUNTER-SUNK PLUG AND SCORIATED SECURED TOP WITH FRAME. INSTALL IN 18"x18"x6" THICK CONCRETE PAD.

* - REFER TO DRAWINGS FOR SIZING.
GENERAL NOTES:
1. FOR ALL SUPPLY STOPS AND TRIM REFER TO THE PLUMBING FIXTURE SUPPLIES AND TRIM SCHEDULE.
2. FOR MOUNTING HEIGHTS OF INDIVIDUAL FIXTURES, REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION.
3. CONTRACTOR TO COORDINATE LOCATION OF DRAINS AND FLOOR SINKS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.

PLUMBING FIXTURE SUPPLIES AND TRIM

FIXTURE	MANUFACTURER	STRAINER	P-TRAP	SIZE	ANGLE STOP AND SUPPLY RISER
LAVATORY	McGUIRE	HD155A	8872	1-1/4"	LFBV2165-LK, 1/2" I.P.S. X 3/8" O.D.
DRINKING FOUNTAIN	McGUIRE	HD155A	8872	1-1/4"	LFBV2165-LK, 1/2" I.P.S. X 3/8" O.D.

NOTE:

1. STRAINERS SHALL BE HEAVY CAST BRASS CHROME PLATED WITH MATCHING GRID TYPE STRAINER, WITH OR WITHOUT OVERFLOW AS REQUIRED. 17 GAUGE SEAMLESS BRASS TAILPIECE OF LENGTH DETERMINED BY INSTALLATION REQUIREMENTS. PROVIDE COMPLETE WITH WASHERS AND BRASS LOCKNUT.
2. P-TRAPS SHALL BE 17 GAUGE SEAMLESS CHROME-PLATED BRASS, ADJUSTABLE TYPE. PROVIDE COMPLETE WITH CLEANOUT PLUG, CHROME-PLATED BRASS SLIP NUTS, WALL BEND, AND WROUGHT BRASS ESCUTCHEON OF DEPTH DETERMINED BY INSTALLATION REQUIREMENTS.
3. ANGLE STOPS SHALL BE LEAD-FREE COMMERCIAL PATTERN CHROME-PLATED BRASS, QUARTER-TURN BALL TYPE WITH LOOSE KEY HANDLES. PROVIDE COMPLETE WITH CHROME-PLATED COPPER SUPPLY RISERS AND WROUGHT BRASS ESCUTCHEON OF DEPTH DETERMINED BY INSTALLATION REQUIREMENTS.
4. PIPE TRIM INSULATION SHALL BE COMPLIANT, WHITE MOLDED VINYL, FADE/DISCOLORATION-RESISTANT, BACTERIA/FUNGAL-RESISTANT INSULATION.
5. PROVIDE ZURN OR EQUAL FLOOR MOUNTED CARRIER.

ELECTRIC WATER HEATER SCHEDULE

PLAN MARK	MANUFACTURER	MODEL #	TYPE	FUEL	GALLONS	HEATING LOAD (BTU/hr)	CW INLET	HW OUTLET	GPH RECOVERY @ 80º TEMP RISE	STANDBY LOSS (%/hour)	ELECTRICAL REQUIREMENTS			
											VOLTS (V)	PHASE	kW	AMPS
ELECTRIC WATER HEATER EWH-1	A.O. SMITH	DEL 20	STORAGE TANK	ELECTRIC	20	8,530	1"	1"	15	0.87	277	1	2.5	9.0

NOTES:
1. PROVIDE WITH WALL MOUNTED WATER HEATER PLATFORM.
2. PROVIDE ASME TEMPERATURE AND PRESSURE RELIEF VALVE, AND DIAL THERMOMETER IN HW OUTLET PIPING
3. FOR POWER AS SCHEDULED ON ELECTRICAL DRAWINGS, VERIFY WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.

PLAN MARK	MANUFACTURER	MODEL #	DESCRIPTION	ELECTRICAL REQUIREMENTS			
				VOLTS (V)	PHASE	kW	HP
CIRCULATION PUMP CP-1 (EWH-1)	GRUNDFOS	MAGNA3	ALL STAINLESS STEEL FLANGED PUMP, 1/25 HP WIRED FOR POWER AS SCHEDULED ON ELECTRICAL DRAWINGS AND FITTED WITH REMOTE HEAT SENSING AQUASTAT CONTROLLER. CONTROLLED BY ELECTRICAL CONTRACTOR, DESIGNED AT 15 FT HEAD LOSS.	115	1	85 W	0.04
TIME SWITCH TS-1	INTERMATIC	EH-10	ELECTROMECHANICAL 24 HOUR TIME SWITCH POWERED BY A SELF STARTING SYNCHRONOUS MOTOR. INSTALL ON WALL ADJACENT TO CIRCULATING PUMP. COORDINATE WITH ELECTRICAL AND PROVIDE FOR POWER AS...	120	1	--	--
THERMAL EXPANSION TANK ET-1	AMTROL	THERM-X-TROL MODEL ST-5-C	ASME THERMAL EXPANSION ABSORBERS, SAFETY RELIEF VALVE, MAXIMUM WORKING PRESSURE 150 PSIG, TOTAL VOLUME 2.0 GALLONS.	--	--	--	--

GENERAL NOTES - PLUMBING FIXTURES

1. CONTRACTOR TO FIELD VERIFY ELEVATIONS AND DIMENSIONS OF FINISHED FLOORS AND WALLS. TRUE ALL DRAINS, ROUGH-IN'S AND CARRIERS IN ACCORDANCE WITH WITH PROPOSED ELEVATIONS AND FINISHED SURFACES.
2. MOUNTING HEIGHT ELEVATION OF ALL WALL HUNG OR COUNTER MOUNTED FIXTURES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION OF ROUGH-IN WORK.
3. FOR ALL FIXTURES AND EQUIPMENT WITH ASSOCIATED TRIM OR COMPONENT ACCESSORIES PROVIDED UNDER SEPARATE DIVISIONS AND REQUIRING PLUMBING CONNECTIONS; THIS CONTRACTOR SHALL FIELD COORDINATE EXACT REQUIREMENTS OF, MAKE PROVISIONS FOR, AND SUPPLY ALL MATERIALS AND LABOR FOR MAKING FINAL CONNECTIONS.
4. CONTRACTOR SHALL REFER TO SHOP DRAWINGS OF EQUIPMENT TO BE SUPPLIED FOR FINAL COORDINATION OF ALL ROUGH-IN OPENINGS BEFORE BEGINNING WORK.
5. ALL FIXTURE AND EQUIPMENT STUB-OUTS SHALL BE PROVIDED WITH A STOP VALVE. ALL FIXTURE STOPS SHALL BE SOLID BRASS, LOOSE KEY OPERATED, CHROME PLATED (WHERE EXPOSED), AND FITTED TIGHT TO CHROME PLATED BRASS WALL ESCUTCHEON PLATES. SUPPLY RISERS SHALL BE TYPE 'L' TUBING, CHROME PLATED. PROVIDE McGUIRE No. H2165LK, 1/2" FIP X 3/8" OD COMPRESSION FOR ALL SINKS AND LAVATORIES AND SIMILAR FIXTURES AND McGUIRE No. H2169LK 1/2" FIP X 1/2" OD COMPRESSION FOR WATER CLOSETS AND SIMILAR FIXTURES.
6. ALL P-TRAPS WITHIN THE BUILDING, ABOVE GRADE AND EXPOSED TO INSPECTION SHALL BE C.P. ADJUSTABLE, CAST BRASS WITH CLEANOUT PLUG. PROVIDE CAST BRASS SLIP NUTS AND WASHERS, 17 GAGE SEAMLESS TUBULAR BRASS DRAIN TO WALL AND WALL FLANGE. PROVIDE McGUIRE No. 8872C, 1-1/4" P-TRAP FOR ALL LAVATORIES AND SIMILAR FIXTURES PROVIDE McGUIRE No. 8912C, 1-1/2" P-TRAP FOR ALL SINKS AND SIMILAR FIXTURES.
7. EACH FIXTURE TRAP SHALL HAVE A LIQUID SEAL OF NOT LESS THAN 2 INCHES AND NOT MORE THAN 4 INCHES, EXCEPT WHERE A DEEPER SEAL IS FOUND NECESSARY BY THE AUTHORITY HAVING JURISDICTION.
8. ALL ROUGH IN OPENINGS SHALL BE FITTED WITH CHROME PLATED, WROUGHT BRASS DEEP BELL OR BOX ESCUTCHEON PLATES FITTED TIGHT TO THE PIPE AND FLUSH TO THE WALL. STEEL ESCUTCHEON PLATES ARE NOT ACCEPTED.
9. ALL EXPOSED BRASS SHALL BE CHROME PLATED.
10. ALL HANDICAPPED ACCESSIBLE FIXTURES INDICATED WITH "ADA" SHALL BE PROVIDED OF APPROVED TYPES AND WITH REQUIRED CONTROLS AND INSTALLED TO HEIGHTS AND CLEARANCES, AS PRESCRIBED BY AMERICAN WITH DISABILITIES ACT (ADA). FIXTURES SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL ACCESSIBILITY CODE REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONED MOUNTING HEIGHTS AND SPECIFIED CLEARANCE REQUIREMENTS. PROVIDE FIXTURES WITH DEPTHS AT MAXIMUM PERMITTED AND AVAILABLE FOR INTENDED FIXTURE USE.
11. ALL WHEELCHAIR LAVATORY AND SINK PIPING WHERE EXPOSED SHALL BE INSULATED. PROVIDE OFFSET DRAIN FITTINGS WHERE REQUIRED TO PROVIDE MINIMUM CLEARANCES.
12. ALL SINKS FOR HANDICAPPED USE SHALL BE STAMPED WITH DRAIN OUTLET AT REAR OF BOWL.
13. PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE IN ACCORDANCE WITH SENATE BILL 587 FOR WATER SAVING PERFORMANCE. LAVATORY AND SINK FAUCETS SHALL INCLUDE 2.2 GPM FLOW CONTROL.
14. ORIENT ADA WATER CLOSET FLUSH VALVE WITH OPERATOR ON LARGE SIDE OF ENCLOSURE.
15. SEAL ALL SPACES BETWEEN PLUMBING FIXTURES AND MOUNTING SURFACES WITH WHITE LATEX CAULK WIPED SMOOTH AND FLUSH WITH FIXTURE.
16. FLOOR DRAINS SHALL BE INSTALLED AT LOW POINTS OF UNIFORMLY SLOPED FLOOR. CONTRACTOR SHALL FIELD COORDINATE WITH STRUCTURAL TO INSURE FLOORS ARE SLOPED UNIFORMLY ACROSS ENTIRE TOILET ROOMS OR OVER AS WIDE AN AREA AS PRACTICAL FOR OPEN AREA FLOOR DRAINS. CONVEX FLOOR SLOPE IN THE IMMEDIATE VICINITY OF THE FLOOR DRAIN IS NOT ACCEPTABLE.
17. PROVIDE AND INSTALL WATER FILTER AT EACH AND EVERY ICE MAKING MACHINE. THIS CONTRACTOR SHALL MAKE FINAL CONNECTIONS FOR EQUIPMENT WITH PLUMBING REQUIREMENTS.
18. ALL LAVATORIES, WASHFOUNTAINS, DRINKING FOUNTAINS AND SINKS SHALL HAVE WALL CLEANOUTS.
19. ALL WATER CLOSETS AND URINALS SHALL HAVE CLEANOUTS. CLEANOUTS SHALL BE LOCATED ABOVE THE FLOOD RIM OF THE FIXTURE.
20. ALL ROOF DRAINS TO BE TESTED BY FILLING WITH WATER TO THE ROOF LEVEL. TEST TO BE WITNESSED BY OWNER'S ENGINEER.
21. PROVIDE URINALS WITH A STRAINER TYPE DRAIN SUCH AS KOHLER K-4960-ET BARDON OR APPROVED EQUIVALENT.

GENERAL PLUMBING NOTES (DEMOLITION)

1. FIELD VERIFY AS NECESSARY THE EXACT LOCATIONS/ROUTING/SIZES OF PLUMBING FIXTURES, PIPING, AND EQUIPMENT TO BE REMOVED OR RE-USED. REFER TO ARCHITECTURAL DRAWINGS FOR CLARIFICATION AS REQUIRED.
2. ALL PLUMBING FIXTURES/EQUIPMENT NOT SPECIFICALLY IDENTIFIED FOR REMOVAL SHALL REMAIN. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES/CONFLICTS FOUND IN THE FIELD.
3. UNLESS NOTED OTHERWISE, WHERE FIXTURES ARE TO BE REMOVED: REMOVE FIXTURE, CARRIER, FAUCET/FLUSH VALVE, SUPPLIES/STOPS, TUBULAR BRASS, AND ASSOCIATED PIPING AS DESCRIBED.
4. ALL PLUMBING FIXTURES AND/OR EQUIPMENT REMOVED SHALL BE SUBMITTED TO THE OWNER WITH THE OPTION TO BE REUSED, WHICH SHALL BE SOLELY AT THE DISCRETION OF THE OWNER. ITEMS THE OWNER DOES NOT WISH TO REUSE BUT WISHES TO RETAIN SHALL BE DELIVERED TO STORAGE AS DIRECTED. ITEMS THE OWNER DOES NOT WISH TO REUSE OR RETAIN SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF LEGALLY.
5. REMOVE ALL PIPING FROM ABOVE FLOOR TO BELOW ROOF/FLOOR ABOVE WHICH WAS PREVIOUSLY ABANDONED OR WHICH SERVES PLUMBING FIXTURES DESIGNATED FOR REMOVAL, UNLESS NEW FIXTURES ARE TO BE INSTALLED IN THOSE LOCATIONS - REFER TO PLUMBING FLOOR PLANS. PRIOR TO ANY REMOVAL, FIELD VERIFY THAT LINES TO BE REMOVED DO NOT SERVE ANY FIXTURES TO REMAIN. CAP REMOVED BRANCH LINES AS CLOSE AS POSSIBLE TO EXISTING MAINS TO REMAIN.
6. WHERE SLAB ON GRADE FLOOR DRAINS OR SIMILAR INSTALLATIONS ARE TO BE REMOVED, THE STRAINER AND DRAIN BODY SHALL BE REMOVED. PLUG THE WASTE PIPE WATERTIGHT BELOW FINISHED FLOOR. PATCH AND REFINISH THE FLOOR TO MATCH EXISTING.
7. AT PLUMBING WASTE/VENT PIPE PENETRATIONS THROUGH SLAB ON GRADE NO LONGER REQUIRED, PLUG THE PIPES WATERTIGHT BELOW FINISHED FLOOR. PATCH AND REFINISH THE FLOOR TO MATCH EXISTING.
8. WHERE WASTE/VENT BRANCH LINES BELOW SLAB ON GRADE ARE PLUGGED AND ABANDONED IN PLACE, THE ABANDONED LINES SHALL REMAIN OTHERWISE SERVICEABLE AND THE REMAINING PIPING SYSTEM SHALL REMAIN INTACT AND FUNCTIONAL.
9. WHERE FIXTURES ARE REMOVED, NO NEW FIXTURES ARE TO BE INSTALLED, AND EXISTING VENTS THROUGH ROOF ARE NO LONGER REQUIRED, VENT TERMINALS ARE TO BE COMPLETELY REMOVED UNLESS NOTED OTHERWISE. THE ROOF SHALL BE REPAIRED AND SEALED WATERTIGHT TO MATCH THE EXISTING ROOF SYSTEM.
10. IN THE COURSE OF DEMOLITION, ANY PIPING TO REMAIN THAT IS EXPOSED AND FOUND TO BE UNLABELED SHALL BE IDENTIFIED AND LABELED ACCORDINGLY. PROVIDE PIPE MARKERS TO INDICATE TYPE OF SERVICE AND DIRECTION OF FLOW.
11. IN THE COURSE OF DEMOLITION, THE CONTRACTOR SHALL ASSIST THE OWNER BY BRINGING TO THE DESIGN TEAM'S ATTENTION ANY EXISTING PLUMBING RELATED ITEMS INTENDED TO REMAIN BUT WHICH ARE FOUND TO BE UNFIT FOR SERVICE OR IN NEED OF REPAIR. THIS SHALL INCLUDE, BUT NOT NECESSARILY BE LIMITED TO, THE FOLLOWING: LEAKING OR DETERIORATED PIPING AND VALVES; IMPROPERLY SLOPED/SUPPORTED OR SAGGING PIPE; MISSING, DAMAGED, OR DETERIORATED INSULATION; CODE REQUIRED BUT MISSING BACKFLOW PREVENTION MEASURES; FIXTURES, FLUSH VALVES, FAUCETS, EQUIPMENT, AND APPURTENANCES NOT FUNCTIONING AS INTENDED.
12. IN THE COURSE OF DEMOLITION, THE CONTRACTOR SHALL ASSIST THE OWNER BY BRINGING TO THE DESIGN TEAM'S ATTENTION ANY EXISTING NON-PLENUM RATED PIPING (PVC, ETC.) INTENDED TO REMAIN WHICH IS FOUND IN A RETURN AIR PLENUM SPACE. UNLESS DEEMED UNACCEPTABLE BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) OR OWNER, ALL SUCH PIPING SHALL BE WRAPPED WITH FIRE RESISTANT INSULATION. 3M FIRE BARRIER PLENUM WRAP 5A OR PRE-APPROVED EQUAL THAT HAS BEEN TESTING IN ACCORDANCE WITH ASTM E84 AND UL 910. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDED METHODS.

GENERAL FIRE PROTECTION NOTES

1. MODIFICATIONS TO THE EXISTING FIRE SPRINKLER SYSTEM SHALL BE DESIGNED AND INSTALLED BY A STATE LICENSED FIRE SPRINKLER CONTRACTOR (HEREINAFTER CONTRACTOR) IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13 (PREVAILING EDITION) AND ALL AUTHORITIES HAVING JURISDICTION.
2. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF EXISTING SPRINKLER HEADS, PIPING, AND APPURTENANCES AS NECESSARY.
3. PROVIDE ALL SPRINKLER HEADS, PIPE, FITTINGS, HANGERS, AND ACCESSORIES AS NECESSARY. ENSURE ANY VALVE SUPERVISORY SWITCHES AND FLOW SWITCHES ARE COORDINATED WITH THE BUILDING FIRE ALARM SYSTEM.
4. THE FINAL FIRE SPRINKLER SYSTEM SHALL PROVIDE COMPLETE AUTOMATIC PROTECTION AND COVERAGE AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION AND NFPA 13 (PREVAILING EDITION).THE SPRINKLER SYSTEM MUST ALSO BE APPROVED BY THE OWNER'S FIRE INSURANCE UNDERWRITER.
5. THE FIRE SPRINKLER CONTRACTOR SHALL COORDINATE SPRINKLER HEAD LOCATIONS WITH CEILING TILES AND ARCHITECTURAL FINISHES. ALL SPRINKLER HEADS SHALL BE INSTALLED IN CENTER OF CEILING TILES REGARDLESS OF ANY NECESSITY TO PROVIDE ADDITIONAL HEADS TO ACCOMPLISH UNIFORM APPEARANCE OF THE COMPLETED INSTALLATION BY THIS REQUIREMENT. THE CONTRACTOR SHALL MAKE ADJUSTMENTS AS NECESSARY DURING THE SHOP DRAWING PROCESS TO MEET ARCHITECTURAL REVIEW REQUIREMENTS WHILE STILL ENSURING COMPLETE AND COMPLIANT COVERAGE.
6. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE OWNER'S FIRE INSURANCE UNDERWRITER AND FIRE MARSHAL. THEY SHALL ALSO BE SUBMITTED FOR REVIEW BY THE ARCHITECT AND ENGINEER OF RECORD.
7. SPRINKLER SYSTEM SHALL CONTAIN NO SUCH ADDITIONAL VALVES DOWNSTREAM OF THE CONTROL STATION.
8. THE SPRINKLER SYSTEM SHALL BE DESIGNED AS REQUIRED TO ACCOMMODATE FIXTURES, PARTITIONS, SOFFITS, FURR DOWNS, CEILING HEIGHTS, OBSTRUCTIONS, ETC.
9. REFER TO THE OWNER'S CRITERIA/CONSTRUCTION REQUIREMENTS FOR ADDITIONAL INFORMATION.
10. REFER TO THE ARCHITECTURAL CODE ANALYSIS FOR ANY SPECIAL REQUIREMENTS.
11. THE EXISTING SPRINKLER SYSTEM SHALL BE FULLY CHARGED AND OPERATIONAL WHEN THE CONTRACTOR IS OFF THE SITE.
12. PRIOR TO THE PROPOSED SHUT-DOWN/INTERRUPTION OF ANY EXISTING FIRE PROTECTION SYSTEM, THE CONTRACTOR SHALL ADVISE THE OWNER/OWNER'S APPOINTED REPRESENTATIVE NO LESS THAN 24 HOURS PRIOR. ALL SUCH SERVICE INTERRUPTIONS SHALL BE FULLY COORDINATED.
13. THE CONTRACTOR SHALL PERFORM ALL WORK IN A WORKMANLIKE MANNER. UPON COMPLETION OF WORK THE CONTRACTOR SHALL TEST, THEN CONNECT TO THE MAIN SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING THE SYSTEM TO FULL OPERATION.

GENERAL PLUMBING NOTES

1. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODES AND AUTHORITIES HAVING JURISDICTION.
2. CONTRACTOR SHALL PROVIDE LABOR AND MATERIALS AS REQUIRED TO MAKE FINAL CONNECTIONS FOR ALL PLUMBING FIXTURES, EQUIPMENT AND RELATED ITEMS PROVIDED UNDER SEPARATE DIVISIONS.
3. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS AND ELEVATIONS OF PROPOSED POINTS OF CONNECTION WITH EXISTING BUILDING PLUMBING UTILITY LINES AND SITE CIVIL LINES PRIOR TO INSTALLATION OF ANY NEW WORK.
4. CONTRACTOR SHALL BE RESPONSIBLE TO ALERT ARCHITECT AND ENGINEER OF GRADING CONFLICTS PRIOR TO COMMENCING INSTALLATION OF ANY WORK.
5. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL CONDITIONS AS EXISTING AND PROVIDE PROPER PIPING INSTALLATIONS AS REQUIRED WITHOUT DAMAGE TO STRUCTURE. WHERE STRUCTURAL MODIFICATIONS ARE TO BE REQUIRED, CONTRACTOR SHALL FIRST RECEIVE WRITTEN APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD COORDINATING LOCATIONS AND ELEVATIONS OF ALL PLUMBING PIPING WITH OTHER TRADES PRIOR TO INSTALLATION. WHERE RELOCATIONS OF NEW WORK ARE REQUIRED TO CORRECT CONFLICTS WITH OTHER TRADES IT SHALL BE DONE AT NO ADDITIONAL COST TO OWNER.
7. ALL PIPE PASSING THROUGH FIRE RATED WALLS OR FLOOR SLAB SHALL BE SUPPORTED AT THE PENETRATION AND SHALL BE SEALED WITH APPROVED FIRE STOP MATERIALS AS SPECIFIED AND REQUIRED BY CODE AUTHORITIES HAVING JURISDICTION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD COORDINATING ALL PLUMBING PIPING SLEEVE LOCATIONS WITH ALL OTHER TRADES PRIOR TO INSTALLATION OF ANY PIPING OR SUPPORTS.
9. DO NOT SCALE PLUMBING DRAWINGS FOR FIELD ROUGH-IN WORK. CONTRACTOR SHALL REFER TO THE DIMENSIONED ARCHITECTURAL AND STRUCTURAL DRAWINGS TO FIELD DETERMINE EXACT LOCATIONS OF ROUGH-IN WORK.
10. SANITARY DRAINAGE PIPE 3" AND SMALLER SHALL HAVE A UNIFORM MINIMUM CONTINUOUS SLOPE OF 1/4 INCH PER FOOT OF RUN. DRAINAGE PIPE 4" AND LARGER SHALL SLOPE AT MINIMUM 1/8 INCH PER FOOT OF RUN. SLOPE ALL VENT PIPE MINIMUM 6" PER 100 FEET OF RUN.
11. STORM DRAINAGE PIPE SHALL HAVE A UNIFORM MINIMUM CONTINUOUS SLOPE OF 1/8 INCH PER FOOT OF RUN. SLOPES OF 1/4 INCH PER FOOT ARE PERMITTED WHERE NOTED ON PLAN OR AS REQUIRED.
12. PROVIDE FITTINGS FOR SANITARY DRAIN, WASTE AND WASTE PIPING SYSTEMS OF APPROVED DRAINAGE PATTERN AND LONG OR SHORT RADIUS TYPES AS REQUIRED AND APPROVED FOR USE IN COMPLIANCE WITH PLUMBING CODE REQUIREMENTS.
13. PROVIDE CLEANOUTS AT EACH CHANGE OF DRAINLINE DIRECTION GREATER THAN 45° AND IN COMPLIANCE WITH PLUMBING CODE REQUIREMENTS.
14. PROVIDE BRACING TO PREVENT AXIAL MOVEMENT FOR ALL DRAINAGE PIPING. PROVIDE RESTRAINTS AT ALL CHANGES IN DIRECTION AND AT ALL DIAMETER CHANGES GREATER THAN TWO PIPE SIZES. BRACES, BLOCKS, RODDING AND OTHER METHODS AS PRESCRIBED BY THE PIPE AND COUPLING MANUFACTURER SHALL BE ACCEPTABLE.
15. PROVIDE ISOLATING BALL VALVES FOR ALL BRANCHES OFF DOMESTIC WATER MAINS. ALL PLUMBING SYSTEM VALVES SHALL BE INSTALLED IN ACCESSIBLE CEILING SPACES. WHERE CEILING IS NOT ACCESSIBLE, OR SPACE IS CONFLICTING, VALVES SHALL BE INSTALLED IN PARTITIONS OR PIPE CHASES. PROVIDE MILCOR STYLE 'K' PAINTED STEEL HINGED ACCESS PANELS IN LOCATIONS PRE-APPROVED BY THE ARCHITECT.
16. ALL HOT WATER AND HOT WATER CIRCULATING PIPING SHALL HAVE 1" THICK FIBERGLASS INSULATION WITH ALL SERVICE JACKET AND SELF SEALING LAP JOINT.
17. INSTALL EACH WATER HEATER AND ALL OTHER PLUMBING EQUIPMENT WITH ADEQUATE CLEARANCES FOR ACCESS BY SERVICE PERSONNEL AND WITH PROPER ORIENTATION FOR ELEMENT REMOVALS/REPLACEMENTS.
18. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD COORDINATING LOCATIONS OF ALL SANITARY VENTS UP THROUGH ROOF TO MAINTAIN MINIMUM 25' CLEARANCE TO ANY BUILDING OUTDOOR AIR INLET.
19. CONTRACTOR SHALL STERILIZE ALL DOMESTIC WATER PIPING ACCORDING TO AMERICAN WATER WORKS ASSOCIATION (AWWA) SPECIFICATIONS.
20. SHOCK ARRESTORS SHALL CONFORM WITH THE REQUIREMENTS OF SSE 1010 AND SHALL BE SIZED AND LOCATED PER PLUMBING AND DRAINAGE INSTITUTE STANDARD WH-201. ACCESS PANELS REQUIRED FOR FIXTURE GROUPS SHALL BE SIZED TO ALLOW SERVICE TO SHOCK ARRESTORS WHERE POSSIBLE. LOCATIONS AND SIZES OF REQUIRED ACCESS PANELS SHALL BE REVIEWED FOR APPROVAL BY THE ARCHITECT PRIOR TO INSTALLATION.
21. ALL CAST IRON FITTINGS AND INSTALLATION SHALL COMPLY WITH THE CAST IRON SOIL PIPE INSTITUTE (CISPI) STANDARDS.
22. FLASH FLOOR DRAINS IN FLOORS WITH TOPPING OVER FINISHED AREAS WITH 40 MIL PVC MEMBRANE, 10 INCHES CLEAR ON SIDES WITH MINIMUM 36 X 36 INCH SHEET SIZE. FASTEN WATERPROOFING MEMBRANE FLASHING TO DRAIN CLAMP DEVICE.
23. PROVIDE A FLOOR DRAIN IN ALL ROOMS WITH A WATER SUPPLY AND DRAIN. ALL FLOOR DRAINS TO BE PROPERLY RECESSED TO FACILITATE PROPER DRAINAGE. CONTRACTOR TO FACILITATE AN OWNER-WITNESS DEMONSTRATION OF ALL FLOOR DRAINS PRIOR TO SUBSTANTIAL COMPLETION.

TYPICAL PLUMBING RISER DETAILS

KEYED NOTES - TYPICAL RISER DIAGRAM DETAILS:
(NOT ALL RISERS USED IN EVERY PROJECT.)

1	REFER TO PLUMBING FIXTURE SCHEDULE FOR SOIL OR WASTE ROUGH-IN PIPE SIZE. MINIMUM SOIL OR WASTE DRAIN LINE SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE.
2	REFER TO PLUMBING FIXTURE SCHEDULE FOR SANITARY VENT ROUGH-IN PIPE SIZE. MINIMUM SANITARY VENT BRANCH SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE
3	REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE DRAIN ROUGH-IN PIPE SIZE. MINIMUM FIXTURE DRAIN AND TRAP SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE
4	REFER TO PLUMBING FIXTURE SCHEDULE FOR WATER PIPING ROUGH-IN PIPE SIZE. MINIMUM WATER SUPPLY BRANCH SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE.
5 *	WATER HAMMER ARRESTOR INLET; REFER TO ARRESTOR SCHEDULE FOR SIZE. LOCATION SHOWN HERE FOR INDIVIDUAL FIXTURE WILL VARY WHERE INCLUDED AS PART OF PLUMBING CHASE BATTERY OF PIPING. REFER TO RISER DIAGRAMS FOR MANIFOLD LOCATIONS. ARRANGE ALL WATER LINES TO GRAVITY DRAIN.
6	WALL CLEANOUTS SHALL BE PROVIDED AT ALL END OF BATTERY OR END OF BRANCH LINE FIXTURES AND WHERE REQUIRED BY PLUMBING CODE OFFICIALS TO ASSURE COMPLETE ACCESS TO ALL PORTIONS OF DRAIN.
7	SANITARY VENT PIPES SHALL CONTINUE TO CEILING OR HEADER TOGETHER AT MINIMUM 42" ABOVE FINISHED FLOOR.
8	TRAP PRIMER LINE; SEE PLUMBING DETAILS SHEET. EXTEND AND CONNECT TO FLOOR DRAIN TRAP AS SHOWN.
9	AIR GAP FITTING; PROVIDE WHERE REQUIRED BY CODE.

WATER HAMMER ARRESTOR SCHEDULE

* P.D.I. SYMBOL	FIXTURE UNITS	SIZE
A	1-11	1/2" NPT
B	12-32	3/4" NPT
C	33-60	1" NPT
D	61-113	1 1/4" NPT
E	114-154	1 1/2" NPT
F	155-330	2" NPT

PIPING RISER DIAGRAMS/TYPICAL RISER DETAILS ILLUSTRATE WATER HAMMER ARRESTORS FOR FIXTURE WATER PIPE OPENINGS. ALL ARRESTORS SHALL BE SIZED AS INDICATED ON DRAWINGS OR IN ACCORDANCE WITH THIS SCHEDULE, WHICHEVER PLACES THE MOST STRINGENT REQUIREMENT.

PROVIDE ARRESTORS IN ACCORDANCE WITH THE REQUIREMENTS OF PLUMBING DRAINAGE INSTITUTE (PDI) STANDARD PDI-WH-201. THE USE OF AIR CHAMBERS SHALL NOT BE ACCEPTABLE.

WATER HAMMER ARRESTORS SHALL HAVE LIFETIME WARRANTY AND SHALL BE CERTIFIED BY THE MANUFACTURER AS SUITABLE FOR INSTALLATION WITHOUT A REQUIREMENT FOR ACCESS PANELS. NONETHELESS, ACCESS PANELS SHALL BE PROVIDED IF AND AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).

DLRGROUP

ANTHONY S. JASPAL
95728
1/17/25

KLEIN ISD
PROMISE 2 PURPOSE

TIMBERWOLVES

SCHINDEWOLF GYM ADDITION
KLEIN INDEPENDENT SCHOOL DISTRICT

20903 ELLA BLVD
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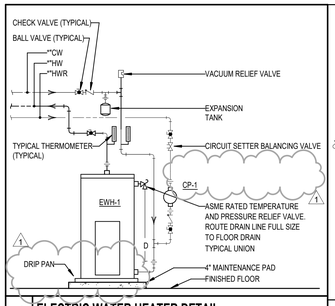
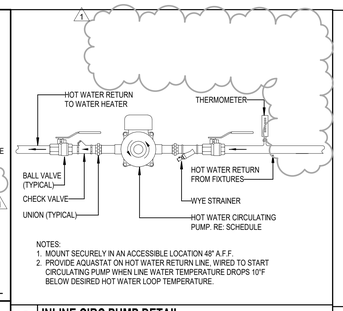
PLUMBING
SCHEDULES

P5.01



1 ELECTRIC WATER HEATER DETAIL
NOT TO SCALE



2 INLINE CIRC PUMP DETAIL
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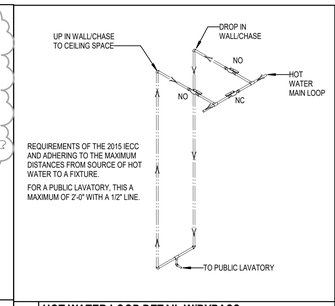
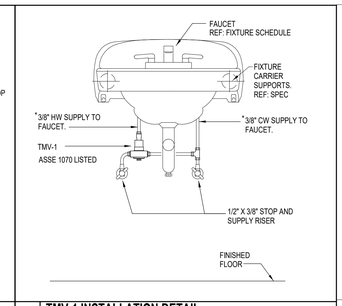
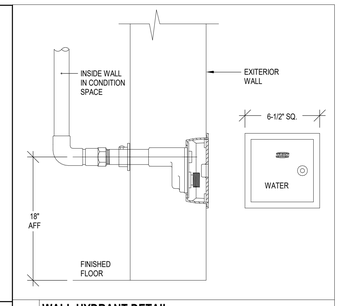


3 HOT WATER LOOP DETAIL W/BYPASS
NOT TO SCALE



4 TMV-1 INSTALLATION DETAIL
NOT TO SCALE



5 WALL HYDRANT DETAIL
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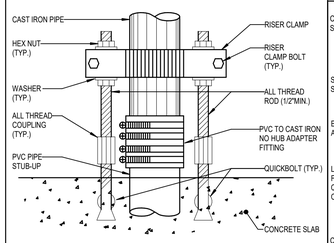
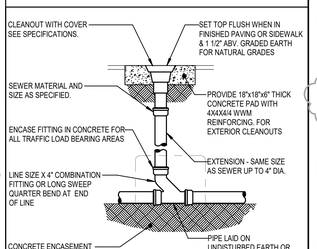


6 PVC TO CAST IRON SUPPORT
NOT TO SCALE



7 CLEANOUT DETAIL
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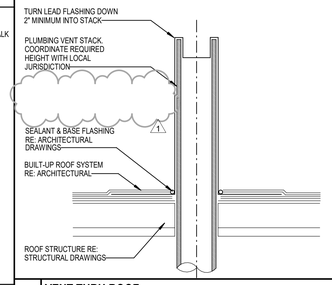
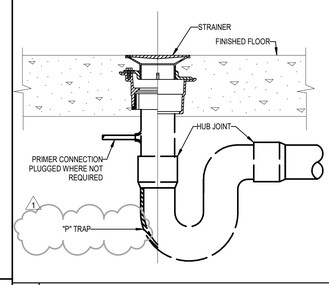
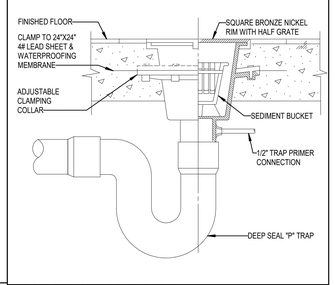


8 VENT THRU ROOF
NOT TO SCALE



9 FLOOR DRAIN DETAIL
NOT TO SCALE



10 FLOOR SINK DRAIN DETAIL
NOT TO SCALE

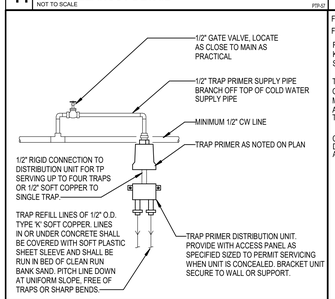
11 WALL CLEANOUT DETAIL
NOT TO SCALE

12 TWO WAY GRADE CLEANOUT
NOT TO SCALE

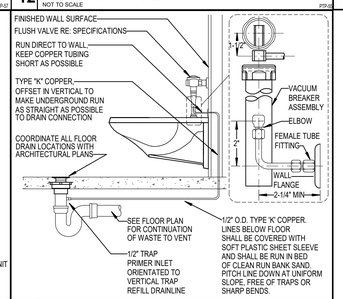
13 ROOF DRAIN DETAIL
NOT TO SCALE

14 OVERFLOW DOWNSPOUT COVER (DC-1)
NOT TO SCALE

17 SPRINKLER RISER AND SERVICE ELEVATION
NOT TO SCALE



15 TRAP PRIMER DETAIL
NOT TO SCALE



16 TRAP PRIMER DETAIL
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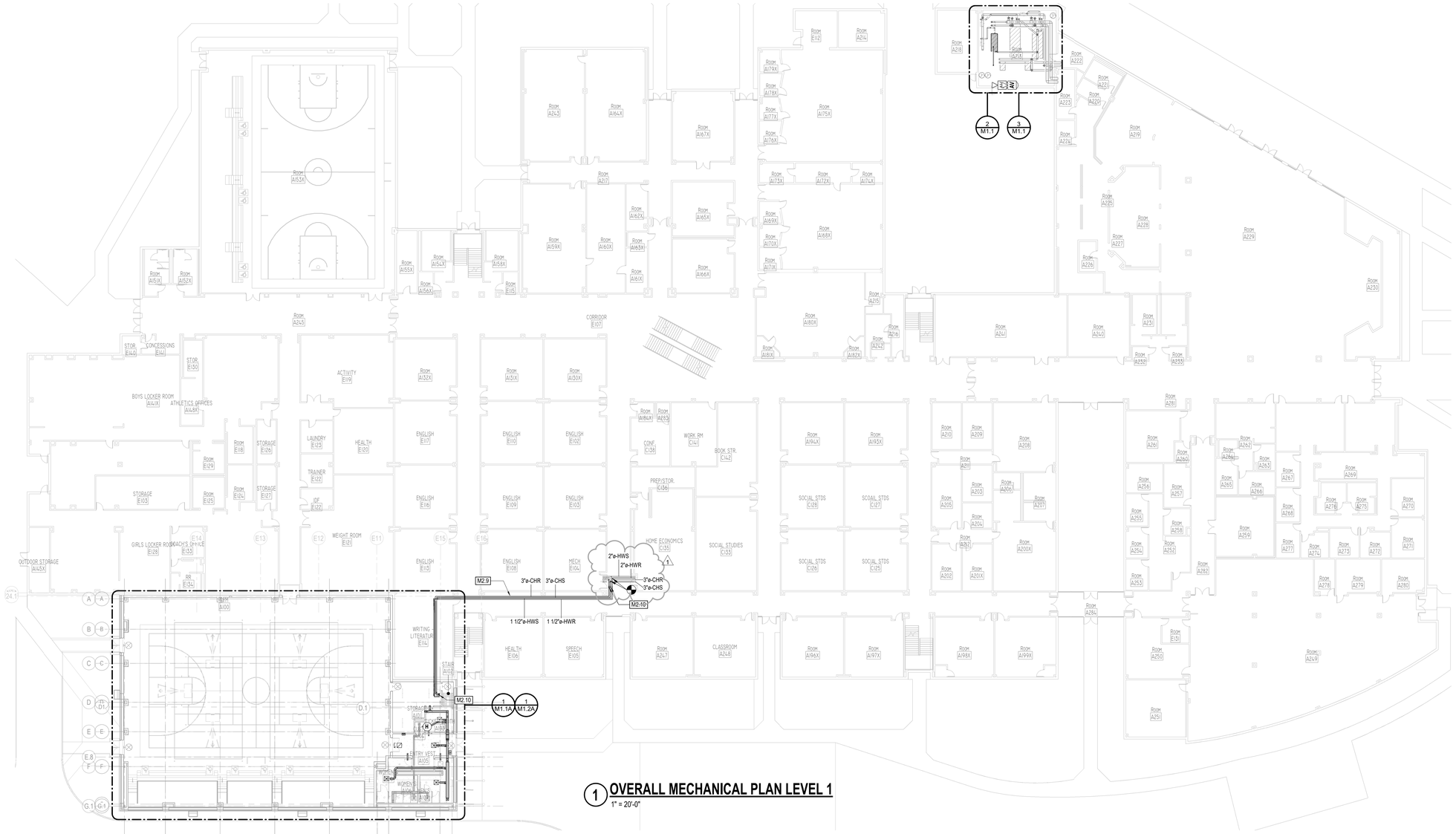
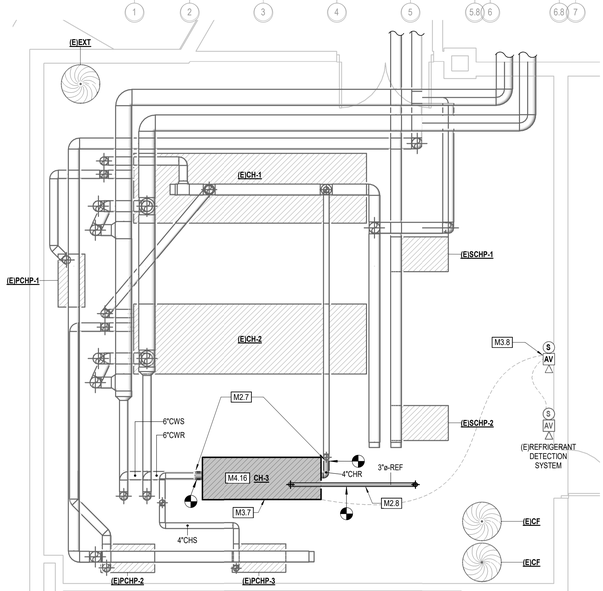
PLUMBING DETAILS

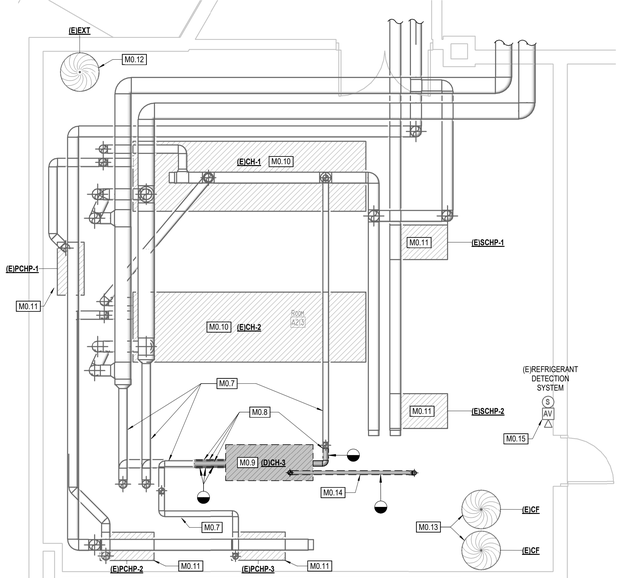
P6.01



1 OVERALL MECHANICAL PLAN LEVEL 1
1" = 20'-0"



3 MECHANICAL PLAN LEVEL 1 - CHILLER
1/4" = 1'-0"



2 DEMOLITION MECHANICAL PLAN LEVEL 1 - CHILLER
1/4" = 1'-0"

MECHANICAL KEYED NOTES

M0.7 EXISTING CHILLED WATER LINES & CONDENSER WATER LINES LOCATED IN MECHANICAL ROOM TO REMAIN UNLESS NOTED OTHERWISE.

M0.8 DEMO 4" CHILLED WATER SUPPLY & RETURN LINES, AS WELL AS 6" CONDENSER WATER SUPPLY AND RETURN LINES, BACK TO POINT AS INDICATED ON PLANS. PREPARE PIPING FOR RECONNECTION TO NEW UNIT.

M0.9 EXISTING WATER COOLED CHILLER TO BE REPLACED. SCOPE OF WORK TO BE LIMITED TO HYDRONIC PIPING CONNECTIONS AND ELECTRICAL CONNECTIONS AT THE CHILLER. DDC CONTROLS TO BE DISCONNECTED AND RECONNECTED.

M0.10 EXISTING WATER COOLED CHILLER TO REMAIN IN THE LOCATION SHOWN.

M0.11 EXISTING HYDRONIC PUMP TO REMAIN.

M0.12 EXISTING EXPANSION TANK TO REMAIN.

M0.13 EXISTING CHEMICAL TREATMENT SYSTEM TO REMAIN.

M0.14 DEMO 3" REFRIGERANT RELIEF PIPING AND DISCONNECT FROM EXISTING CHILLER AS REQUIRED TO FACILITATE CHILLER REMOVAL.

M0.15 EXISTING REFRIGERANT DETECTION SYSTEM TO REMAIN.

M2.7 PROVIDE NEW 4" CHILLED WATER SUPPLY & RETURN PIPING, AS WELL AS 6" CONDENSER WATER SUPPLY AND RETURN PIPING, AS REQUIRED TO CONNECT NEW CHILLER TO EXISTING PIPING. MODIFY PIPE LENGTH AS REQUIRED. PROVIDE NECESSARY PIPE FITTINGS AND ACCESSORIES AS REQUIRED TO CONNECT TO CHILLER.

M2.8 PROVIDE NEW 3" REFRIGERANT RELIEF PIPE TO NEW CHILLER. REUSE EXISTING ROOF OPENING FOR NEW PIPE.

M2.9 TIE NEW 1-1/2" HWS/R AND 3" CHWS/R INTO EXISTING MAINS AS INDICATED. PROVIDE TRANSITIONS AS REQUIRED

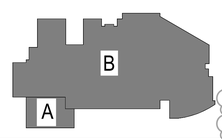
M2.10 PROVIDE LINE-SIZE SHUT-OFF VALVE IN EACH CHW AND HW PIPE AT APPROXIMATE LOCATION SHOWN.

M3.7 PROVIDE NEW REFRIGERANT DETECTION SENSOR. NEW SENSOR TO BE COMPATIBLE WITH PROPOSED NEW REFRIGERANT AND TIED BACK INTO EXISTING REFRIGERANT DETECTION SYSTEM PANEL.

M3.8 PROVIDE NEW REFRIGERANT DETECTION SYSTEM PANEL AT APPROXIMATE LOCATION SHOWN. NEW SENSOR TO BE COMPATIBLE WITH PROPOSED NEW REFRIGERANT AND TIED BACK INTO EXISTING REFRIGERANT DETECTION SYSTEM PANEL.

M4.16 PROVIDE REPLACEMENT WATER COOLED CHILLER AS SCHEDULED IN THE LOCATION SHOWN. MAKE PIPING CONNECTIONS TO EXISTING HYDRONIC LINES AS SHOWN. INSTALL CHILLER ON EXISTING HOUSEKEEPING PAD. MODIFY/EXTEND PAD AS REQUIRED. RE: DETAIL 15/M8.01.

KEY PLAN



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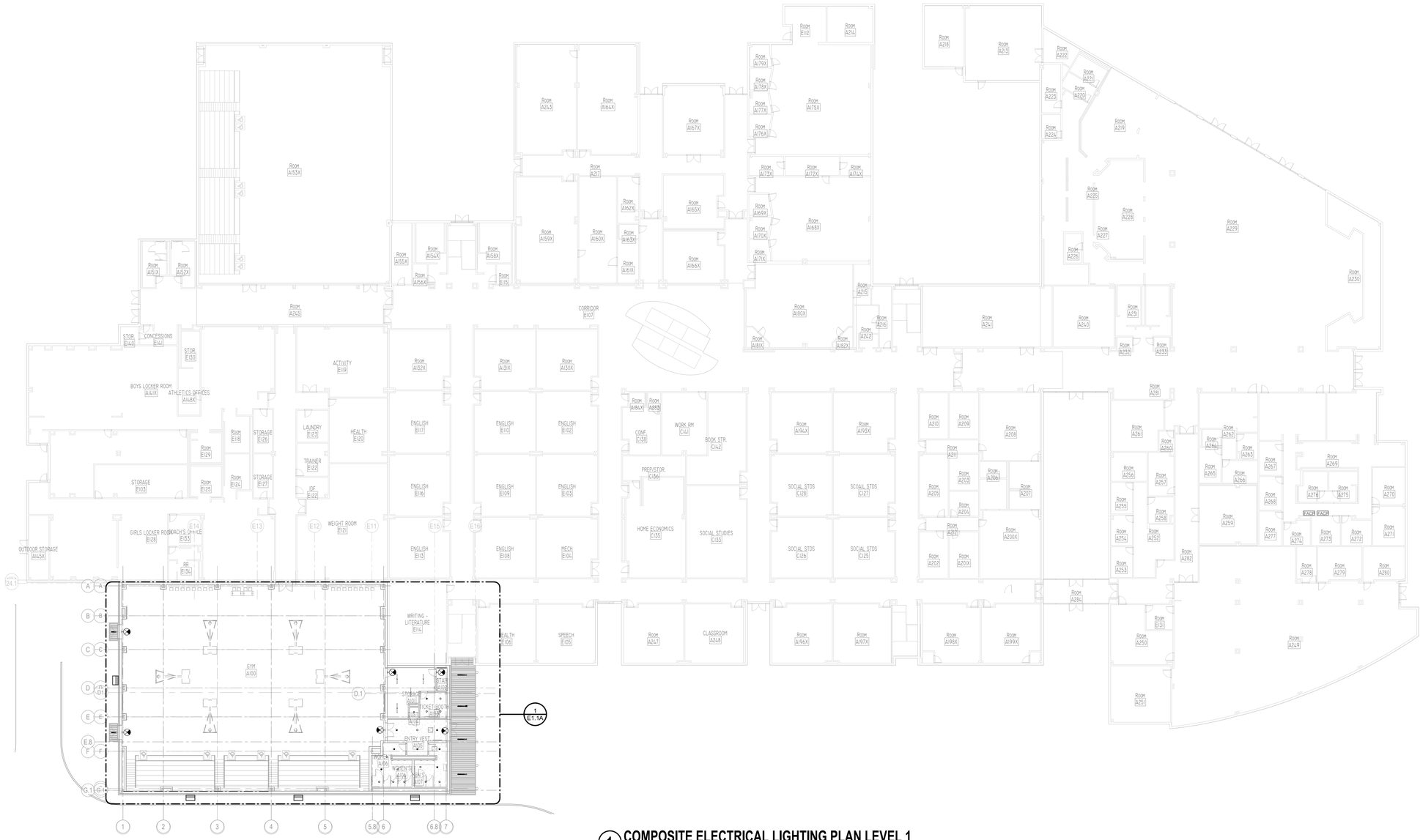
OVERALL MECHANICAL PLAN LEVEL 1

M1.1

GENERAL ELECTRICAL NOTE:

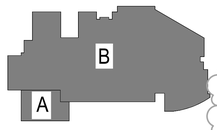
A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.



1 COMPOSITE ELECTRICAL LIGHTING PLAN LEVEL 1

1" = 20'-0"

KEY PLAN



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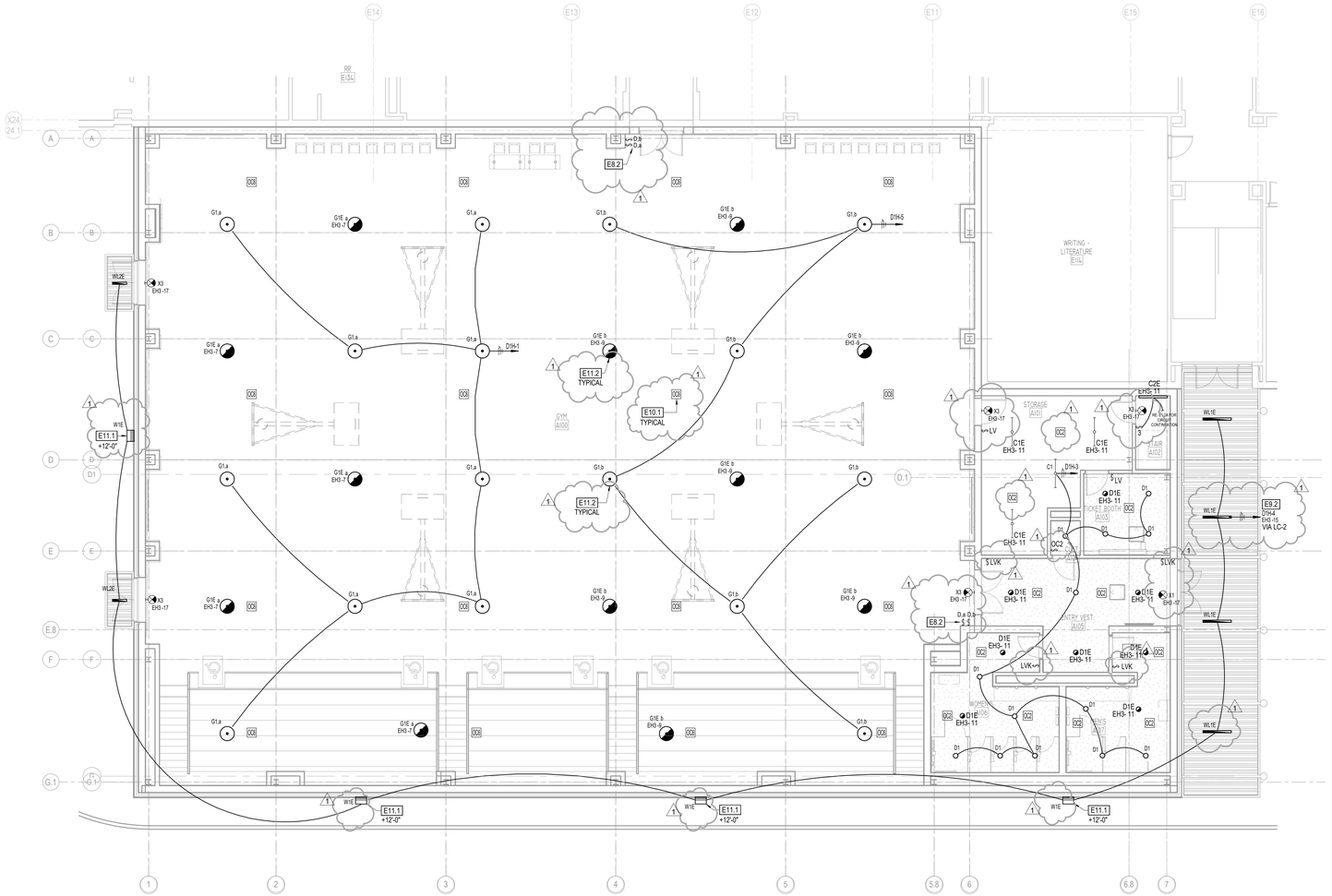
COMPOSITE ELECTRICAL LIGHTING PLAN LEVEL 1

E1.1



1 ELECTRICAL LIGHTING PLAN LEVEL 1 - AREA A

1/8" = 1'-0"

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

ELECTRICAL KEYED NOTES

E8.2 PROPOSED LOCATION OF SWITCH BANK FOR GYM LIGHTS. CONTRACTOR SHALL COORDINATE FINAL LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.

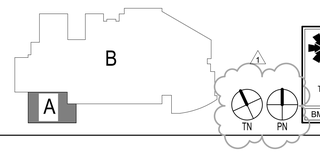
E9.2 ALL EXTERIOR EMERGENCY LIGHTING SHALL BE PROVIDED WITH AN EMERGENCY LIGHTING CIRCUIT AND NORMAL LIGHTING CIRCUIT AND ROUTED THROUGH GTD 20A GENERATOR TRANSFER DEVICE "UL 1008" AND LIGHTING CONTACTOR. LOCATE GTD ADJACENT TO EMERGENCY PANEL SERVING CIRCUIT. REFER TO GTD WIRING DIAGRAM ON SHEET 6/E602 FOR ADDITIONAL INFORMATION. TYPICAL.

E10.1 CONTROLS SHALL BE IMPACT RESISTANT FOR GYM HIGH BAY APPLICATION. PROVIDE WIRE GUARD IF NECESSARY. COORDINATE WITH CONTROLS MANUFACTURER, ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK. TYPICAL FOR GYM ONLY.

E11.1 INSTALL WALL PACKS AT 12'-0" ABOVE FINISHED FLOOR MEASURED FROM THE TOP OF THE WALL PACK. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATION, TYP.

E11.2 REFER TO DETAIL 20/E8.01 FOR INSTALLATION REQUIREMENTS AND FOR ADDITIONAL INSTALLATION DETAILS. INSTALLATION SHALL BE COORDINATED WITH MANUFACTURER INSTALLATION INSTRUCTIONS. PROVIDE SAFETY CHAIN PER DISTRICT STANDARDS. FIELD COORDINATE WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. TYPICAL.

KEY PLAN



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ELECTRICAL LIGHTING PLAN LEVEL 1 - AREA A

E1.1A

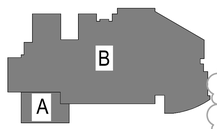
GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

1 COMPOSITE ELECTRICAL LIGHTING PLAN LEVEL 2

1" = 20'-0"

KEY PLAN



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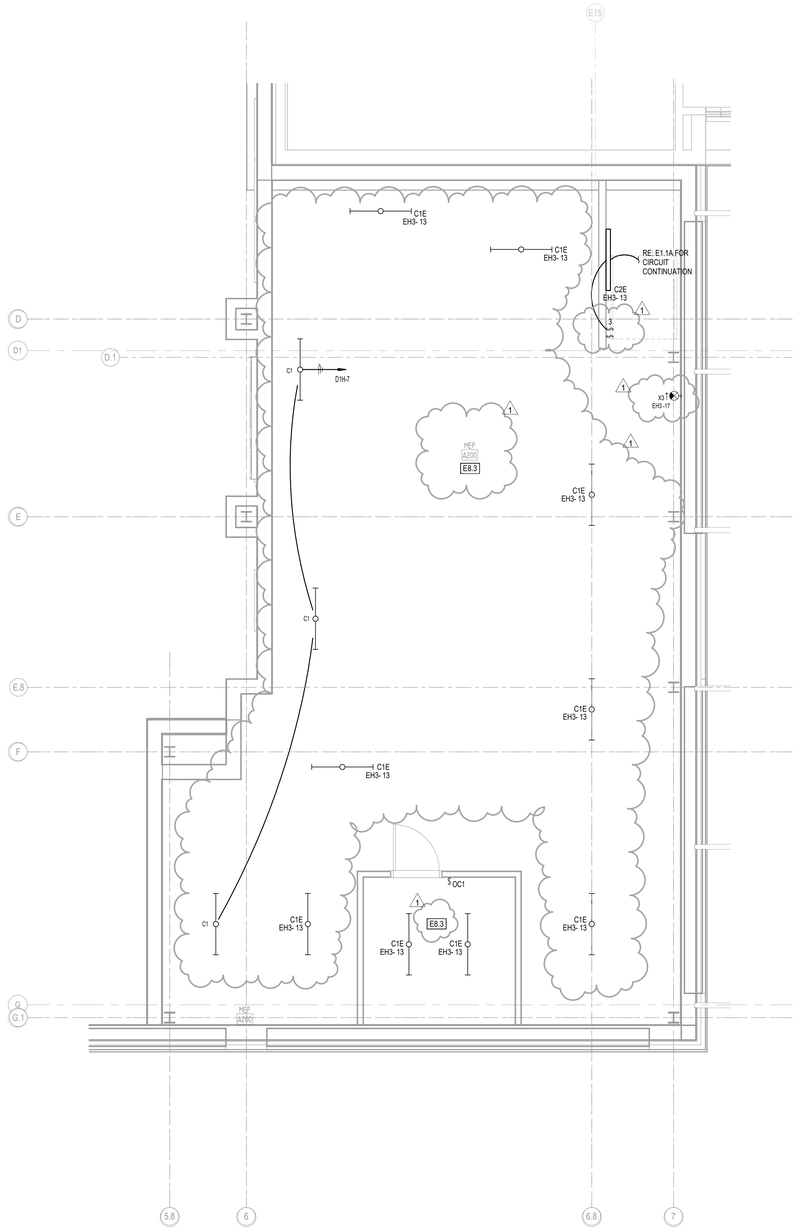
COMPOSITE ELECTRICAL LIGHTING PLAN LEVEL 2

E1.2



GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

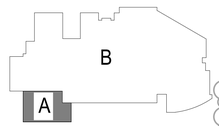
ELECTRICAL KEYED NOTES

E8.3 ALL LIGHTING FIXTURES IN MECHANICAL, ELECTRICAL, AND IDF/MDF ROOMS SHALL BE PROVIDED WITH WIRE GUARDS AND SAFETY CHAINS.

1 ELECTRICAL LIGHTING PLAN LEVEL 2 - AREA A

1/4" = 1'-0"

KEY PLAN



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ELECTRICAL
LIGHTING PLAN
LEVEL 2 - AREA A

E1.2A

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

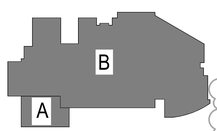
1 COMPOSITE ELECTRICAL POWER PLAN LEVEL 1

1" = 20'-0"

NOTE TO ALL CONTRACTORS:

ELECTRICAL CONTRACTOR SHALL REFER TO DIVISION 27 AND 28 LOW VOLTAGE PLANS FOR ADDITIONAL ELECTRICAL ROUGH-IN REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY RACEWAY AND CABLING REQUIRED.

KEY PLAN



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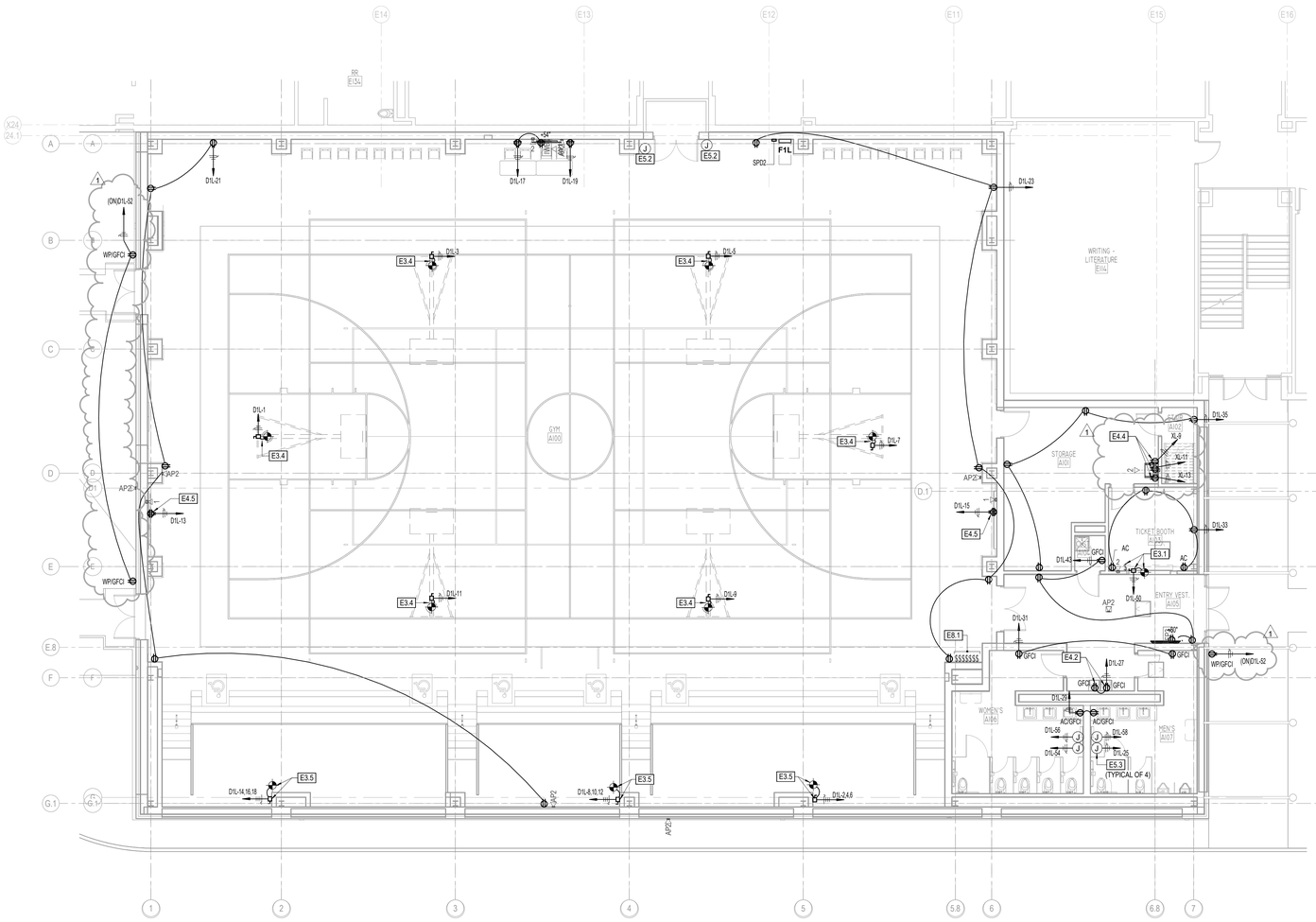
COMPOSITE ELECTRICAL POWER PLAN LEVEL 1

E2.1



1 ELECTRICAL POWER PLAN LEVEL 1 - AREA A

1/8" = 1'-0"

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

ELECTRICAL KEYED NOTES

E3.1 PROVIDE POWER CONNECTION TO DOOR OVERHEAD ROLLING MOTOR CONTROLLER. FIELD COORDINATE EXACT LOCATION. CONTROL WIRING QUANTITIES AND ADDITIONAL REQUIREMENTS WITH DOOR INSTALLER AND ARCHITECT PRIOR TO ROUGH-IN. ROUTE (1) 3/4" CONDUIT WITH CONTROL WIRE TO ASSOCIATED OPEN/CLOSE SWITCH. DISCONNECT SHALL BE LOCATED IN A READILY ACCESSIBLE LOCATION.

E3.4 PROVIDE 120V POWER FOR BASKETBALL GOALS. COORDINATE EXACT POWER REQUIREMENTS AND INSTALLATION DETAILS WITH BASKETBALL GOALS PRODUCT SPECIFICATIONS, MANUFACTURER/INSTALLER, DIVISION 27, ARCHITECT AND OWNER PRIOR TO ROUGH-IN. REFER TO ELECTRICAL KEYED NOTE E8.1 FOR APPROXIMATE LOCATION OF SWITCHES FOR BASKETBALL GOALS.

E3.5 PROVIDE 208V, 3 PHASE POWER FOR BLEACHERS. COORDINATE EXACT POWER REQUIREMENTS AND INSTALLATION DETAILS WITH BLEACHERS PRODUCT SPECIFICATIONS, MANUFACTURER/INSTALLER, ARCHITECT AND OWNER PRIOR TO ROUGH-IN. REFER TO ELECTRICAL KEYED NOTE E8.1 FOR APPROXIMATE LOCATION OF SWITCH FOR BLEACHERS.

E4.2 PROVIDE RECEPTACLE FOR DRINKING FOUNTAIN AT THIS LOCATION. PROVIDE REMOTE GFCI TEST BUTTON ADJACENT TO DRINKING FOUNTAIN AT NORMAL RECEPTACLE HEIGHT IN AN ACCESSIBLE LOCATION. REFER TO DETAIL 10/E.601 FOR ADDITIONAL DETAILS. CONFIRM EXACT LOCATION AND INSTALLATION DETAILS WITH ARCHITECT, OWNER, AND ELECTRIC DRINKING FOUNTAIN INSTALLATION REQUIREMENTS PRIOR TO ROUGH-IN.

E4.4 PROVIDE THREE (3) 20A DEDICATED RECEPTACLES FOR SOUND RACK. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATION AND INSTALLATION DETAILS, ETC. WITH DIV. 27, AV REPRESENTATIVE/INSTALLER, ARCHITECT AND OWNER PRIOR TO ROUGH-IN.

E4.5 PROVIDE 120V POWER FOR SCOREBOARD. COORDINATE EXACT POWER REQUIREMENTS, EXACT LOCATION AND INSTALLATION DETAILS WITH SCOREBOARD PRODUCT SPECIFICATIONS, MANUFACTURER/INSTALLER, DIVISION 27, ARCHITECT AND OWNER PRIOR TO ROUGH-IN.

E5.2 APPROXIMATE LOCATION OF MAGNETIC DOOR HOLDERS. PROVIDE RELAY TO INTERFACE WITH FIRE ALARM SYSTEM. CONTRACTOR SHALL FIELD COORDINATE EXACT REQUIREMENTS WITH DIV. 27 AND SECURITY INTEGRATOR PRIOR TO ROUGH-IN.

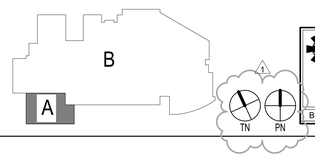
E5.3 PROVIDE 120V POWER FOR ELECTRIC HAND DRYER ON INDICATED CIRCUIT. CONFIRM EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.

E8.1 PROPOSED LOCATION OF SWITCH BANK FOR BASKETBALL GOALS AND BLEACHERS. PROVIDE (6) SWITCHES FOR BASKETBALL GOALS - 1 PER GOAL AND PROVIDE ENGRAVING IDENTIFYING SWITCHES AS "BASKETBALL GOAL". PROVIDE (1) SWITCH FOR ALL BLEACHERS AND PROVIDE ENGRAVING IDENTIFYING SWITCH AS "BLEACHERS". COORDINATE EXACT NUMBER OF SWITCHES PRIOR TO ROUGH-IN. COORDINATE EXACT POWER REQUIREMENTS AND INSTALLATION DETAILS WITH EQUIPMENT MANUFACTURER/INSTALLER, DIVISION 27, ARCHITECT AND OWNER PRIOR TO ROUGH-IN. FIELD COORDINATE FINAL LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.

NOTE TO ALL CONTRACTORS:

ELECTRICAL CONTRACTOR SHALL REFER TO DIVISION 27 AND 28 LOW VOLTAGE PLANS FOR ADDITIONAL ELECTRICAL ROUGH-IN REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY RACEWAY AND CABLING REQUIRED.

KEY PLAN



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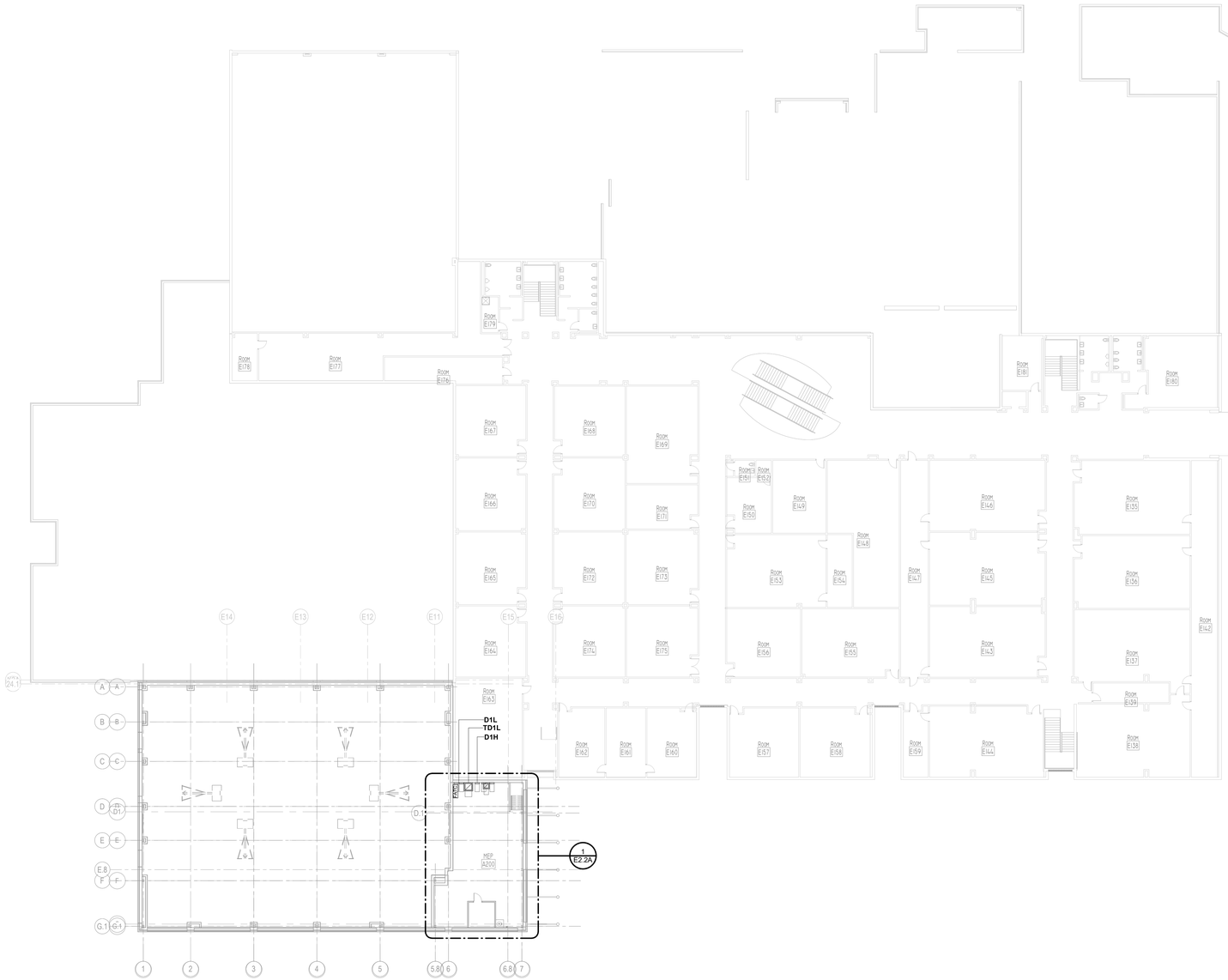
ELECTRICAL POWER PLAN LEVEL 1 - AREA A

E2.1A

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.



1 COMPOSITE ELECTRICAL POWER PLAN LEVEL 2

1" = 20'-0"

NOTE TO ALL CONTRACTORS:

ELECTRICAL CONTRACTOR SHALL REFER TO DIVISION 27 AND 28 LOW VOLTAGE PLANS FOR ADDITIONAL ELECTRICAL ROUGH-IN REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY RACEWAY AND CABLING REQUIRED.

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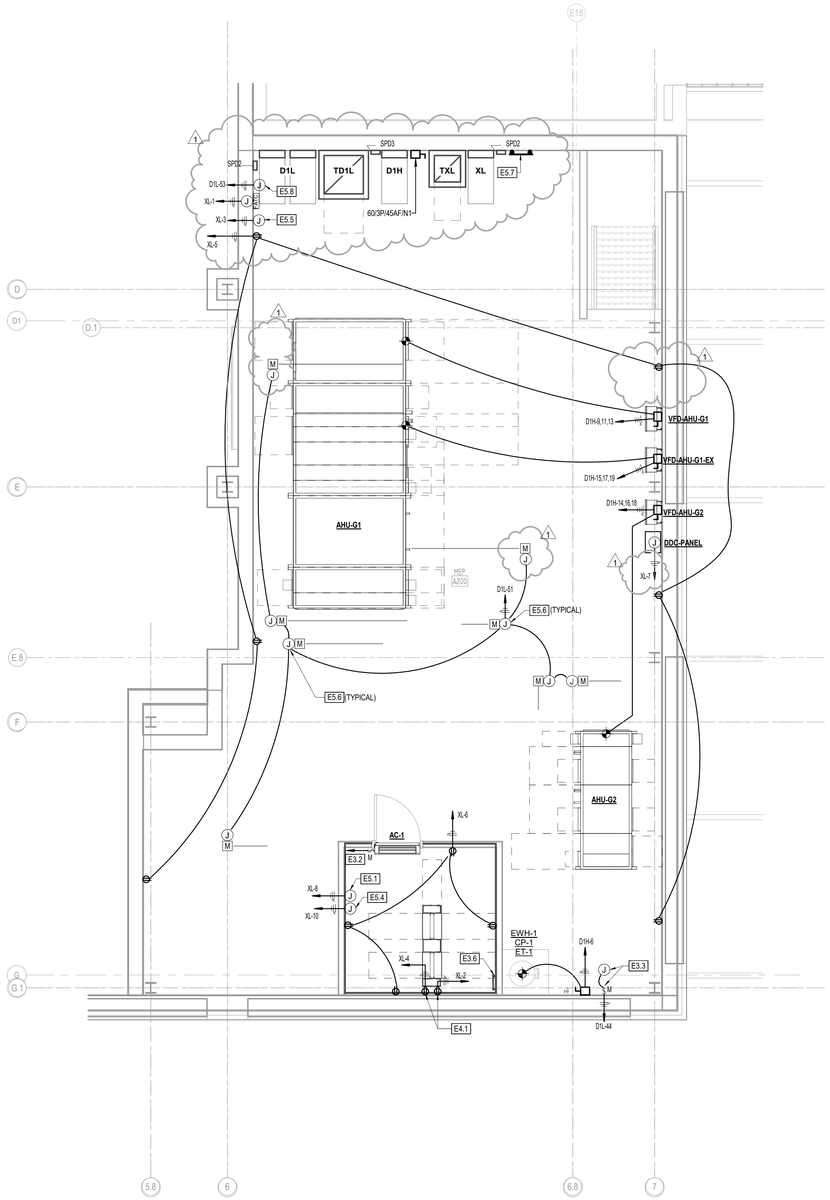
COMPOSITE ELECTRICAL POWER PLAN LEVEL 2

E2.2



1 ELECTRICAL POWER PLAN LEVEL 2 - AREA A

1/4" = 1'-0"

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

ELECTRICAL KEYED NOTES

E3.2 PROVIDE SINGLE POINT OF POWER AT CONDENSING UNIT FOR SPLIT DX SYSTEM INDOOR UNIT SHALL BE POWERED FROM OUTSIDE UNIT. PROVIDE DISCONNECTING MEANS FOR BOTH PIECES OF EQUIPMENT. REFERENCE DUCTLESS SPLIT ELECTRICAL CONNECTION DETAIL.

E3.3 PROVIDE 120V POWER TO CIRCULATION PUMP AND TIME SWITCH. PROVIDE DISCONNECTING MEANS FOR ALL EQUIPMENT. COORDINATE EXACT CONNECTION POINT AND REQUIREMENTS WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.

E3.6 PROPOSED LOCATION OF TECHNICAL GROUND BUS. RE: 06/E6.02.

E4.1 PROVIDE TWO (2) DEDICATED 30A DUPLEX RECEPTACLE FOR IDF ROOM. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATION AND INSTALLATION DETAILS, ETC. WITH IT REPRESENTATIVE/INSTALLER, ARCHITECT AND OWNER PRIOR TO ROUGH-IN.

E5.1 PROVIDE 120V POWER TO ACCESS CONTROL PANEL IN IDF ROOM. COORDINATE EXACT LOCATION AND CONNECTION REQUIREMENTS WITH SECURITY CONTRACTOR PRIOR TO ROUGH-IN.

E5.4 PROVIDE 120V POWER TO SECURITY PANEL IN IDF ROOM. COORDINATE EXACT LOCATION AND CONNECTION REQUIREMENTS WITH SECURITY CONTRACTOR PRIOR TO ROUGH-IN.

E5.5 PROVIDE 120V POWER TO POWER SUPPLY WITH INTERFACE TO FIRE ALARM RELAY FOR MAGNETIC DOOR HOLDERS. COORDINATE EXACT LOCATION AND CONNECTION REQUIREMENTS WITH DIV. 27 AND SECURITY CONTRACTOR PRIOR TO ROUGH-IN.

E5.6 PROVIDE 120V POWER AND DISCONNECTS TO MOTORIZED DAMPERS. COORDINATE/CONFIRM ALL MOTORIZED DAMPER LOCATIONS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. TYPICAL. REFER TO MECHANICAL PLANS FOR ADDITIONAL INFORMATION. ALL MOTORIZED DAMPERS INDICATED ON MECHANICAL PLANS SHALL BE CONNECTED TO CIRCUIT "D1L-63".

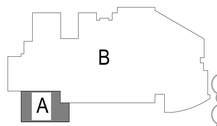
E5.7 PROPOSED LOCATION OF GROUND BUS. RE: 02/E6.01.

E5.8 PROVIDE 120V POWER CONNECTION FOR LIGHTING CONTACTORS. COORDINATE FINAL INSTALLATION AND POWER DETAILS WITH LIGHTING CONTACTOR'S MANUFACTURER REQUIREMENTS AND EQUIPMENT PRIOR TO ROUGH-IN.

NOTE TO ALL CONTRACTORS:

ELECTRICAL CONTRACTOR SHALL REFER TO DIVISION 27 AND 28 LOW VOLTAGE PLANS FOR ADDITIONAL ELECTRICAL ROUGH-IN REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY RACEWAY AND CABLING REQUIRED.

KEY PLAN



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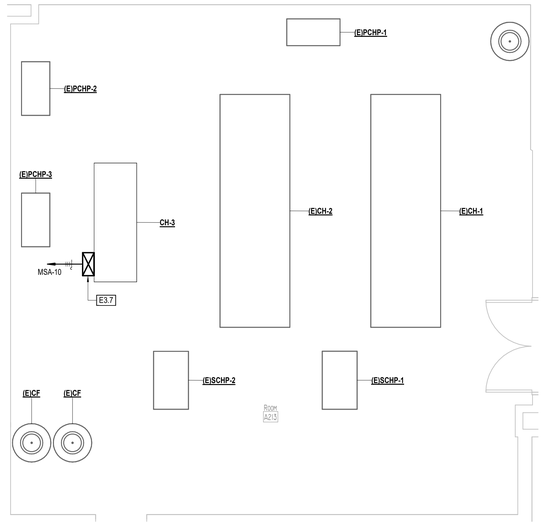
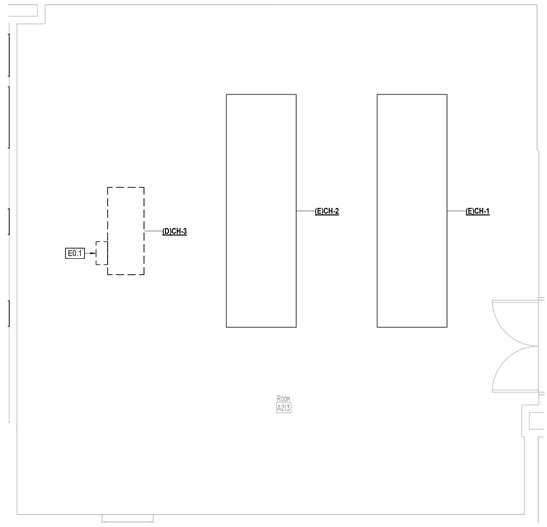
ELECTRICAL POWER PLAN LEVEL 2 - AREA A

E2.2A



2 ELECTRICAL POWER PLAN LEVEL 1 - NEW CHILLER
1/4" = 1'-0"



1 ELECTRICAL POWER PLAN LEVEL 1 - DEMO CHILLER
1/4" = 1'-0"

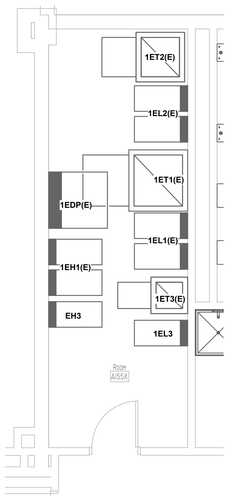
GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

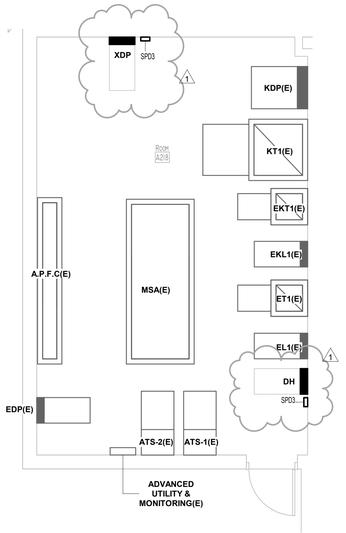
ELECTRICAL KEYED NOTES

E0.1 EXISTING CHILLER UNIT SHALL BE REMOVED AND REPLACED WITH NEW, REFERENCE NEW PLANS. DISCONNECT UNIT BEING REMOVED AND RECONNECT NEW UNIT WITH NEW ELECTRICAL EQUIPMENT. CONTRACTOR SHALL FIELD VERIFY EXISTING ELECTRICAL EQUIPMENT AND COORDINATE WITH MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR AND OWNER PRIOR TO STARTING ANY WORK.

E3.7 NEW CHILLER REPLACING EXISTING UNIT ONE. REFERENCE ELECTRICAL DEMO PLANS FOR EXISTING MECHANICAL UNIT BEING REPLACED. DISCONNECT UNIT BEING REMOVED AND RECONNECT NEW UNIT TO ENTIRELY NEW CIRCUIT AND NEW BREAKER. REFER TO GENERAL POWER NOTES "C" ON SHEET E0.11 FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING ELECTRICAL EQUIPMENT AND COORDINATE WITH MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR AND OWNER PRIOR TO STARTING ANY WORK.



4 ENLARGED ELECTRICAL ROOM A155
1/4" = 1'-0"

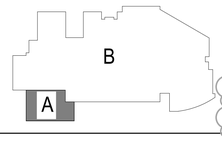


3 ENLARGED MAIN ELECTRICAL ROOM A218
1/4" = 1'-0"

NOTE TO ALL CONTRACTORS:

ELECTRICAL CONTRACTOR SHALL REFER TO DIVISION 27 AND 28 LOW VOLTAGE PLANS FOR ADDITIONAL ELECTRICAL ROUGH-IN REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY RACEWAY AND CABLING REQUIRED.

KEY PLAN



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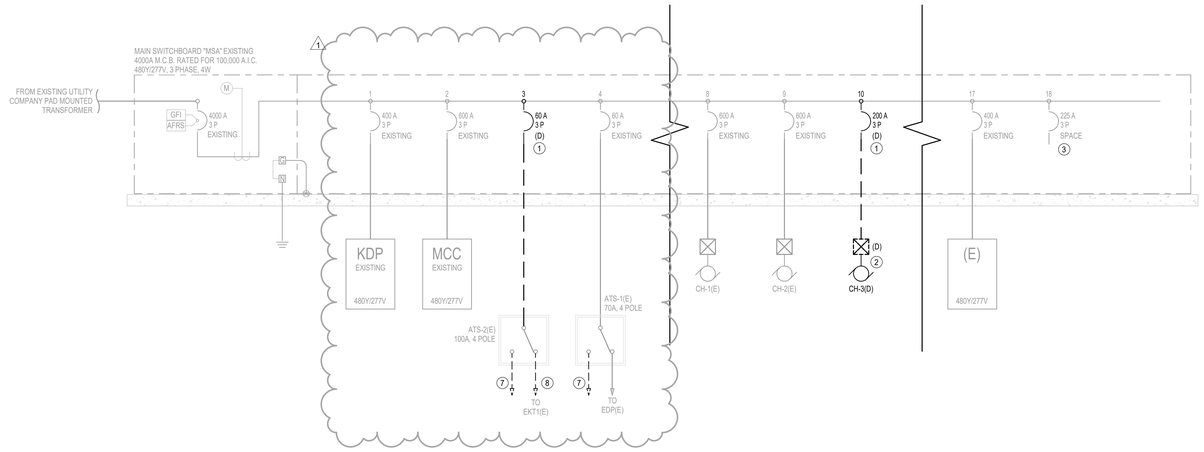
ENLARGED ELECTRICAL POWER PLANS - DEMO & NEW

E3.1



1 ELECTRICAL ONE-LINE - DEMO
NOT TO SCALE

ONE-LINE DIAGRAM GENERAL NOTES:

A. MANUFACTURER OF ELECTRICAL GEAR SHALL PROVIDE A COORDINATION STUDY FOR THE ENTIRE ELECTRICAL SYSTEM IN ORDER TO SET BREAKERS. REFER TO SPECIFICATIONS. MANUFACTURER SHALL PROVIDE AN ARC FLASH & SHORT CIRCUIT STUDY FOR THE ENTIRE ELECTRICAL SYSTEM IN ORDER TO SELECT INTERRUPTING RATINGS OF ALL CIRCUIT BREAKERS, DISTRIBUTION PANELBOARDS, PANELBOARDS, ETC. A SERIES RATED SYSTEM SHALL BE USED. SUBMIT INTERRUPTING RATING FOR ALL ELECTRICAL GEAR IN SUBMITTALS. CONTRACTOR SHALL SUPPLY WITH THEIR SUBMITTALS ON ALL NEW EQUIPMENT THE MANUFACTURERS UL DATA LISTING THE SERIES RATING OF ALL EQUIPMENT. THIS SWITCHBOARD AND ALL NEW EQUIPMENT CONNECTED DOWNSTREAM SHALL BEAR LABELS INDICATING "SERIES RATED EQUIPMENT" ON THEIR EXTERIOR AS SPECIFIED IN THE SPECIFICATIONS. CONTRACTOR SHALL INSTRUCT MANUFACTURER TO INCLUDE IN THEIR SUBMITTALS ALL TRIP CURVES AND ALL LITERATURE INDICATING THE INTERRUPTING RATING CHARACTERISTICS OF EQUIPMENT BEING SUPPLIED. CONTRACTOR SHALL SUBMIT STUDIES FOR REVIEW BEFORE SUBMITTING ELECTRICAL DISTRIBUTION EQUIPMENT FOR REVIEW. REFER TO SPECIFICATION SECTION 26 05 73.

B. METERING EQUIPMENT ENCLOSURE PROVIDED BY POWER CO., INSTALLED BY ELECTRICAL CONTRACTOR PER POWER COMPANY SPECIFICATIONS. METERS INSTALLED BY POWER COMPANY.

C. ALL CONDUCTORS SHALL BE COPPER.

D. CONTRACTOR SHALL INSTALL FEEDERS BASED ON THE OVERCURRENT DEVICE RATING UNLESS OTHERWISE NOTED. CONTRACTOR SHALL REFER TO THE FEEDER SCHEDULE TO OBTAIN AND INSTALL THE FEEDERS REQUIRED.

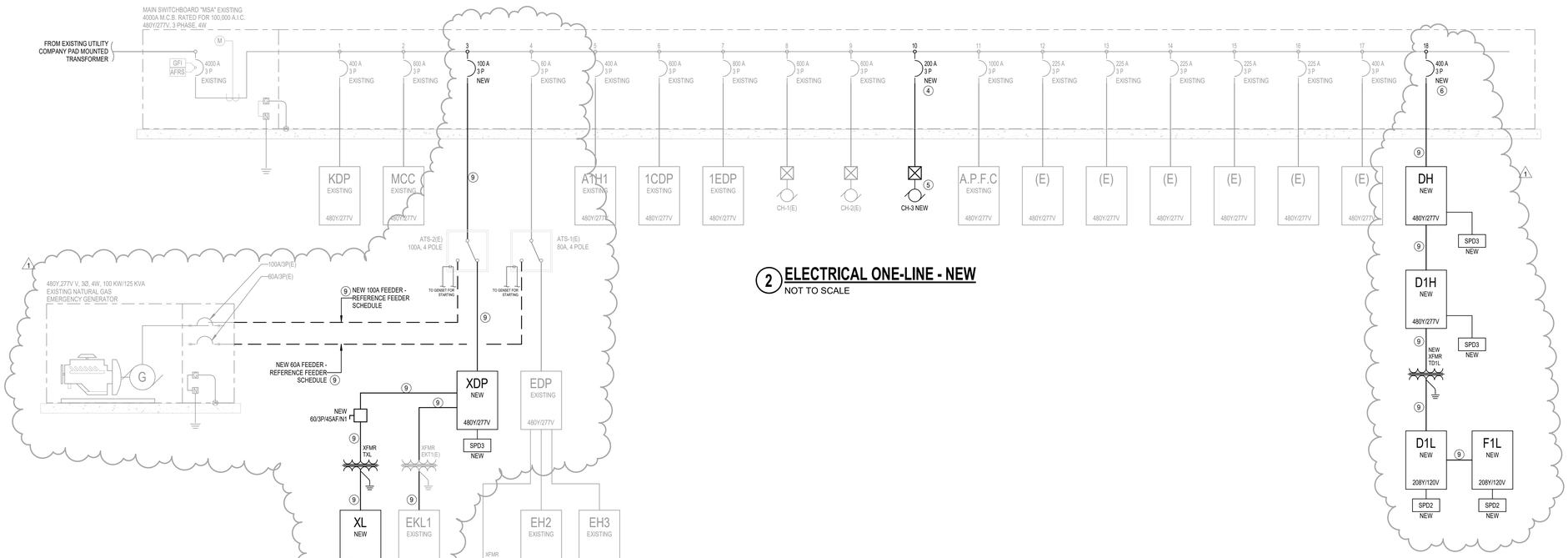
E. SERVICE EQUIPMENT IN OTHER THAN DWELLING UNITS SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT AT THE TIME OF INSTALLATION AND CALCULATION. THE LABEL SHALL BE 2" X 3" IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO INCLUDE THE DATE OF THE CALCULATION.

F. PRIOR TO INSTALLATION OF UNDERGROUND FEEDERS, THE ELECTRICAL CONTRACTOR SHALL SUBMIT AN UNDERGROUND ROUTING PLAN TO THE ENGINEER OF RECORD, INDICATING THE EXACT ROUTING PATH FOR ALL UNDERGROUND CONDUIT. INDICATE STUB-UP LOCATIONS, SIZE AND QUANTITY OF CONDUIT. ALL ELECTRICAL PANELS AND EQUIPMENT SHALL BE SHOWN ON THIS PLAN FOR REFERENCE OF CONDUIT TERMINATION.

G. DIVISION 26 INSTALLER SHALL COORDINATE NEW ELECTRICAL SERVICE WITH UTILITY COMPANY. PROVIDE CONDUIT, TRANSFORMER PAD, AND TAP BOX, WHERE REQUIRED. ALL NEW UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY SPECIFICATIONS.

ONE-LINE DIAGRAM KEYED NOTES:

1. EXISTING BREAKER AND FEEDER SHALL BE DEMOLISHED. REMOVE EXISTING CONDUIT AND WIRE IN IT'S ENTIRETY.
2. EXISTING CHILLER UNIT SHALL BE REMOVED AND REPLACED WITH NEW, REFERENCE NEW PLANS. DISCONNECT UNIT BEING REMOVED AND RECONNECT NEW UNIT WITH NEW ELECTRICAL EQUIPMENT. CONTRACTOR SHALL FIELD VERIFY EXISTING ELECTRICAL EQUIPMENT AND COORDINATE WITH MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR AND OWNER PRIOR TO STARTING ANY WORK.
3. RE-PURPOSE EXISTING 225A SPACE ALONG WITH 2" BLANK COVER PLATE AREA BELOW SPACE FOR NEW 400A BREAKER. REFER TO NEW ELECTRICAL ONE-LINE FOR ADDITIONAL INFORMATION.
4. PROVIDE NEW "HACR" TYPE BREAKER FOR NEW CHILLER UNIT. REFER TO GENERAL POWER NOTES 'C' ON SHEET E0.11 FOR ADDITIONAL INFORMATION.
5. PRICE AS ADD ALTERNATE NO. 3. REFER TO ARCHITECTURAL FRONT END SPECIFICATIONS FOR ADDITIONAL INFORMATION. NEW UNIT-MOUNTED 'WYE-DELTA' MOTOR STARTER FOR NEW CHILLER REPLACING EXISTING UNIT, REFERENCE ELECTRICAL DEMO PLANS FOR EXISTING MECHANICAL UNIT BEING REPLACED. REFER TO GENERAL POWER NOTES 'C' ON SHEET E0.11 FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING ELECTRICAL EQUIPMENT AND COORDINATE WITH MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR AND OWNER PRIOR TO STARTING ANY WORK.
6. PROVIDE NEW 400A BREAKER IN EXISTING SPACE. REFER TO DEMO ELECTRICAL ONE-LINE FOR ADDITIONAL INFORMATION.
7. EXISTING CONNECTION TO EXISTING NATURAL GAS GENERATOR SHALL BE DEMOLISHED. REFER TO NEW ONE-LINE.
8. EXISTING CONNECTION TO EXISTING XFMR EXT1 SHALL BE DEMOLISHED. REFER TO NEW ONE-LINE.
9. NEW FEEDER - REFERENCE FEEDER SCHEDULE



2 ELECTRICAL ONE-LINE - NEW
NOT TO SCALE

Load Analysis - Schindewolf - Generator (240253.000)

480 / 277 , 3 -PHASE, 4 -WIRE — Date: 1/16/2025

DESCRIPTION							NEC	KVA
LIGHTING:								
INTERIOR =	14,181	S.F.	X	0.2	W/S.F.		220.12	2.8
EXTERIOR =	732	VA	X	125%				0.9
POWER:								
RECEPTACLES =	2,160	VA		=	0.01	W/SF	220.44	
First	0	VA	X	100%				0.0
Remaining	2,160	VA	X	100%				2.2
MISCELLANEOUS =	43,764	VA		=	0.29	W/SF		43.8
								0.0
HVAC:								
COOLING =	2,910	VA	X	100%			220.60	2.9
HEATING =	0	VA	X	0%			220.60	0.0
FANS =	2,710	VA	X	100%			220.60	2.7
ALL MOTOR LOADS:								
	33,255	VA	X	125%			220.50	41.6
							TOTAL =	96.9
							TOTAL AMPS:	116.5
SQUARE FOOTAGE = 150,481 SF COMBINED							SERVICE SIZE:	150.0
							SPARE AMPACITY:	33.5

Peak KVA Load Analysis - Schindewolf (240253.000)

480 / 277 , 3 -PHASE, 4 -WIRE — Date: 1/16/2025

DESCRIPTION							NEC	KVA
EXISTING LOAD:								
PEAK KVA FROM CPE =	1,018,750	VA	X	125%			220.87	1273.4
ADDED LOAD:								
LIGHTING:								
INTERIOR & EXTERIOR =	5,942	VA	X	125%	= 0.46	W/SF	220.12	7.4
POWER:								
RECEPTACLES =	9,540	VA			= 0.74	W/SF	220.44	
First	10,000	VA	X	100%				10.0
Remaining	(460)	VA	X	50%				-0.2
MISCELLANEOUS=	9,980	VA						10.0
HVAC & PLUMBING LOADS:								
HEATING & COOLING =	1,830	VA	X	100%				1.8
FANS =	31,039	VA						31.0
LARGEST MOTOR =	11,378	VA	X	125%			220.50	14.2
WATER HEATER =	2,860	VA	X	100%				2.9
							TOTAL =	1347.7
							TOTAL AMPS:	1621.0
TOTAL SQ. FOOTAGE = 12,967							SERVICE SIZE:	4000.0
							SPARE AMPACITY:	2379.0

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ELECTRICAL ONE-LINE DIAGRAM

E4.01

FEEDER SCHEDULE
COPPER ONLY

RATING	SETS	CONDUCTOR SIZE	CONDUIT
30A	1	4#10, 1#10 G.	3/4"
40A	1	4#8, 1#10 G.	1"
50A	1	4#8, 1#10 G.	1"
60A	1	4#6, 1#10 G.	1"
70A	1	4#4, 1#8 G.	1 1/4"
80A	1	4#4, 1#8 G.	1 1/4"
90A	1	4#3, 1#8 G.	1 1/4"
100A	1	4#3, 1#8 G.	1 1/4"
125A	1	4#1, 1#6 G.	1 1/2"
150A	1	4#1/0, 1#6 G.	1 1/2"
175A	1	4#2/0, 1#6 G.	2"
200A	1	4#3/0, 1#6 G.	2"
225A	1	4#4/0, 1#4 G.	2 1/2"
250A	1	4#250, 1#4 G.	2 1/2"
300A	1	4#350, 1#4 G.	3"
350A	1	4#500, 1#3 G.	3 1/2"
400A	1	4#600, 1#3 G.	4"
450A	2	4#4/0, 1#2 G.	2 1/2"
500A	2	4#250, 1#2G.	2 1/2"
600A	2	4#350, 1#1G.	3"
700A	2	4#500, 1#1/0G.	4"
800A	2	4#600, 1#1/0G.	4"
1000A	3	4#500, 1#2/0G.	4"
1200A	4	4#350, 1#3/0G.	3"
1600A	4	4#600, 1#4/0G.	4"
	5	4#500, 1#4/0G.	4"
2000A	5	4#600, 1#250 G.	4"
	6	4#500, 1#250 G.	4"
2500A	6	4#600, 1#350 G.	4"
	7	4#500, 1#350 G.	4"
3000A	8	4#500, 1#400 G.	4"
3500A	9	4#600, 1#500 G.	4"
	10	4#500, 1#500 G.	4"
4000A	10	4#600, 1#500 G.	4"
	11	4#500, 1#500 G.	4"
5000A	12	4#600, 1#750 G.	4"
	14	4#500, 1#750 G.	4"

1. ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.
2. GROUND NOT REQUIRED AT SERVICE LATERAL.

TRANSFORMER FEEDER SCHEDULE - HARMONIC MITIGATING - 3 PHASE

PRIMARY VOLTAGE				SECONDARY VOLTAGE			
480V, THREE PHASE				120/208V, THREE PHASE, FOUR WIRE			
KVA	FEEDER	CONDUIT	BREAKER	FEEDER	CONDUIT	BREAKER	G.E.C. SIZE
15	3 #10, 1 #10 G.	3/4"	25A/3P	3 #6, 1 #4N, 1 #8G.	1"	60A/3P	#8
30	3 #8, 1 #10 G.	1"	45A/3	3 #3, 1 #1/0N, 1 #8G.	1 1/4"	100A/3P	#8
45	3 #4, 1 #8 G.	1"	70A/3P	3 #1/0, 1 #4/0N, 1 #6G.	2"	150A/3P	#6
75	3 #1, 1 #6 G.	1 1/4"	125A/3P	3 #250, 2 #3/0N, 1 #2G.	3"	250A/3P	#2
112.5	3 #2/0, 1 #6 G.	1 1/2"	175A/3P	3 #600, 2 #300N, 1 #1/0G.	4"	400A/3P	#1/0
150	3 #4/0, 1 #4 G.	2"	225A/3P	(2) SETS OF 3 #250, 2 #3/0N, 1 #1/0G.	3"	500A/3P	#1/0
225	3 #500, 1 #3 G.	3"	350A/3P	(2) SETS OF 3 #600, 2 #300N, 1 #3/0G.	4"	800A/3P	#3/0
300	(2) SETS OF 3 #4/0, 1#2G	2 1/2"	450A/3P	(3) SETS OF 3 #500, 2 #250N, 1 #3/0G.	3 1/2"	1000A/3P	#3/0
500	(2) SETS OF 3 #500, 1#1/0G	3"	800A/3P	(5) SETS OF 3 #500, 2 #300N, 1 #350G.	3 1/2"	1800A/3P	#3/0

NOTE:
-ALL CONDUCTORS SHALL BE COPPER

1

TRANSFORMER SCHEDULE

MARK	KVA	PRI. VOLTAGE	SECONDARY VOLTAGE	MOUNTING	ENCLOSURE	REMARKS
TD1L	75.0	480V, 3PH.	208Y/120V, 3PH., 4W	PAD	Type 3R	PQ DV SERIES HARMONIC MITIGATING TRANFORMER WITH ALUMINUM WINDING.
TXL	30.0	480V, 3PH.	208Y/120V, 3PH., 4W	PAD	Type 3R	PQ DV SERIES HARMONIC MITIGATING TRANFORMER WITH ALUMINUM WINDING.

1. PROVIDE ALL TRANSFORMERS WITH ALUMINUM WINDING, UNLESS NOTED OTHERWISE.
2. PQI SHALL SELECT 0, 20, 30 AND 40 PHASE SHIFTS TO PROVIDE THE BEST PHASE ANGLES TO MITIGATE HARMONIC CURRENTS. SUBMIT FOR REVIEW.

SURGE PROTECTION DEVICE (SPD) SCHEDULE

MARK	MANUFACTURER	MODEL	VOLTAGE	PHASE	SURGE RATING PER MODE	BREAKER SIZE	TIERGUIDE CABLE SIZE
SPD2	SOUTHERN TIER TECHNOLOGIES	T45120Y100AWA2S	208/120V	3	100/200kA	30A/3P	INCLUDED
SPD3	SOUTHERN TIER TECHNOLOGIES	T45277Y100AWA2S	480/277V	3	100/200kA	30A/3P	INCLUDED

*ALL T45 SERIES SPD ENCLOSURES INSTALLED IN FOOD SERVICE AREAS (IE. KITCHENS, SNACK BARS, FOOD LABS, CULINARY ARTS ROOMS AND LIFE SKILLS ROOMS) SHALL BE RECESSED IN THE WALL. PROVIDE RECESSED WALL KIT #RKSS.

STATE OF TEXAS
BRENT B. MOE
117260
LICENSED
PROFESSIONAL ENGINEER
1-17-25

KLEIN ISD
PROMISE 2 PURPOSE

SCHINDEWOLF GYM ADDITION
KLEIN INDEPENDENT SCHOOL DISTRICT
20903 ELLA BLVD
SPRING, TEXAS 77388

100% CONSTRUCTION DOCUMENTS
01/08/2025
REVISIONS
Addendum 1 01/17/2025

39-25107-00

ELECTRICAL SCHEDULES

DBR
713.914.0888 p
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TBPE Firm Registration No. 2234
DBR Project # 240253

BM | TD/RA/LB/DL | TN/JL | -

E4.02

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	MODEL	MOUNTING	LAMPS	VOLTAGE	WATTAGE	DESCRIPTION
B1	LSI INDUSTRIES	TSFL LED-2L-UNV-DIM-40-XX-XX	GROUND	4000K LED	277 V	21 VA	EXTERIOR GROUND LIGHT FOR MARQUEE SIGN. PROVIDE ALL THE NECESSAR COMPONENTS FOR MOUNTING OF FIXTURE.
C1	DAYBRITE	FSS440L840-UNV-DIM-FKR-126	SUSPENDED	4000K LED	277 V	32 VA	4' INDUSTRIAL STRIP, 4000 LUMEN, 4000K, CHAIN HUNG. PROVIDE SAFETY CHAINS.
C1E	DAYBRITE	FSS440L840-UNV-DIM-FKR-126	SUSPENDED	4000K LED	277 V	30 VA	4' INDUSTRIAL STRIP, 4000 LUMEN, 4000K, CHAIN HUNG, PROVIDE WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER. PROVIDE SAFETY CHAINS.
C2E	DAYBRITE	FSS440L840-UNV-DIM-FKR-126	SURFACE	4000K LED	277 V	30 VA	4' INDUSTRIAL STRIP, 4000 LUMEN, 4000K, SAME AS TYPE "C1E" EXCEPT SURFACE MOUNTED.
D1	LIGHTOLIER	6RN-P6RDL20940WCCZ10U	RECESSED	4000K LED	277 V	19 VA	6" RECESSED DOWNLIGHT, 2000 LUMEN, 4000K.
D1E	LIGHTOLIER	6RN-P6RDL20940WCCZ10U	RECESSED	4000K LED	277 V	19 VA	6" RECESSED DOWNLIGHT, 2000 LUMEN, 4000K. PROVIDE WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
G1	DAYBRITE	HCY-0823L-8CST-UN3-DIM-FINISH	PENDANT	4000K LED	277 V	150 VA	INDUSTRIAL ROUND LED HIGH BAY
G1E	DAYBRITE	HCY-0823L-8CST-UN3-DIM-FINISH	PENDANT	4000K LED	277 V	150 VA	INDUSTRIAL ROUND LED HIGH BAY.
W1E	GARDCO	GWM-A09-740-T4M-UNV-FINISH	SURFACE	4000K LED	277 V	39 VA	TRAPAZOIDAL WALL PACK FIXTURE. 6000 LUMEN, 4000K. ARCHITECT TO SPECIFY FINISH. LIGHTS SHALL BE POWERED BY NORMAL/EMERGENCY CIRCUIT VIA UL 1008 "GTD" TRANSFER DEVICE PER LIGHTING KEYED NOTES.
WL1E	PINNACLE	EX3-WET-N-840-4-IND-S-U-FSD-1-0-FINISH	SURFACE	4000K LED	277 V	19 VA	4' WET RATED LINEAR, SURFACE MOUNT, ARCHITECT TO SPECIFY FINISH. LIGHTS SHALL BE POWERED BY NORMAL/EMERGENCY CIRCUIT VIA UL 1008 "GTD" TRANSFER DEVICE PER LIGHTING KEYED NOTES.
WL2E	PINNACLE	EX3-WET-N-840-2-IND-S-U-FSD-1-0-FINISH	SURFACE	4000K LED	277 V	19 VA	2' WET RATED LINEAR, SURFACE MOUNT, ARCHITECT TO SPECIFY FINISH. LIGHTS SHALL BE POWERED BY NORMAL/EMERGENCY CIRCUIT VIA UL 1008 "GTD" TRANSFER DEVICE PER LIGHTING KEYED NOTES.
X1	EMERGI-LITE	LXN-1-N-X-M-UA-A	SURFACE	LED	277 V	2 VA	SINGLE SIDED EXIT SIGN, MIRRORED BACKGROUND, UNIVERSAL FIELD INSTALL ARROWS, ARCHITECT TO SPECIFY LETTER COLOR. CONNECT TO EMERGENCY CIRCUIT AS SPECIFIED ON DRAWING SHEETS.
X3	EMERGI-LITE	HOUSING COLOR-SVXN-1-LEGEND-4X-OPTIONS	SURFACE	LED	277 V	2 VA	SINGLE SIDED EXIT SIGN, VANDAL RESISTANT, WET RATED, ARCHITECT TO SPECIFY FINISH AND LETTER COLOR. CONNECT TO EMERGENCY CIRCUIT AS SPECIFIED ON DRAWING SHEETS.

1

NOTES:
1. LIGHTING FIXTURE CATALOG NUMBERS AND DESCRIPTIONS ARE SCHEDULED FOR ESTABLISHING QUALITY, APPEARANCE AND PERFORMANCE OF THE FIXTURES AS REQUIRED BY THE DESIGN. EXACT CATALOG NUMBERS DESCRIBING MOUNTING CONDITIONS, FINISHES AND REQUIREMENTS RELATED TO TRIMS AND LENS FOR ALL FIXTURES SHALL BE CONFIRMED (BY THE CONTRACTOR) WITH THE ROOM FINISH SCHEDULE AND REFLECTED CEILING PLANS, INCLUDING GRID TYPES, ON THE ARCHITECTURAL DRAWINGS PRIOR TO BIDDING. FIXTURES SHALL BE SUBMITTED ACCORDING TO THE CONDITIONS INDICATED ON THE ARCHITECTURAL PLANS. REFER TO THE WRITTEN SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. CONFIRM ALL FINISH AND FIXTURE REQUIREMENTS WITH ARCHITECT PRIOR TO ORDERING.
2. THE NEW LIGHT FIXTURES SCHEDULED ARE THE BASIS OF DESIGN. IT IS NOT INTENDED TO LIMIT COMPETITION FROM EQUAL MANUFACTURERS. ALL BIDDERS SHALL SUBMIT THEIR PROPOSED LIGHT FIXTURES IN SUBMITTAL FORM A MINIMUM OF 10 BUSINESS DAYS PRIOR TO BID DATE FOR REVIEW. APPROVED LIGHT FIXTURES WILL BE ISSUED IN AN ADDENDUM.

LIGHTING CONTROLS DEVICE SCHEDULE

TYPE	DESCRIPTION	COMMENTS
S^{T}	LINE VOLTAGE TIMER SWITCH WITH DIGITAL TIMER	RATED FOR 120/277VAC. PROVIDE WITH AUDIBLE & VISUAL ALERTS. USER PROGRAMMABLE FOR 5MIN-12HR TIME-OUT SETTINGS.
S^{OC1}	LINE VOLTAGE WALL MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR	SENSOR SHALL BE SET TO VACANCY MODE
S^{OC2}	LINE VOLTAGE WALL MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR	SENSOR SHALL BE SET TO OCCUPANCY MODE
S^{LV} S^{LVK}	LOW VOLTAGE MANUAL CONTROL	CONNECT TO POWER PACK OR ROOM CONTROLLER IF OCCUPANCY SENSORS ARE INDICATED ON PLAN. PROVIDE MULTI-BUTTON SWITCH AS REQUIRED PER SWITCH LEGS SHOWN ON PLANS. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH.
S^{OR} S^{ORK}	LOW VOLTAGE MANUAL CONTROL	CONNECT TO RELAY PANEL OR TIME CLOCK FOR TIME OF DAY OVERRIDE AS NOTED ON PLANS. PROVIDE MULTI-BUTTON SWITCH AS NOTED ON PLANS. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH.
S^{D}	LOW VOLTAGE SWITCH WITH 0-10V DIMMER	PROVIDE MULTI-BUTTON SWITCH AS REQUIRED PER SWITCH LEGS SHOWN ON PLANS. PROVIDE POWER PACKS OR ROOM CONTROLLERS AS REQUIRED.
OC1	CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR	SET TO VACANCY MODE. PROVIDE POWER PACKS AS NEEDED.
OC2	CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR	SET TO OCCUPANCY MODE. PROVIDE POWER PACKS AS REQUIRED.
OC6	CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR FOR HIGH BAY APPLICATION	SET TO OCCUPANCY MODE. PROVIDE POWER PACKS AS REQUIRED.

NOTES:
1. LUTRON IS THE BASIS OF DESIGN.
2. THE LIGHTING CONTROLS SCHEDULED ARE THE BASIS OF DESIGN. IT IS NOT INTENDED TO LIMIT COMPETITION FROM EQUAL MANUFACTURERS. ALL BIDDERS SHALL SUBMIT THEIR PROPOSED LIGHTING CONTROLS IN SUBMITTAL FORM A MINIMUM OF 10 BUSINESS DAYS PRIOR TO BID DATE FOR REVIEW. APPROVED LIGHTING CONTROL SYSTEMS WILL BE ISSUED IN AN ADDENDUM.
3. BASIS OF DESIGN SHALL BE A HARD-WIRED TYPE SYSTEM, UNLESS NOTED OTHERWISE.

IECC 2015 STANDARD SEQUENCE of OPERATIONS

ROOM TYPE	OCCUPANCY SENSOR					TIME SWITCH			DAYLIGHT CONTROL		LT REDUCT		MANUAL CONTROL			SEQUENCE OF OPERATION
	AUTO ON	MANUAL ON (VACANCY)	AUTO OFF (30 MIN MAX)	PARTIAL OFF AT NORMAL HOURS	AUTO OFF AFTER HOURS (30 MIN MAX)	TIME ON	TIME OFF	ASTRONOMIC or PHOTOCELL ON/OFF	AUTO STEP CONTROL WITH OFF	AUTO CONTINUOUS DIM WITH OFF	MANUAL BI-LEVEL REDUCTION CONTROL	MANUAL CONINUOUS DIM CONTROL	MANUAL ON/OFF SWITCH	MANUAL DIMMER SWITCH	DISPLAY, ACCENT, TASK CONTROL	V0-2-032917
SPACES (≥300 sq ft)	50%		20 MIN							D	•	D	•	D		Auto On 50%; Occupancy sensor Auto Off; Local control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
RESTROOM	100%		20 MIN								•		•			Auto On 100%. Occupancy sensor Auto Off; Local control and ≥50% light reduction with two on/off controls;
LUNCH / BREAK / ROOMS / LOUNGES	50%		20 MIN							D	•	D	•	D	•	Auto On 50%; Occupancy sensor Auto Off; Local control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
PUBLIC LOBBIES	100%		20 MIN							D			•	D	•	Auto On 100%. Occupancy sensor Auto Off; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
CORRIDOR	100%		20 MIN							D			•	D	•	Auto On 100%. Occupancy sensor Auto Off; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
STAIRWELL	100%		20 MIN							D	•	D	•	D		Auto On 100%; Occupancy sensor Auto Off; Local control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
STORAGE ROOM	50%		20 MIN							D	•	D	•	D		Auto On 50%; Occupancy sensor Auto Off; Local control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
CAFETERIA / GYM MULTIPURPOSE (>100 sq ft)							11:00 PM			D	•	D	•	D		Manual On; Time Off with closing hours. After hours 2 hour override from local control device; Where ≥150W in daylight area, continuous dimming daylighting control with dimmer switch.
MULTIPURPOSE (≤ 100 sq ft)	50%		20 MIN							D	•	D	•	D		Auto On 50%; Occupancy sensor Auto Off; Local control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
LOCKER ROOM	50%		20 MIN							D	•	D	•	D		Auto On 50%; Occupancy sensor Auto Off; Local control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
BUILDING FACADE / LANDSCAPE						CLOSE	OPEN	•								Dusk Auto On with astronomical time switch or photocell; Evening Time Auto Off as a function of close time. Morning Time On as a function of open time; Dawn Auto Off.

•= Designation for code compliant default control design for spaces without daylighting control
D= Where daylighting control is required, "D" designation indicates controls required in the space for code compliance design
CK= Captive Key Switch system for use in Hotel/Motel and Guest Suites

LIGHTING CONTACTOR SCHEDULE

MARK	POLES	AMPS/ POLES	COIL VOLTAGE	AREA SERVED	CIRCUIT NO.
LC-1	2	20	120	MARQUEE/GROUND LTG	SEE PLANS
LC-2	2	20	120	EXTERIOR LTG	SEE PLANS

LIGHTING CONTACTOR NOTES:

1. ALL LIGHTING CONTACTORS SHALL BE CONTROLLED VIA BAS WITH OWNER PROVIDED SCHEDULE AND SEQUENCE OF OPERATIONS PROVIDED ON THE LIGHTING PLANS. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR TO PROVIDE ADDITIONAL BAS CONTROL POINTS TO EACH LIGHTING CONTACTOR AS REQUIRED.
2. MARQUEE GROUND LIGHTING SHALL BE PROVIDED WITH AN OVERRIDE SWITCH IN THE RECEPTION AREA. FINAL OVERRIDE SWTICH LOCATION SHALL BE COORDINATED WITH OWNER PRIOR TO ROUGH-IN.
3. EXTERIOR LIGHTING SHALL BE PROVIDED WITH AN OVERRIDE SWITCH IN THE TICKET BOOTH ROOM A103. FINAL OVERRIDE SWTICH LOCATION SHALL BE COORDINATED WITH OWNER PRIOR TO ROUGH-IN.
4. EACH CONTACTOR SHALL HAVE HAND-OFF-AUTO (H-O-A) SWITCH ADJACENT TO CONTACTOR.
5. EACH CONTACTOR SHALL BE PROVIDED WITH A MINIMUM OF 2 SPARE POLES, IN ADDITION TO THE QUANTITY OF POLES INDICATED ABOVE.
6. CONTACTORS SHALL BE LOCATED IN THE ELECTRICAL ROOMS WHERE THE ASSOCIATED CIRCUITS ORIGINATE FROM. LOCATE ADJACENT TO ASSOCIATED PANEL.

DLR GROUP
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STATE OF TEXAS
BRENT B. MOE
117260
LICENSED
PROFESSIONAL ENGINEER
1-17-25

KLEIN ISD
PROMISE 2 PURPOSE

SCHINDEWOLF GYM ADDITION
KLEIN INDEPENDENT SCHOOL DISTRICT
20903 ELLA BLVD
SPRING, TEXAS 77388

100% CONSTRUCTION DOCUMENTS
01/08/2025
REVISIONS
Addendum 1 01/17/2025

39-25107-00

ELECTRICAL SCHEDULES

E5.01

DBR
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https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 240253
BM TD/RA LB/DL TN/JL -

Distribution Panelboard DH

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire	Mains Type:	0 A -- --	LUGS: SINGLE	Mounting Stye:
1 Section	MLO	400 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	0 VA	--	Space	12	--	1	2	250 A	250	D1H	Spare; L; R; WH;...	58448 VA	
	0 VA	--	Space	12	--	3	4						
	0 VA	--	Space	12	--	5	6						
	0 VA	--	Space	12	--	7	8	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	9	10	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	11	12	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	13	14	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	15	16	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	17	18	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	19	20	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	21	22	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	23	24	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	25	26	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	27	28	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	29	30	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	31	32	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	33	34	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	35	36	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	37	38	30 A	10	SPD3	SP	0 VA	
	0 VA	--	Space	12	--	39	40						
	0 VA	--	Space	12	--	41	42						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle	7380 VA	100.00%	7380 VA	210.20A	(L)Lighting	2769 VA	125.00%	3461 VA
220.56	(K)Kitchen					(EL)Ext. Ltg.	269 VA	125.00%	336 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	2860 VA	100.00%	2860 VA
220.60	(F)Fans	26633 VA	100.00%	26633 VA	220.50	(MT)Lrg. Motor	11378 VA	103.03%	11723 VA
	(M)Misc.	7160 VA	100.00%	7160 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 58448 VA VA = 70 A
Total Load (Diversified): 59552 VA VA = 72 A

Location of Panel: Room A218

Panelboard D1H

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire	Mains Type:	250 A MCB --	LUGS: --	Mounting Stye:
1 Section	MCB	250 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	1350 VA	L	LIGHTING	12	20 A	1	2						
	273 VA	L	LIGHTING	12	20 A	3	4	20 A	12	EXTERIOR LIGHTING	EL	269 VA	
	1050 VA	L	LIGHTING	12	20 A	5	6	20 A	12	EWH	WH	2500 VA	
	96 VA	L	LIGHTING	12	20 A	7	8	20 A	12	SAF-1	F	6318 VA	
	15047 VA	F	VFD-AHU-G1	8	50 A	9	10						
						11	12						
						13	14	15 A	12	VFD-AHU-G2	F	1247 VA	
	3491 VA	F	VFD-AHU-G1-EX	12	15 A	15	16						
						17	18						
						19	20	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	21	22	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	25	26	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	27	28	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	29	30	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	31	32	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	33	34	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	35	36	20 A	12	Spare	--	0 VA	
	26808 VA	Spare; R; WH;...	TD1L	1	125 A	37	38	30 A	10	SPD3	SP	0 VA	
						39	40						
						41	42						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle	7380 VA	100.00%	7380 VA	210.20A	(L)Lighting	2769 VA	125.00%	3461 VA
220.56	(K)Kitchen					(EL)Ext. Ltg.	269 VA	125.00%	336 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	2860 VA	100.00%	2860 VA
220.60	(F)Fans	26633 VA	100.00%	26633 VA	220.50	(MT)Lrg. Motor	11378 VA	103.03%	11723 VA
	(M)Misc.	7160 VA	100.00%	7160 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 58448 VA VA = 70 A
Total Load (Diversified): 59552 VA VA = 72 A

Location of Panel: MEP-1 A200-1

Panelboard D1L

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire	Mains Type:	250 A MCB --	LUGS: --	Mounting Stye:
2 Section	MCB	250 A BUS (Copper)	FEED THRU	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	1380 VA	MT	BASKETBALL GOALS	10	30 A	1	2	15 A	12	BLEACHERS	MT	793 VA	
	1380 VA	MT	BASKETBALL GOALS	10	30 A	3	4						
	1380 VA	MT	BASKETBALL GOALS	10	30 A	5	6						
	1380 VA	MT	BASKETBALL GOALS	10	30 A	7	8	15 A	12	BLEACHERS	MT	793 VA	
	1380 VA	MT	BASKETBALL GOALS	10	30 A	9	10						
	1380 VA	MT	BASKETBALL GOALS	10	30 A	11	12						
	480 VA	M	SCOREBOARD	12	20 A	13	14	15 A	12	BLEACHERS	MT	793 VA	
	480 VA	M	SCOREBOARD	12	20 A	15	16						
	720 VA	R	R GYM-1 A100-1	12	20 A	17	18						
	360 VA	R	R GYM-1 A100-1	12	20 A	19	20	20 A	12	Spare	--	0 VA	
	900 VA	R	R GYM-1 A100-1	12	20 A	21	22	20 A	12	Spare	--	0 VA	
	900 VA	R	R GYM-1 A100-1	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	1100 VA	M	HAND DRYER	10	30 A	25	26	20 A	12	Spare	--	0 VA	
	720 VA	R	EDF	12	20 A	27	28	20 A	12	Spare	--	0 VA	
	360 VA	R	R Room A107-1, A106-1	12	20 A	29	30	20 A	12	Spare	--	0 VA	
	360 VA	R	R Room A106-1, A107-1	12	20 A	31	32	50 A	8	F1L	Spare; SP	0 VA	
	720 VA	R	R TICKET BOOTH A103	12	20 A	33	34						
	720 VA	R	R Room A101, A102	12	20 A	35	36						
	0 VA	--	Space	12	--	37	38	30 A	10	SPD2	SP	0 VA	
	0 VA	--	Space	12	--	39	40						
	0 VA	--	Space	12	--	41	42						
	720 VA	R	R ENTRY VEST. A105	12	20 A	43	44	15 A	12	CP-1	WH	360 VA	
	0 VA	--	Spare	12	20 A	45	46	20 A	12	WP/GFCI - ROOF	R	360 VA	
	0 VA	--	Spare	12	20 A	47	48	15 A	12	EF-1	F	530 VA	
	0 VA	--	Spare	12	20 A	49	50	20 A	12	OVERHEAD ROLLING MOTOR	MT	720 VA	
	1440 VA	M	MOTOR DAMPERS	12	20 A	51	52	20 A	12	WP/GFCI - EXTERIOR	R	540 VA	
	360 VA	M	LTG CONTACTORS	12	20 A	53	54	30 A	10	HAND DRYER	M	1100 VA	
	0 VA	--	Spare	12	20 A	55	56	30 A	10	HAND DRYER	M	1100 VA	
	0 VA	--	Spare	12	20 A	57	58	30 A	10	HAND DRYER	M	1100 VA	
	0 VA	--	Spare	12	20 A	59	60	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	61	62	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	63	64	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	65	66	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	67	68	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	69	70	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	71	72	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	73	74	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	75	76	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	77	78	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	79	80	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	81	82	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	83	84	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle	7380 VA	100.00%	7380 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	360 VA	100.00%	360 VA
220.60	(F)Fans	530 VA	100.00%	530 VA	220.50	(MT)Lrg. Motor	11378 VA	103.03%	11723 VA
	(M)Misc.	7160 VA	100.00%	7160 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 26808 VA VA = 74 A
Total Load (Diversified): 27153 VA VA = 75 A

Location of Panel: MEP-1 A200-1

PANEL SCHEDULE GENERAL NOTES:

A. ALL CIRCUIT NUMBERS ON EXISTING ELECTRICAL PANELS ARE FOR PLAN REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY AVAILABILITY OF BREAKERS. CONTRACTOR SHALL UTILIZE SPARE BREAKERS MADE AVAILABLE FROM DEMOLITION PHASE.

PANEL SCHEDULE KEYED NOTES:

1. EXISTING LOAD SHALL REMAIN.
2. PROVIDE NEW CIRCUIT AND NEW BREAKER IN EXISTING PANEL.

Panelboard F1L

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire	Mains Type:	50 A MCB --	LUGS: --	Mounting Stye:
1 Section	MCB	100 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	0 VA	--	Spare	12	20 A	1	2	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	3	4	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	5	6	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	7	8	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	9	10	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	11	12	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	13	14	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	15	16	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	17	18	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	19	20	30 A	10	SPD2	SP	0 VA	
	0 VA	--	Spare	12	20 A	21	22						
	0 VA	--	Spare	12	20 A	23	24						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle				210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.50	(MT)Lrg. Motor			
	(M)Misc.					(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 0 VA VA = 0 A
Total Load (Diversified): 0 VA VA = 0 A

Location of Panel: GYM-1 A100-1

Panelboard XDP

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire	Mains Type:	100 A MCB --	LUGS: --	Mounting Stye:
1 Section	MCB	125 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	0 VA	--	Spare	12	20 A	1	2	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	3	4	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	5	6	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	7	8	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	9	10	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	11	12	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	13	14	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	15	16	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	17	18	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	19	20	45 A	8	XFMR EKT1(E)	C; EL; M	31004 VA	
	0 VA	--	Spare	12	20 A	21	22						
	0 VA	--	Spare	12	20 A	23	24						
	7970 VA	Spare; R; SP; C; M	TXL	8	45 A	25	26	30 A	10	SPD3	SP	0 VA	
						27	28						
						29	30						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle	2340 VA	100.00%	2340 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.	500 VA	125.00%	625 VA
220.60	(C)Cooling	2910 VA	100.00%	2910 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.50	(MT)Lrg. Motor			
	(M)Misc.	33224 VA	100.00%	33224 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 38974 VA VA = 47 A
Total Load (Diversified): 39099 VA VA = 47 A

Location of Panel: Room A218

Panelboard XL

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire	Mains Type:	100 A MCB --	LUGS: --	Mounting Stye:
1 Section	MCB	125 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	360 VA	M	FATC	12	20 A	1	2	30 A	10	IT RACK	M	1000 VA	
	360 VA	M	PWR SUPPLY MAG DOOR	12	20 A	3	4	30 A	10	IT RACK	M	1000 VA	
	1080 VA	R	R MEP-1 A200-1	12	20 A	5	6	20 A	12	RECEP	R	720 VA	
	360 VA	M	DDC PANEL	12	20 A	7	8	20 A	12	ACP	M	360 VA	
	180 VA	R	AV RACK	12	20 A	9	10	20 A	12	SECURITY PANEL	M	360 VA	
	180 VA	R	AV RACK	12	20 A	11	12	30 A	10	CU-1 & AC-1	C	1830 VA	
	180 VA	R	AV RACK	12	20 A	13	14						
	0 VA	--	Spare	12	20 A	15	16	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	17	18	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	19	20	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	21	22	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	25	26	30 A	10	SPD2	SP	0 VA	
	0 VA	--	Spare	12	20 A	27	28						
	0 VA	--	Spare	12	20 A	29	30						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle	2340 VA	100.00%	2340 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling	1830 VA	100.00%	1830 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.50	(MT)Lrg. Motor			
	(M)Misc.	3800 VA	100.00%	3800 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 7970 VA VA = 22 A
Total Load (Diversified): 7970 VA VA = 22 A

Location of Panel: MEP-1 A200-1

Panelboard EH3

65000 A AIC Rating
New
X Existing

480/277 Wye Volt, 3 Phase, 4 Wire	Mains Type:	0 A -- --	LUGS: SINGLE	Mounting Stye:
1 Section	MLO	100 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
1	0 VA	--	EXISTING LOAD	12	20 A	1	2	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	3	4	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	5	6	20 A	12	EXISTING LOAD	--	0 VA	1
2	750 VA	L	EMERGENCY LIGHTING	12	20 A	7	8	--	12	Space	--	0 VA	
2	1050 VA	L	EMERGENCY LIGHTING	12	20 A	9	10	--	12	Space	--	0 VA	
2	268 VA	L	EMERGENCY LIGHTING	12	20 A	11	12	--	12	Space	--	0 VA	
2	299 VA	L	EMERGENCY LIGHTING	12	20 A	13	14	--	12	Space	--	0 VA	
2	232 VA	EL	EMERGENCY EXT. LIGHTING	12	20 A	15	16	--	12	Space	--	0 VA	
2	14 VA	L	EXIT LIGHTS	12	20 A	17	18	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	19	20	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	21	22	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	23	24	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	25	26	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	27	28	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	29	30	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	31	32	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	33	34	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	35	36	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	37	38	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	39	40	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	41	42	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle				210.20A	(L)Lighting	2381 VA	125.00%	2976 VA
220.56	(K)Kitchen					(EL)Ext. Ltg.	232 VA	125.00%	290 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.50	(MT)Lrg. Motor			
	(M)Misc.					(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 2613 VA VA = 3 A
Total Load (Diversified): 3266 VA VA = 4 A

Location of Panel: Room A155

Panelboard A1H1

65000 A AIC Rating
New
X Existing

480/277 Wye Volt, 3 Phase, 4 Wire	Mains Type:	100 A MCB --	LUGS: --	Mounting Stye:
1 Section	MCB	100 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
1	0 VA	--	EXISTING LOAD	12	20 A	1	2	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	3	4	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	5	6	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	7	8	20 A	12	MARQUEE SIGN LIGHT	EL	84 VA	2
1	0 VA	--	EXISTING LOAD	12	20 A	9	10	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	11	12	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	13	14	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	15	16	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	17	18	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	19	20	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	21	22	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	23	24	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	25	26	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	27	28	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	29	30	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	31	32	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	33	34	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	35	36	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	37	38	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	39	40	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	41	42	20 A	12	Spare	--	0 VA	1

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle				210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.	84 VA	125.00%	105 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.50	(MT)Lrg. Motor			
	(M)Misc.					(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 84 VA VA = 0 A
Total Load (Diversified): 105 VA VA = 0 A

Location of Panel:

Panelboard A1L2

10000 A AIC Rating
New
X Existing

120/208 Wye Volt, 3 Phase, 4 Wire	Mains Type:	150 A MCB --	LUGS: --	Mounting Stye:
1 Section	MCB	225 A BUS (Copper)	--	SURFACE
Type 1 -Nema Rating		--		

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
1	0 VA	--	EXISTING LOAD	12	20 A	1	2	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	3	4	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	5	6	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	7	8	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	9	10	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	11	12	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	13	14	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	15	16	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	17	18	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	19	20	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	21	22	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	23	24	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	25	26	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	27	28	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	29	30	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	31	32	20 A	12	EXISTING LOAD	--	0 VA	1
1	0 VA	--	EXISTING LOAD	12	20 A	33	34	20 A	12	EXISTING LOAD	--	0 VA	1
2	180 VA	R	WP/GFCI MARQUEE SIGN	10	20 A	35	36	20 A	12	Spare	--	0 VA	
2	180 VA	M	MARQUEE SIGN	10	20 A	37	38	20 A	12	Spare	--	0 VA	
2	180 VA	EL	MARQUEE LED LIGHT	10	20 A	39	40	20 A	12	Spare	--	0 VA	
	0 VA	--	EXISTING LOAD	12	20 A	41	42	20 A	12	Spare	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.47	(R)Receptacle	180 VA	100.00%	180 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.	180 VA	125.00%	225 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.50	(MT)Lrg. Motor			
	(M)Misc.	180 VA	100.00%	180 VA		(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 540 VA VA = 1 A
Total Load (Diversified): 585 VA VA = 2 A

Location of Panel:

DLR GROUP

BRENT B. MOE
117260
1-17-25

KLEIN ISD
PROMISE 2 PURPOSE

SCHINDEWOLF GYM ADDITION
KLEIN INDEPENDENT SCHOOL DISTRICT

20903 ELLA BLVD
SPRING, TEXAS 77388

100%
CONSTRUCTION
DOCUMENTS
01/08/2025

REVISIONS

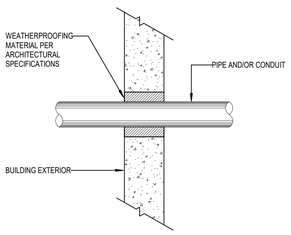
Addendum 1	01/17/2025

39-25107-00

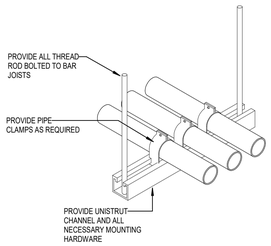
ELECTRICAL
SCHEDULES

DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 240253

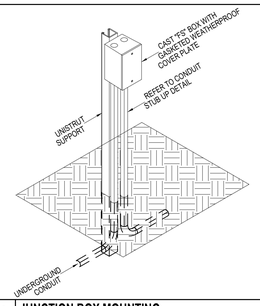
BM	TD/RA	LB/DL	TN/JL	-



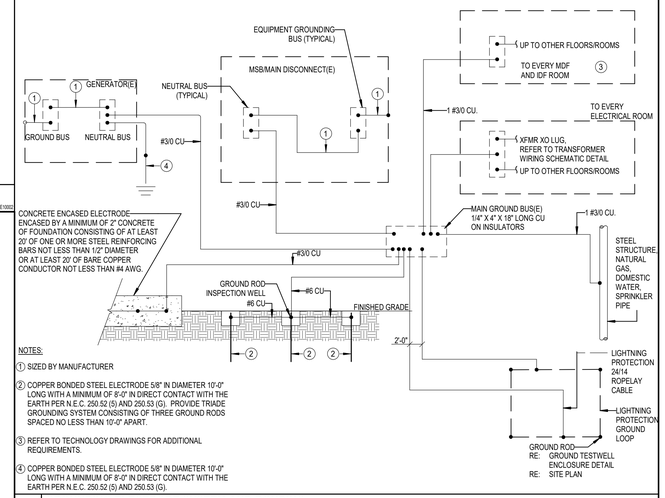
5 PIPE AND/OR CONDUIT PENETRATION
NOT TO SCALE E1001E



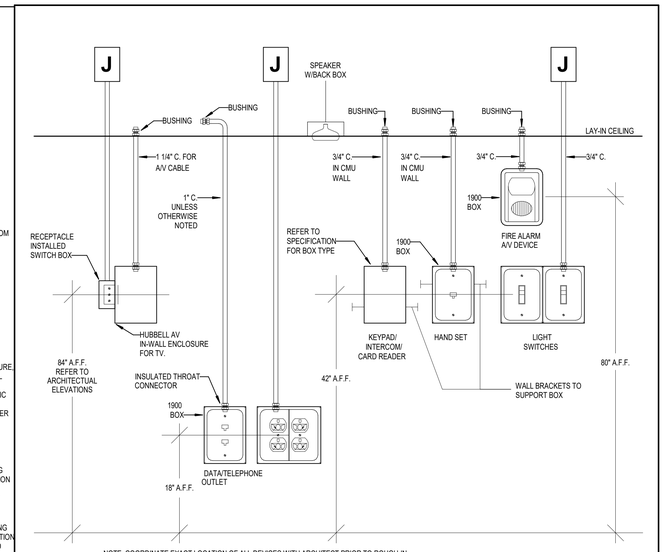
4 UNISTRUT CONDUIT DETAIL
NOT TO SCALE E1002E



3 JUNCTION BOX MOUNTING
NOT TO SCALE E1003E

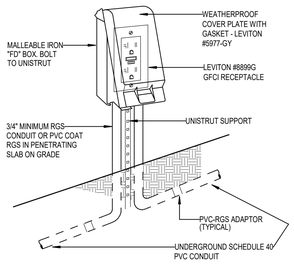


2 GROUNDING ELECTRODE SYSTEM AND BONDING DETAIL
NOT TO SCALE E1007



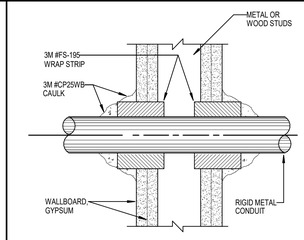
NOTE: COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT PRIOR TO ROUGH-IN.

1 TYPICAL DEVICE ELEVATIONS
NOT TO SCALE E1100S



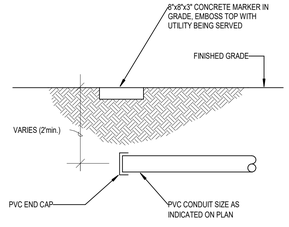
NOTE: FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.

8 2, 3 AND 4 HR. PENETRATIONS FOR CONCRETE
NOT TO SCALE E1001H

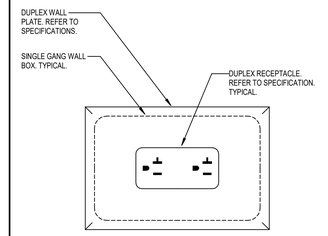


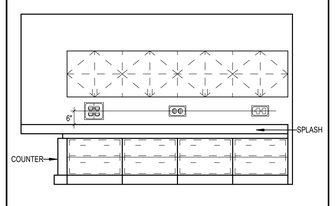
NOTE: FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION

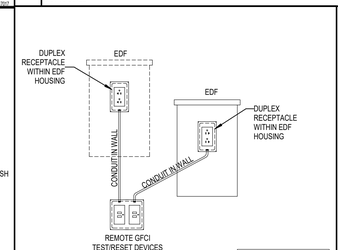
7 2 HR. GYPSUM WALLBOARD PIPE PENETRATION
NOT TO SCALE E1007

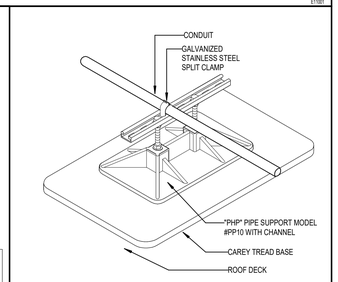


6 CAP AND STAKE DETAIL
NOT TO SCALE E1008E

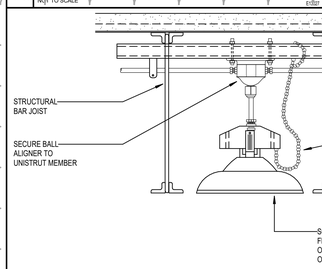




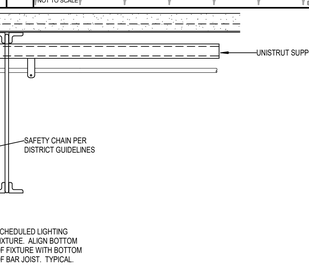




9 ROOF CONDUIT SUPPORT DETAIL
NOT TO SCALE E1009S



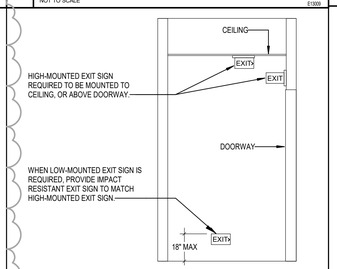
15 RECEPTACLE MOUNTING DETAIL
NOT TO SCALE E1007



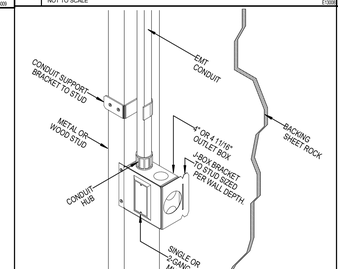
14 BACK-TO-BACK OUTLETS
NOT TO SCALE E1002E

13 TYPICAL RECEPTACLE MOUNTING DETAIL
NOT TO SCALE E1001E

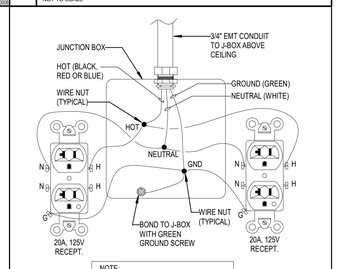
12 HORIZONTAL RECEPTACLE MOUNTING DETAIL
NOT TO SCALE E1001E



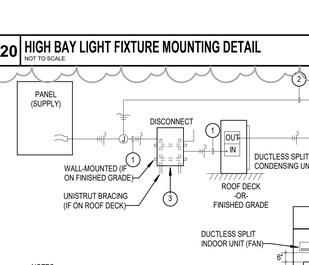
11 TYPICAL COUNTERTOP DEVICE ELEVATION
NOT TO SCALE E1009



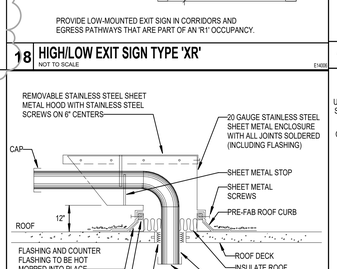
10 ELEC. DRINKING FOUNTAIN DETAIL
NOT TO SCALE E1009S



9 ROOF CONDUIT SUPPORT DETAIL
NOT TO SCALE E1009S



20 HIGH BAY LIGHT FIXTURE MOUNTING DETAIL
NOT TO SCALE E1402



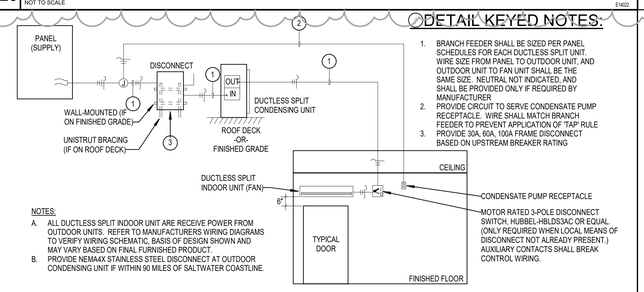
18 HIGH/LOW EXIT SIGN TYPE 'XR'
NOT TO SCALE E1400E

17 J-BOX TO STUD DETAIL
NOT TO SCALE E1003S

NOTE:
WRAP AROUND THE WIRE TERMINALS WITH ELECTRICAL TAPE.

16 20A,125V. RECEPTACLE WIRING DETAIL
NOT TO SCALE E1002S

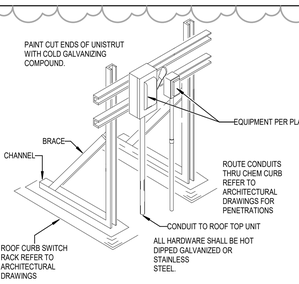
DETAIL KEYED NOTES:



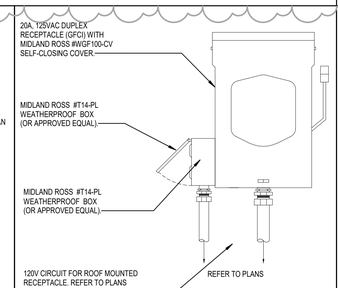
NOTES:
A. ALL DUCTLESS SPLIT INDOOR UNIT ARE RECEIVE POWER FROM OUTDOOR UNITS. REFER TO MANUFACTURERS WIRING DIAGRAMS TO VERIFY WIRING SCHEMATIC, BASIS OF DESIGN SHOWN AND MAY VARY BASED ON FINAL FURNISHED PRODUCT.
B. PROVIDE NEMA4X STAINLESS STEEL DISCONNECT AT OUTDOOR CONDENSING UNIT IF WITHIN 90 MILES OF SALTWATER COASTLINE.

1. BRANCH FEEDER SHALL BE SIZED PER PANEL SCHEDULES FOR EACH DUCTLESS SPLIT UNIT. WIRE SIZE FROM PANEL TO OUTDOOR UNIT, AND OUTDOOR UNIT TO FAN UNIT SHALL BE THE SAME SIZE. NEUTRAL NOT INDICATED, AND SHALL BE PROVIDED ONLY IF REQUIRED BY MANUFACTURER
2. PROVIDE CIRCUIT TO SERVE CONDENSATE PUMP RECEPTACLE. WIRE SHALL MATCH BRANCH FEEDER TO PREVENT APPLICATION OF "TAP" RULE
3. PROVIDE 30A, 60A, 100A FRAME DISCONNECT BASED ON UPSTREAM BREAKER RATING

26 DUCTLESS SPLIT ELECTRICAL CONNECTION DETAIL
NOT TO SCALE E1300S



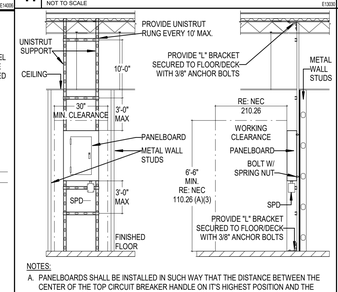
25 ROOF UNISTRUT RACK DETAIL
NOT TO SCALE E1001E



24 ROOF MOUNTED RECEPTACLE
NOT TO SCALE E1302S

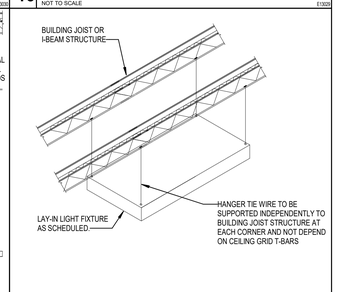
NOTE: REFER TO ARCHITECTURAL DRAWINGS FOR ROOF DETAILS.

23 ROOF CONDUIT PENETRATION DETAIL
NOT TO SCALE E1003S



NOTES:
A. PANELBOARDS SHALL BE INSTALLED IN SUCH WAY THAT THE DISTANCE BETWEEN THE CENTER OF THE TOP CIRCUIT BREAKER HANDLE ON IT'S HIGHEST POSITION AND THE FINISHED FLOOR IS NOT MORE THAT 6'-7", RE: NEC 240.24(A).

22 PANELBOARD MOUNTING DETAIL
NOT TO SCALE E2200S



21 LIGHTING FIXTURE SUPPORT DETAIL
NOT TO SCALE E1402H

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ELECTRICAL DETAILS

E6.01

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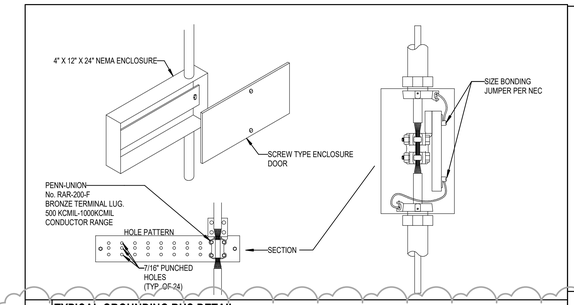
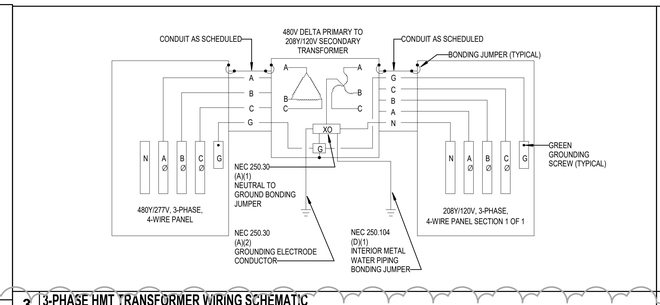
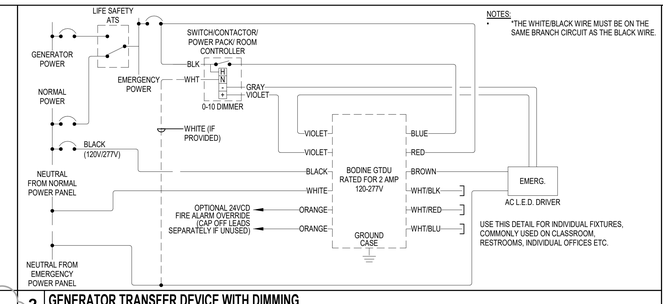


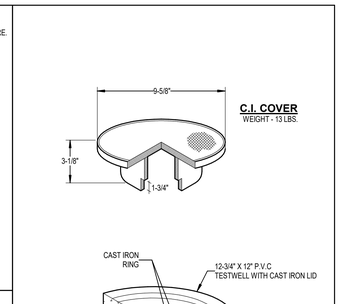
4 TYPICAL GROUNDING BUS DETAIL
NOT TO SCALE 16002



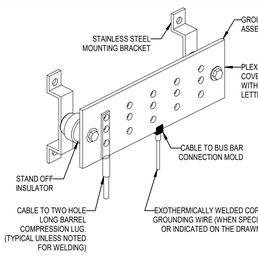
3 3-PHASE HMT TRANSFORMER WIRING SCHEMATIC
NOT TO SCALE E16002



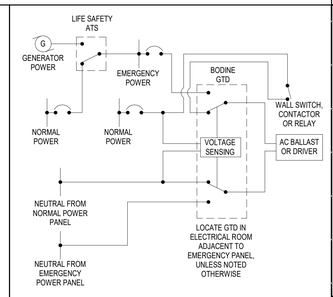
2 GENERATOR TRANSFER DEVICE WITH DIMMING OVERRIDE, U.L. 924.
NOT TO SCALE E14003



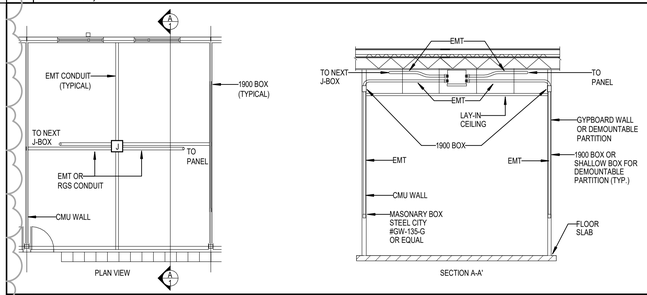
1 GROUND TESTWELL ENCLOSURE
NOT TO SCALE E16005



7 TECHNICAL GROUND BUS DETAIL
NOT TO SCALE 16005



6 BODINE 20 AMP GTD DEVICE - UL 1008
NOT TO SCALE E14003



5 TYPICAL RACEWAY CONFIGURATION
NOT TO SCALE

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SCHINDEWOLF GYM ADDITION

KLEIN INDEPENDENT SCHOOL DISTRICT

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ELECTRICAL DETAILS

E6.02

1 COMPOSITE DEMOLITION ELECTRICAL LIGHTING AND POWER PLAN LEVEL 1

1" = 20'-0"

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

☐ ELECTRICAL KEYED NOTES

E12.1 EXISTING ELECTRICAL DEVICES AND EQUIPMENT ON DEMOLISHED WALLS SHALL BE REMOVED. REMOVE CONDUIT AND CONDUCTORS BACK TO PANEL. REPAIR ANY PARTIALLY DEMOLISHED CIRCUITS. PROVIDE NEW DEVICES AND CIRCUITING PER NEW PLAN.

E12.2 EXISTING ELECTRICAL DEVICES, EQUIPMENT, LIGHTING AND CONTROLS ON EXTERIOR DEMOLISHED WALLS SHALL BE REMOVED. REMOVE CONDUIT AND CONDUCTORS BACK TO PANEL. REPAIR ANY PARTIALLY DEMOLISHED CIRCUITS. PROVIDE NEW DEVICES, LIGHTING AND CIRCUITING PER NEW PLANS. TYPICAL.

E12.3 APPROXIMATE LOCATION OF EXISTING CAMERA/ELECTRICAL DEVICES ON EXTERIOR DEMOLISHED WALLS. EXISTING CAMERAS/ELECTRICAL DEVICES SHALL BE REMOVED OR RELOCATED AS NECESSARY. REMOVE CONDUIT AND CONDUCTORS BACK TO PANEL. REPAIR ANY PARTIALLY DEMOLISHED CIRCUITS. CONTRACTOR SHALL FIELD COORDINATE WITH SECURITY/LOW VOLTAGE CONTRACTOR/INSTALLER, ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK.

☐ ELECTRICAL KEYED NOTES

E12.4 APPROXIMATE LOCATION OF EXISTING LIGHT ON EXTERIOR DEMOLISHED WALLS. EXISTING LIGHT, CONTROLS, AND LIGHTING CIRCUIT SHALL BE REMOVED. REMOVE CONDUIT AND CONDUCTORS BACK TO PANEL. REPAIR ANY PARTIALLY DEMOLISHED CIRCUITS. PROVIDE NEW LIGHTING, CONTROLS AND CIRCUITING PER NEW PLANS. REFERENCE NEW PLANS FOR NEW LIGHTING LAYOUTS. CONTRACTOR SHALL FIELD COORDINATE WITH ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK.

E12.5 APPROXIMATE LOCATION OF EXISTING ELECTRICAL DEVICE ON EXTERIOR DEMOLISHED WALLS. EXISTING ELECTRICAL DEVICES SHALL BE REMOVED OR RELOCATED AS NECESSARY. REMOVE CONDUIT AND CONDUCTORS BACK TO PANEL. REPAIR ANY PARTIALLY DEMOLISHED CIRCUITS. CONTRACTOR SHALL FIELD COORDINATE WITH ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK.

KEY PLAN

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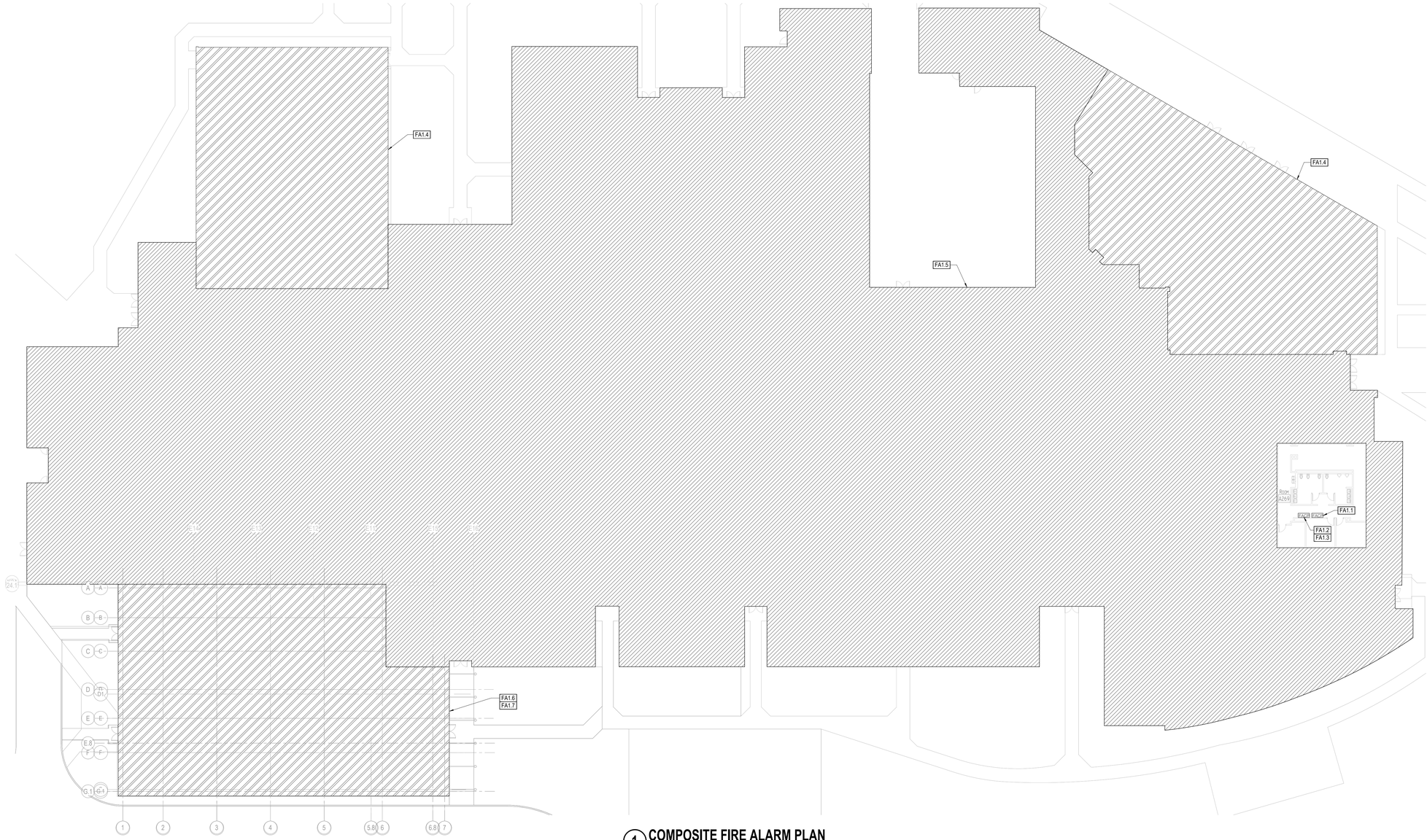
COMPOSITE DEMOLITION ELECTRICAL LIGHTING AND POWER PLAN LEVEL 1

ED1.1



1 COMPOSITE FIRE ALARM PLAN
1" = 20'-0"

GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

FIRE ALARM REMODELING NOTES:

A. ALL FIRE ALARM CONTRACTORS ARE RESPONSIBLE FOR VISITING THE SITE AND VERIFYING THE EXISTING FIRE ALARM SYSTEM AND SCOPE OF WORKED REQUIRED PER PLANS AND SPECIFICATIONS, PRIOR TO BIDDING. VISIBLE EXISTING SITE CONDITIONS, MAKE AND MODEL OF CURRENT FIRE ALARM SYSTEM, NECESSITY OF ANY FRONT-END UPGRADES, CODE COMPLIANCE OF EXISTING DEVICES LOCATED WITHIN THE SCOPE OF WORK AREA, IS ASSUMED TO BE KNOWN BY FIRE ALARM CONTRACTOR UPON DESIGN OF FIRE ALARM SHOP DRAWINGS.

B. REFER TO THE FIRE ALARM PLAN FOR FIRE ALARM DEVICES, NEW OR EXISTING. BEING ADDED, RE-USED OR REMOVED BY THIS REMODEL.

C. THE INTENT OF THIS PLAN IS TO INCORPORATE NEW AND RELOCATED DEVICES WITH THE EXISTING BUILDING FIRE ALARM SYSTEM.

D. WHEN ANY ACTIVATION DEVICE IS ACTIVATED THE NOTIFICATION SYSTEM SHALL ACTIVATE BUILDING WIDE IN ACCORDANCE WITH THE ESTABLISHED NOTIFICATION

E. IT IS ASSUMED WITH THIS REMODEL THAT THE EXISTING SYSTEM MEETS REQUIRED CODES FOR THE ORIGINAL DATE OF INSTALLATION, AND BUILDING MANAGEMENT HAS MAINTAINED SYSTEM IN COMPLIANCE WITH LIFE SAFETY 101. FOR SEQUENCE OF OPERATIONS AND SPECIFICATIONS, REFER TO ORIGINAL SYSTEM DOCUMENT. COORDINATE WITH BUILDING MANAGEMENT.

F. THE EQUIPMENT SUPPLIER AND INSTALLING CONTRACTOR SHALL BE LICENSED BY THE STATE FIRE MARSHALL TO SELL, INSTALL, AND SERVICE FIRE ALARM SYSTEMS AS REQUIRED BY ARTICLE 5.49-2 OF THE TEXAS INSURANCE CODE.

G. ALL NEW EQUIPMENT REQUIRED FOR THIS REMODEL SHALL BE COMPATIBLE WITH THE EXISTING BUILDING SYSTEM AND IS TO BE A PART OF THE SUBMITTAL PROCESS AS NOTED IN THE ELECTRICAL SPECIFICATIONS FOR THIS PROJECT. PROVIDE ADDITION SYSTEM POWER BOOSTER WHERE REQUIRED.

H. VERIFY QUANTITIES OF NEW DEVICES TO INTERFACE WITH THE EXISTING BUILDING SYSTEM. THE CONTRACTOR SHALL COORDINATE WITH BUILDING MANAGEMENT AND SHALL NOTIFY THE ENGINEER IF ANY CONFLICT EXISTS PREVENTING MODIFICATIONS REQUIRED IN THESE PLANS.

I. THE SYSTEM WHEN MODIFIED, SHALL BE A COMPLETE AND WORKING SYSTEM, AND COMPLY WITH THE MOST RECENT RULES, REGULATIONS, AND ORDINANCES THAT PRESENTLY APPLY TO THIS REMODEL.

J. ANY DEVICE THAT SUFFERS MALFUNCTION DURING RENOVATION SHALL BE REPLACED AT NO COST TO OWNER. CONTRACTOR SHALL TAKE PROPER STEPS TO ENSURE DUST AND DEBRIS DOES NOT NEGATIVELY INTERFERE WITH OPERATION OF ANY EXISTING EQUIPMENT LEFT OPERATIONAL DURING RENOVATION.

K. **REFER TO GENERAL FIRE ALARM NOTES "A" AND "B" FOR BASE BID DESIGN AND ADD ALTERNATE NOTES.**

GENERAL FIRE ALARM NOTES:

A. **REFER TO SPECIFICATION SECTION 284609 - FIRE ALARM SYSTEM WITH VOICE EVACUATION FOR EXPANSION OF EXISTING SIMPLEX SYSTEM FOR BASE BID DESIGN.**

B. **REFER TO SPECICATION SECTION 284609.01 - FIRE ALARM SYSTEM WITH VOICE EVACUATION WITH ALTERNATE FOR ADD ALTERNATE 7A, 7B, 7C FOR AN ALL NEW VOICE EVACUATION SYSTEM TO PROTECT THE ENTIRE SCHOOL. DEMOLISH THE EXISTING SIMPLEX FIRE ALARM SYSTEM EQUIPMENT AND DEVICES FOR THE ENTIRE SCHOOL AND REPLACE WITH NEW VOICE EVACUATION FIRE ALARM SYSTEM PER PROJECT PERFORMANCE SPECIFICATION. REFER TO PROJECT SPECIFICATION FOR MANUFACTURERS AND DESIGN CRITERIA. PATCH/REPAIR ALL EXISTING FIRE ALARM DEVICE LOCATION WHERE REMOVED DUE TO DEMOLITION. REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.**

C. IT SHALL BE THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO COORDINATE ALL REQUIREMENTS SURROUNDING INSTALLATION OF THE FIRE ALARM SYSTEM WITH ALL TRADES INCLUDING, BUT, NOT EXCLUSIVE OF: ELECTRICAL CONTRACTOR, SPRINKLER CONTRACTOR, AND HVAC/CONTROLS CONTRACTOR AND INTERCOM SYSTEM. ADEQUATE COORDINATION SHALL BE PROVIDED TO INSURE PROPER INSTALLATION AND INTERFACE TO ALL PERIPHERAL ITEMS REQUIRED TO INTERACT WITH THE FIRE ALARM AND COMMUNICATION SYSTEM TO PROVIDE A COMPLETE AND FUNCTIONAL LIFE SAFETY SYSTEM.

D. INSTALL PER NATIONAL, STATE, AND LOCAL CODES, REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION AND MANUFACTURERS RECOMMENDATIONS.

E. ALL CEILING MOUNTED DEVICES SHALL BE CENTERED IN THE CEILING TILE.

F. ALL FIRE ALARM VISUAL AND AUDIO/VISUAL DEVICES SHALL BE CONFIGURED TO PROVIDE CANDELA RATINGS IN ACCORDANCE WITH ADA & NFPA COVERAGES.

G. ALL VISUAL FIRE ALARM DEVICES SHALL BE 75 CD UNLESS NOTED OTHERWISE.

H. PROVIDE FLOW SWITCHES AND TAMPER SWITCHES FOR ALL SPRINKLER ZONE MAINS AS WELL AS AT PIV AND BACKFLOW PREVENTOR. COORDINATE EXACT LOCATIONS WITH CIVIL AND SPRNKLER CONTRACTOR. PROVIDE UNDERGROUND CONDUIT FOR CONTROL WIRING AS NEEDED.

I. ALL WIRING FOR DEVICES IN EXPOSED STRUCTURE AREAS SHALL BE ROUTED WITHIN CONDUIT. NO WIRING SHALL BE ROUTED EXPOSED.

J. CONTRACTOR SHALL PROVIDE ADDITIONAL DEVICES AS REQUIRED BY FIRE ALARM SHOP DRAWINGS TO MEET CODE-MINIMUM DEVICE COVERAGE.

K. REFERENCE PERFORMANCE SPECIFICATIONS FOR DESIGN CRITERIA REQUIREMENTS AND FOR MATERIALS AND METHODS.

FIRE ALARM KEYED NOTES

FA1.1 APPROXIMATE LOCATION OF EXISTING "SIMPLEX 4100 U" FIRE ALARM CONTROL PANEL IN EXISTING BUILDING. FIELD VERIFY EXACT LOCATION PRIOR TO STARTING ANY WORK.

FA1.2 APPROXIMATE LOCATION OF EXISTING SIMPLEX 4003 VOICE CONTROL PANEL. VOICE CONTROL PANEL SERVES EXISTING GYM AND CAFETERIA ONLY. FIELD VERIFY EXACT LOCATION PRIOR TO STARTING ANY WORK.

FA1.3 BASE BID: APPROXIMATE LOCATION OF EXISTING SIMPLEX 4003 VOICE CONTROL PANEL. FIELD VERIFY EXACT LOCATION. PROVIDE ALL EQUIPMENT, HARDWARE, AND SOFTWARE TO EXPAND THE EXISTING VOICE EVACUATION SYSTEM TO PROTECT THE NEW GYM ADDITION FOR BASE BID DESIGN.

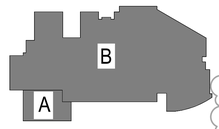
FA1.4 EXISTING AREA COVERED BY EXISTING VOICE EVACUATION SYSTEM/ PANEL.

FA1.5 BASE BID: REMAINDER OF THE SCHOOL WITH THE EXCEPTION OF AREA MARKED BY VOICE IS AN EXISTING HORN/STROBE SYSTEM THAT SHALL REMAIN FOR BASE BID DESIGN.

FA1.6 BASE BID: EXPAND THE EXISTING SIMPLEX VOICE EVACUATION SYSTEM TO COVER ONLY THE NEW GYM ADDITION. PROVIDE NEW VOICE EVACUATION DEVICES TO COVER THE NEW GYM ADDITION. PROVIDE ALL HARDWARE AND SOFTWARE TO EXPAND THE EXISTING VOICE EVACUATION SYSTEM TO PROTECT THE NEW GYM ADDITION FOR BASE BID DESIGN.

FA1.7 PROVIDE FIRE ALARM TERMINAL CABINET AND AMPLIFIER IN NEW GYM ADDITION MEZZANINE LEVEL FOR NEW FIRE ALARM DEVICES. COORDINATE EXACT LOCATION WITH FIRE ALARM CONTRACTOR AND FIRE ALARM CONTRACTOR DESIGN.

KEY PLAN



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COMPOSITE FIRE ALARM PLAN

EF1.1