

REPORT(S)

- 1.1 A copy of the following report(s), drawings are appended under separate cover:

Toronto Green Standard Guideline: Whole Building Air Leakage Testing Protocol

Prepared by WSP Canada Inc, Ryerson University Department of Architectural Science and RDH Building Science Inc.
Revised November 2022

Centennial Park Soccer Hub – Drawing E-2 Electrical Plan

Prepared by MJS Consulting Inc.
September 20, 2024.

- 1.2 The report(s), by their nature, cannot reveal all conditions that exist or can occur on the site. Should conditions be found to vary substantially from the report, immediately notify Consultant in writing and await instructions.
- 1.3 Contractor shall not be entitled to extra payment or extension of Contract Time for work which is required and which is reasonably inferable in the report(s) as being necessary.

END OF SECTION

This document was prepared for the City of Toronto, City Planning Division by contributing authors from WSP Canada Inc, Ryerson University, Department of Architectural Science and RDH Building Science Inc.

Purpose: This guidance document applies to large, multizone buildings being constructed in Toronto and should be read and applied in conjunction with ASTM-3158-18 *Standard Test Method for Measuring the Air Leakage Rate of a Large or Multizone Building* to be followed in conducting an air leakage test. The purpose of this Guidance document is to clarify the testing protocol to be used for projects pursuing Toronto Green Standard (TGS), Tiers 2 through 4 and help them achieve more air tight buildings. Air leakage testing and processes associated with testing should produce more airtight buildings and improve durability, occupant comfort, mechanical ventilation system effectiveness, lower utility costs, and enhance resiliency.

This document provides specific guidance for the standards to be referenced, testing procedures including the use of guarded testing, and how to test large multizone buildings. Air leakage testing is a new requirement since 2018 required for all Tier 2 large (Part 3) buildings. Testing is not required for Part 9 buildings by the TGS but may be required by other standards including Energy Star. The requirement is to perform the test as outlined below, and to report the results of the test to the City and the third party Tier 2 verifier. Information from the test should inform future developments and ways to reduce air leakage in design and construction to achieve better testing results on a go forward basis.

1. Testing Target

1.1. The testing target is 2.0 L/s m² @75Pa (0.4 cfm/ft² @75Pa); the testing report is required to be submitted to the City of Toronto.

2. Testing Procedures

2.1. Follow *ASTM E-3158-18 Standard Test Method for Measuring the Air Leakage Rate of a Large or Multizone Building*. Additional guidance can be found in US Army Corps of Engineers (USACE) Air Leakage Test Protocol.

2.2. Whole-building air leakage testing is preferred. If the testing plan identifies that whole- building testing is not feasible, guarded testing is permitted. Guarded testing shall include testing a sampling of floors including: podium, base of tower, top of tower, unique floors, and 2 contiguous floors for every 10 floors (to capture slab bypass condition). For example, a building consisting of an 18-storey tower, with identical floor plates for the entire tower, and a podium would require the following tests, as a minimum:

- One (1) test at the podium,
- One (1) test at the base/bottom floor of the tower,
- One (1) test at the top floor of tower,
- One (1) test at any one floor within the tower (not top or bottom),
- One (1) test incorporating 2 contiguous floors, to capture the slab by-pass condition.

2.3. Test method:

2.3.1. Projects shall conduct a *building envelope* (see ASTM E3158, Table 1) air leakage test under negative pressure producing a multi-point regression. If desired, projects are permitted to pursue negative and positive pressure testing standard. We acknowledge that the difference between positive and negative infiltration tests is acceptably small for large buildings with adhered or mechanically-attached air barrier systems. Alternately, for buildings pursuing Passive House or EnerPHit certification testing as per the Passive House testing requirements is acceptable. However, test results must be converted and presented in $L/s \cdot m^2 @ 75Pa$ for the TGS submission.

2.3.2. Projects shall target a test pressure of 75Pa. Projects unable to achieve 75Pa must follow either ASTM E-3158-18 alternative test methods, Repeated Single-Point Test, or a Repeated Two-Point test and demonstrate compliance using projected curves for air tightness at 75Pa.

2.3.3. Baseline pressure is reported at 75Pa for enclosure leakage rates and Equivalent Leakage Area (EqLA) is reported in cm^2 at 10Pa.

2.3.4. If the whole building cannot be tested as one zone, it is acceptable to test a zone that can be partitioned temporarily with adjacent zones “guarded” as buffer zones using blower door equipment. Note that the air leakage rate should be normalised to the exterior surface area and not include the guarded surface areas. The results of each guarded test should be reported independently and not combined or averaged. Each guarded test must meet the testing target outlined in section 1.1.

2.3.5. When determining the normalized air leakage rate for ASTM E3158, include all surfaces separating the conditioned space from the exterior, above and below ground (i.e. six sides of the box).

2.3.6. Conditions for the test: All materials, assemblies, and systems that form the air barrier must be installed plus any HVAC equipment, ducts, and fittings included in the test boundary. The Builder and Testing agency will identify the Test Enclosure volume and clearly delineate any volume(s) that are not part of the test boundaries. An agreement will also be made on who will prepare and treat the HVAC penetrations and overhead doors and dock levelers prior to testing.

2.3.7. On test day the builder shall provide the following conditions that must be met before test can be conducted: Power for test fans; person authorized to place HVAC and combustion equipment in test mode; access to all spaces within the test boundaries, and; safe access to all HVAC and overhead doors, related penetrations, openings, and dampers.

2.3.8. Compliance with a specified air leakage rate does not imply that all potentially problematic leaks have been sealed. While this test determines the air leakage rate of an envelope it does not identify the location of leakage sites.

2.3.9. Air tightness testing must be undertaken by a qualified, experienced, third party air leakage testing professional or agency. Whole Building Air Leakage Testing certification training is under development in Canada. Until such a time as there is a clear designation, the qualified professional must provide project references showing that they have completed air tightness

testing on Part 3 buildings in Canada or the U.S and/or have undertaken relevant education and training.

3. Reference documents

- 3.1. [ASTM E 3815](#) *Standard Test Method for Measuring the Air Leakage Rate of Large or Multi-zone Buildings* (Must be followed).
- 3.2. [US Army Corps of Engineers](#) (USACE) *Air Leakage Test Protocol for Building Envelopes*.
- 3.3. [ASTM E779-19](#) *Standard Test Method for Determining Air Leakage Rate by Fan Pressurization*.
- 3.4. [ASTM E1827 – 11](#) *Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door*.
- 3.5. [ISO 9972:2015](#) *Thermal performance of buildings -- Determination of air permeability of buildings -- Fan pressurization method*
- 3.6. [CGSB - CAN/CGSB-149.10-M86](#) *Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method*.
- 3.7. ATTMA 2015 TECHNICAL STANDARD L2. MEASURING AIR PERMEABILITY IN THE ENVELOPES OF BUILDINGS (Non-Dwellings).

4. TGS Tier 2 Submittal Requirements for Third Party Verification

4.1. Construction Documents (CD) Stage Submittal

- 4.1.1. Submit signed confirmation of contract with air leakage testing firm name, team members, and credentials.
- 4.1.2. Drawings shall include intended line of air leakage (building envelope).
- 4.1.3. Include a short narrative that describes the project's approach to achieving air tightness, proposed testing procedure (i.e. infiltration only or infiltration and exfiltration), with related quality assurance / quality control activities which may include partial building air leakage testing and a representative sampling strategy for selecting parts of the building for "guarded" testing methods where whole building testing is not feasible or possible. Refer to Section 5 for additional information.

4.2. Project Completion Submittal

- 4.2.1. Completed air leakage testing report in accordance with reference documents.
- 4.2.2. If the results are below the required testing target in section 1.1, the report must include practical steps to identify areas of significant air leakage and improve air tightness for the project to meet the target.

5. Guidance

- 5.1. At the 50-75% CD stage, an *air leakage testing plan* should be submitted by the testing agency engaged on the project. In the submission, the testing agency should include, but is not limited to, the following documentation:

5.1.1. The associated calculations to identify the number of blower door fans required for testing;

5.1.2. The location of the equipment set up on the construction drawings;

5.1.3. Identify the power source and electrical circuits that will be used to operate the fans on applicable drawings;

5.1.4. A comprehensive testing procedure plan; and,

5.1.5. Identification of all persons associated with the testing (for example – testing agency, construction project manager, construction site supervisor, the mechanical contractor responsible for the temporary shut-down of mechanical equipment, security [if required]).

5.2. Investing in the planning efforts early in the project will help ensure that the construction project team is fully aware of the testing activities that will be taking place, make all parties aware of what their responsibilities are, and ensure that the testing agency is prepared with the adequate equipment to perform the testing.

5.3. The Building Enclosure Commissioning Agent (BECxA) may be engaged during the design development phase and provide input into building enclosure systems as they relate to energy, water, indoor environmental quality, and durability throughout the project. Air tightness is a key attribute and should be part of the BECxA's scope. Including BECx in the Owner's Project Requirements will create a smooth transition to a successful air leakage test.

0m 5m 10m 15m 25m 40m

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general notes :

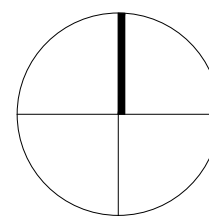
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3. Positions of exposed or finished mechanical or electrical devices, fittings, and fixtures are indicated on the Architectural drawings. The locations shown on the Architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly located will be located as per directed by the Architect.



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5. Issued for Tender	September 20/24
4. Revised as per TH & City Review	September 12/24
3. Issued for Construction	August 12/24
2. Revised as per Toronto Hydro Review	July 15/24
1. Revised as per Toronto Hydro Review	July 8/24
revision	date



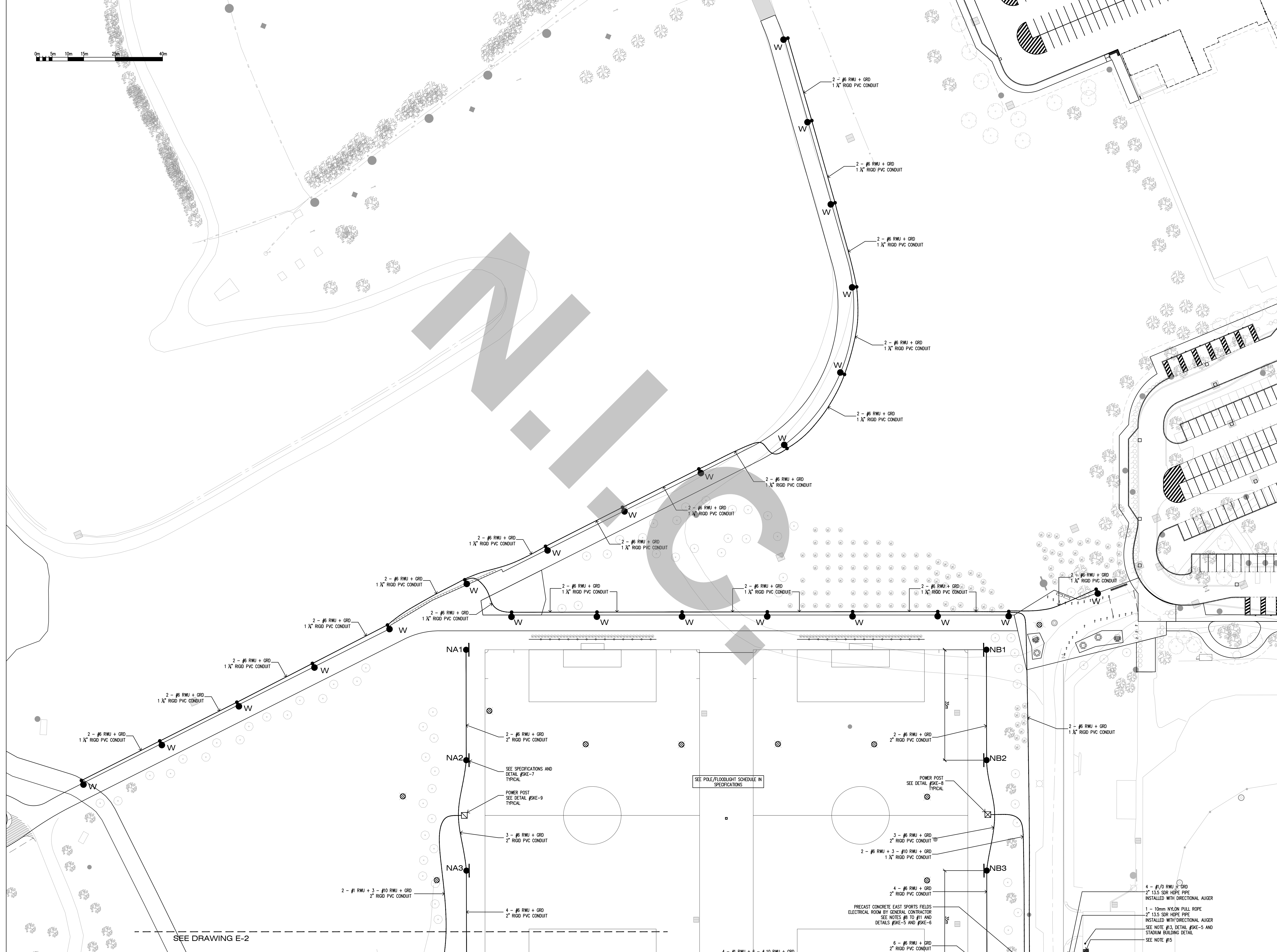
CENTENNIAL PARK
SOCCER HUB

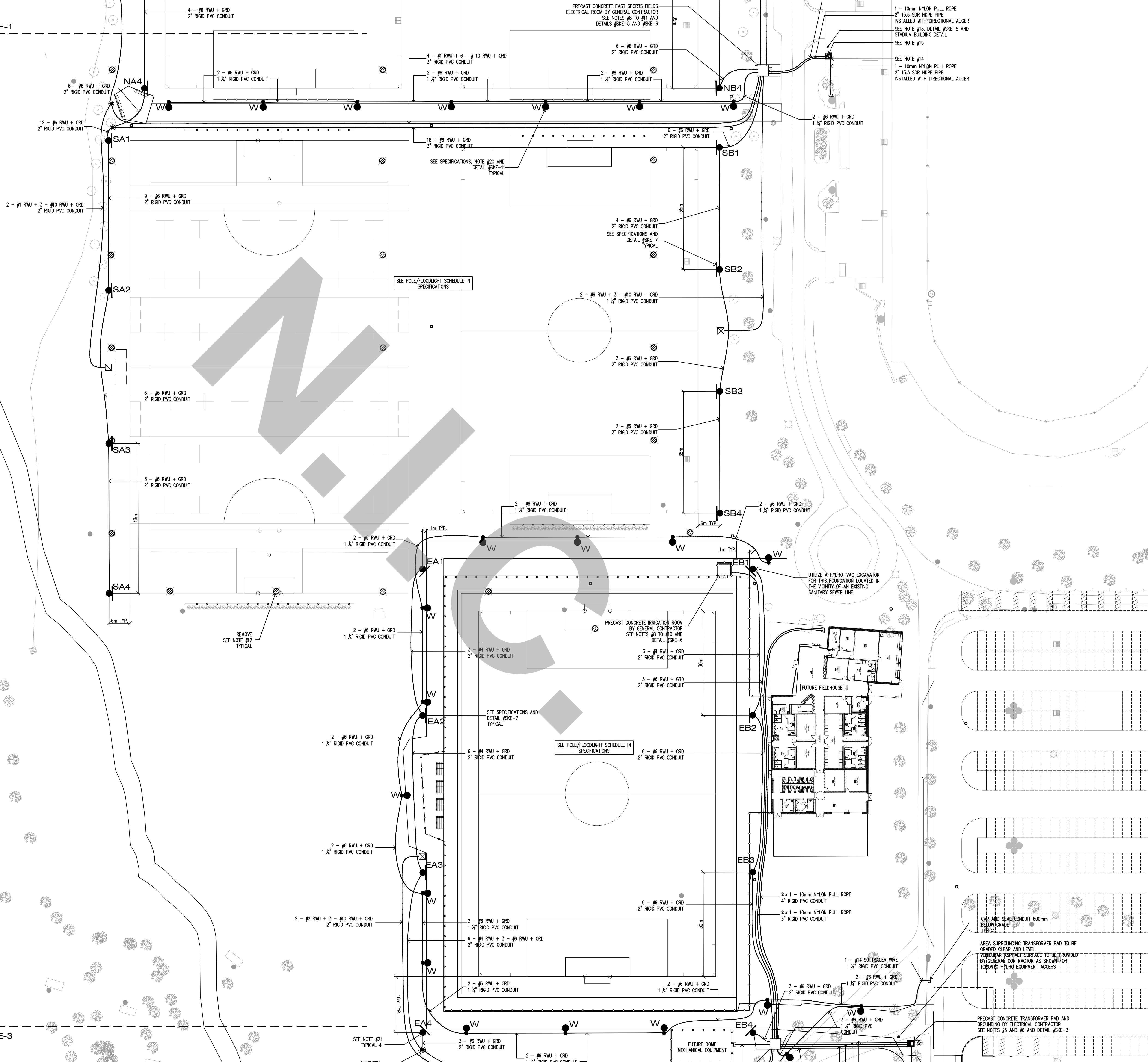
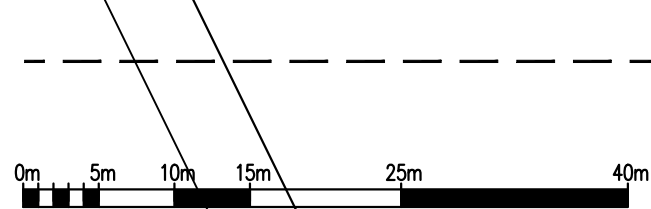
Address: 56 Centennial Park Rd, Toronto, ON

ELECTRICAL PLAN

project no.:
scale: 1: 500
date: September 20, 2024

E-1





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REGISTERED PROFESSIONAL ENGINEER
B.A. KRASNICHUK
Province of Ontario

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CENTENNIAL PARK SOCCER HUB
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ELECTRICAL PLAN

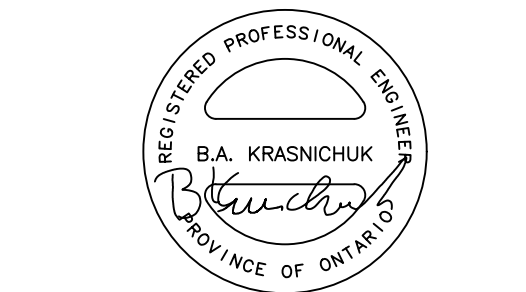
project no. :
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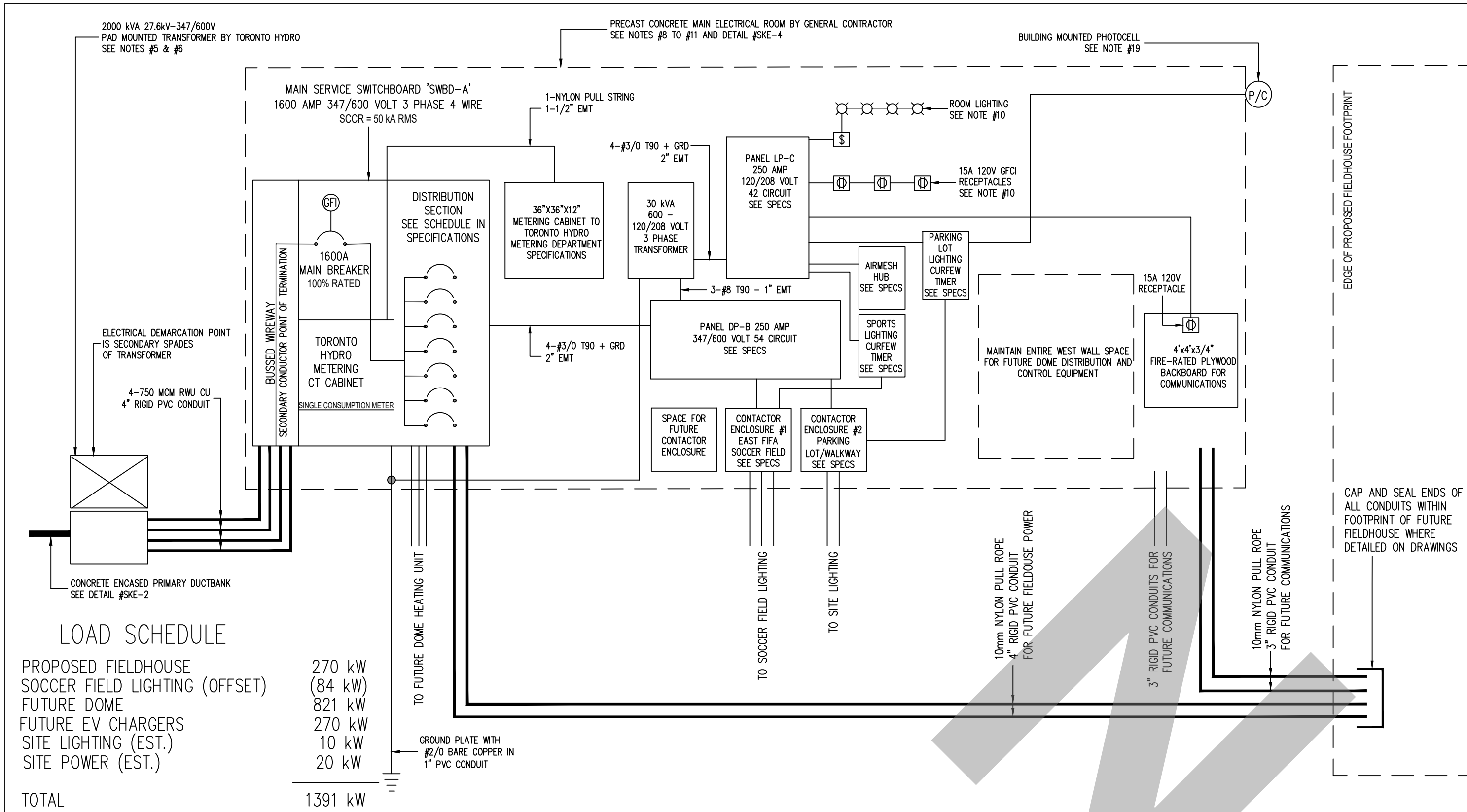
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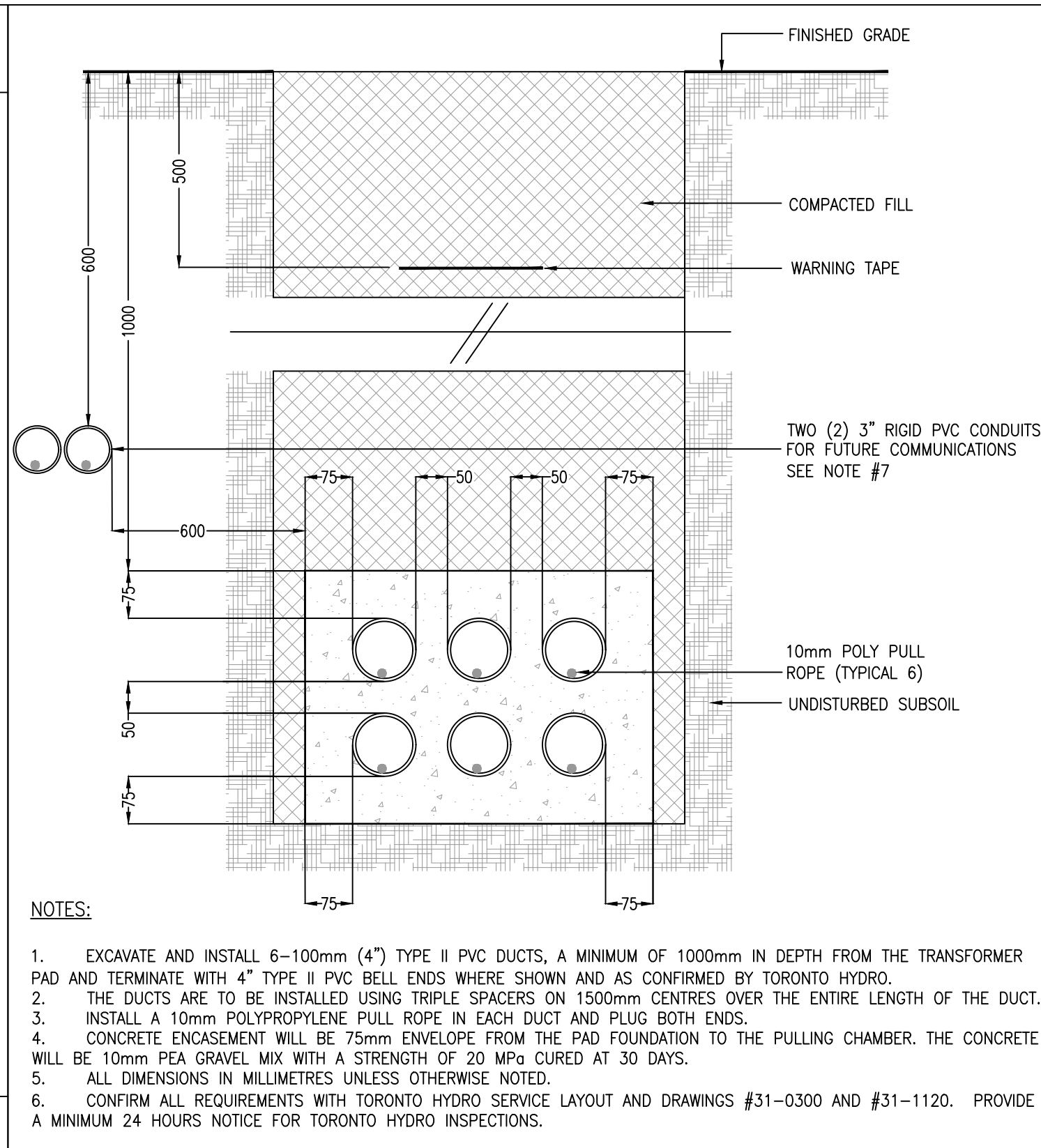
CENTENNIAL PARK
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Address: 256 Centennial Park Rd, Toronto, ON

ELECTRICAL PLAN

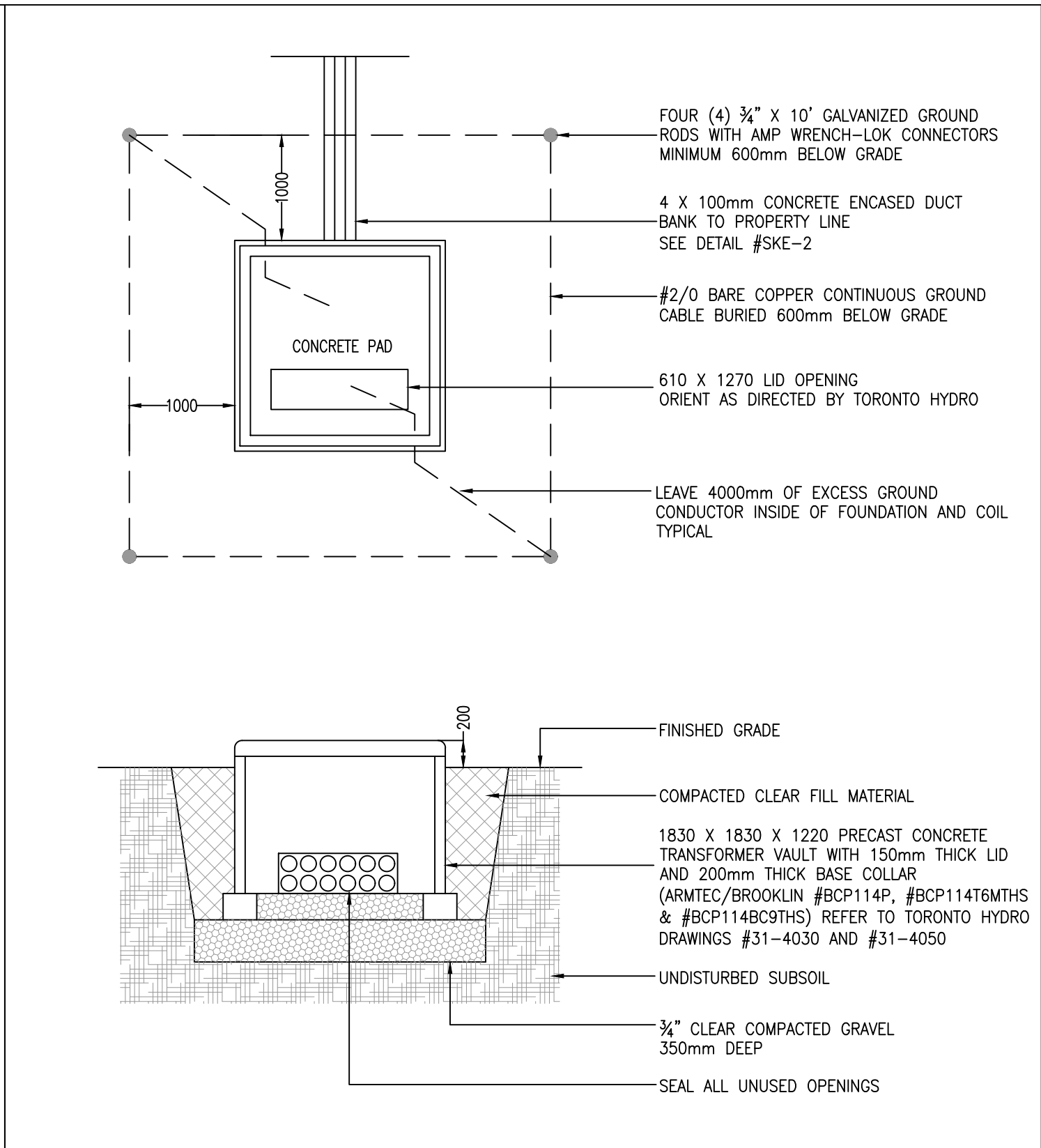
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scale : 1: 500
date : September 20, 2024



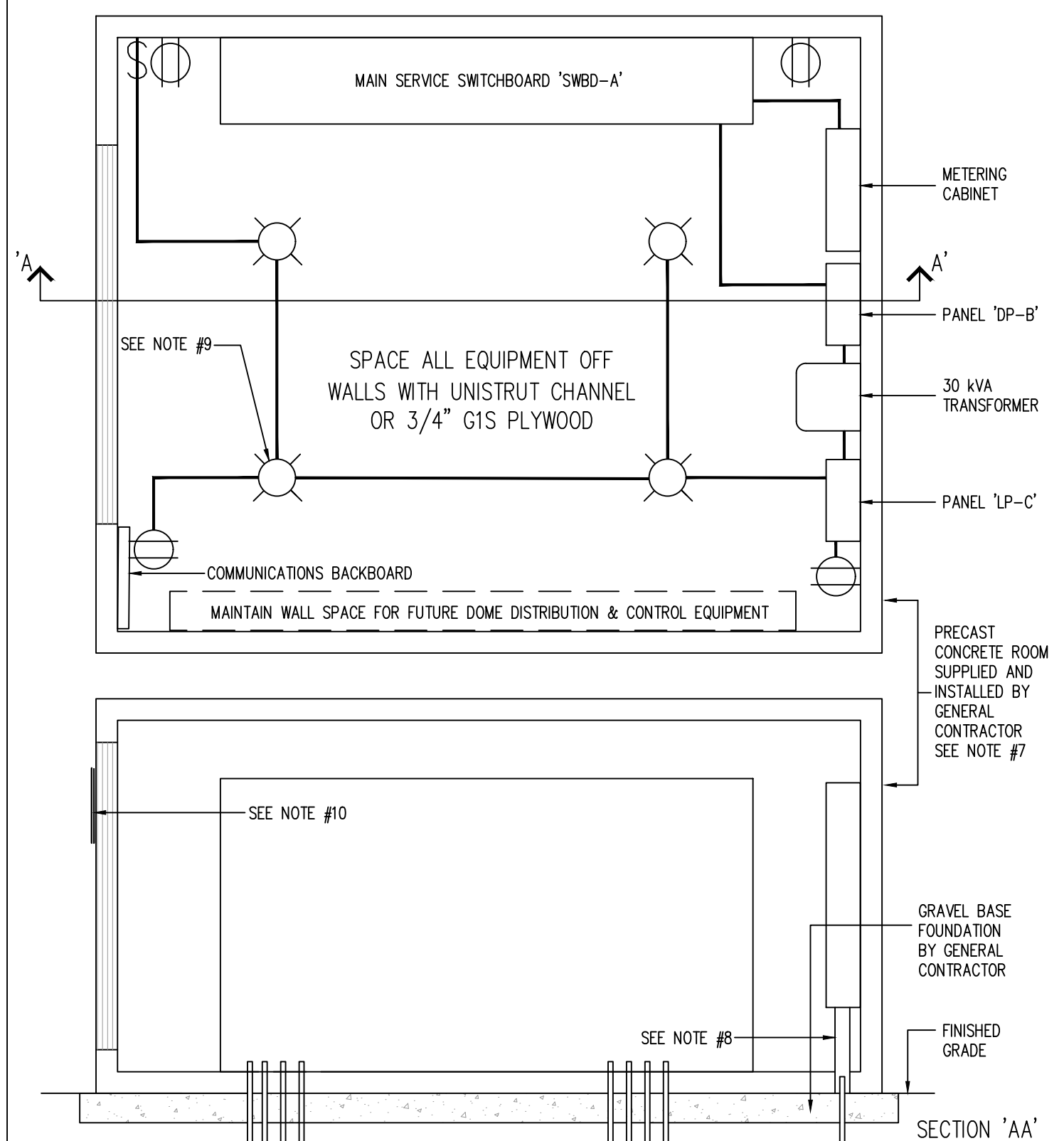
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DATE JULY, 2024	MAIN SERVICE SINGLE LINE DISTRIBUTION	
SCALE NOT TO SCALE		



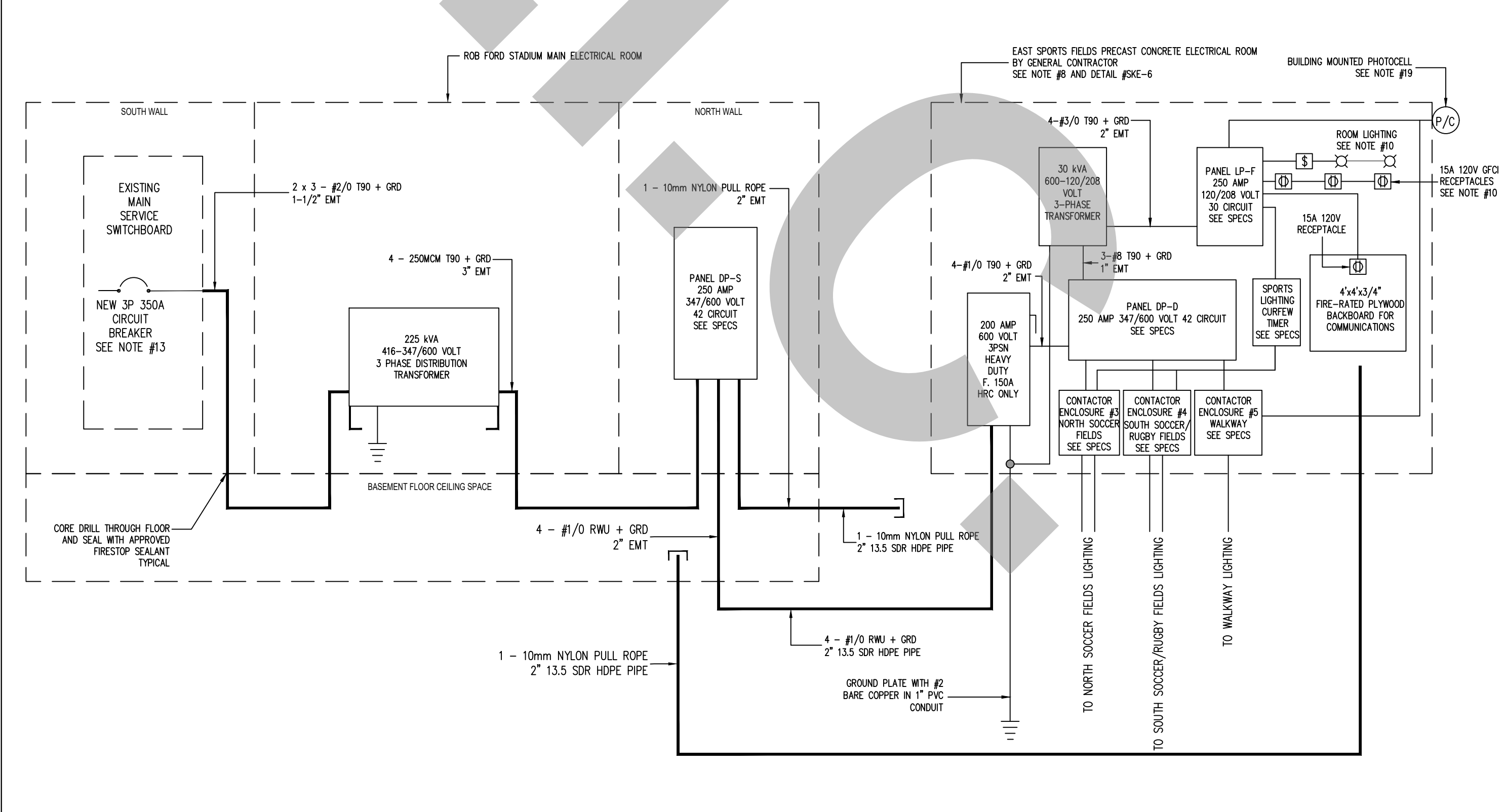
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DATE JULY, 2024	PRIMARY DUCT BANK DETAIL	
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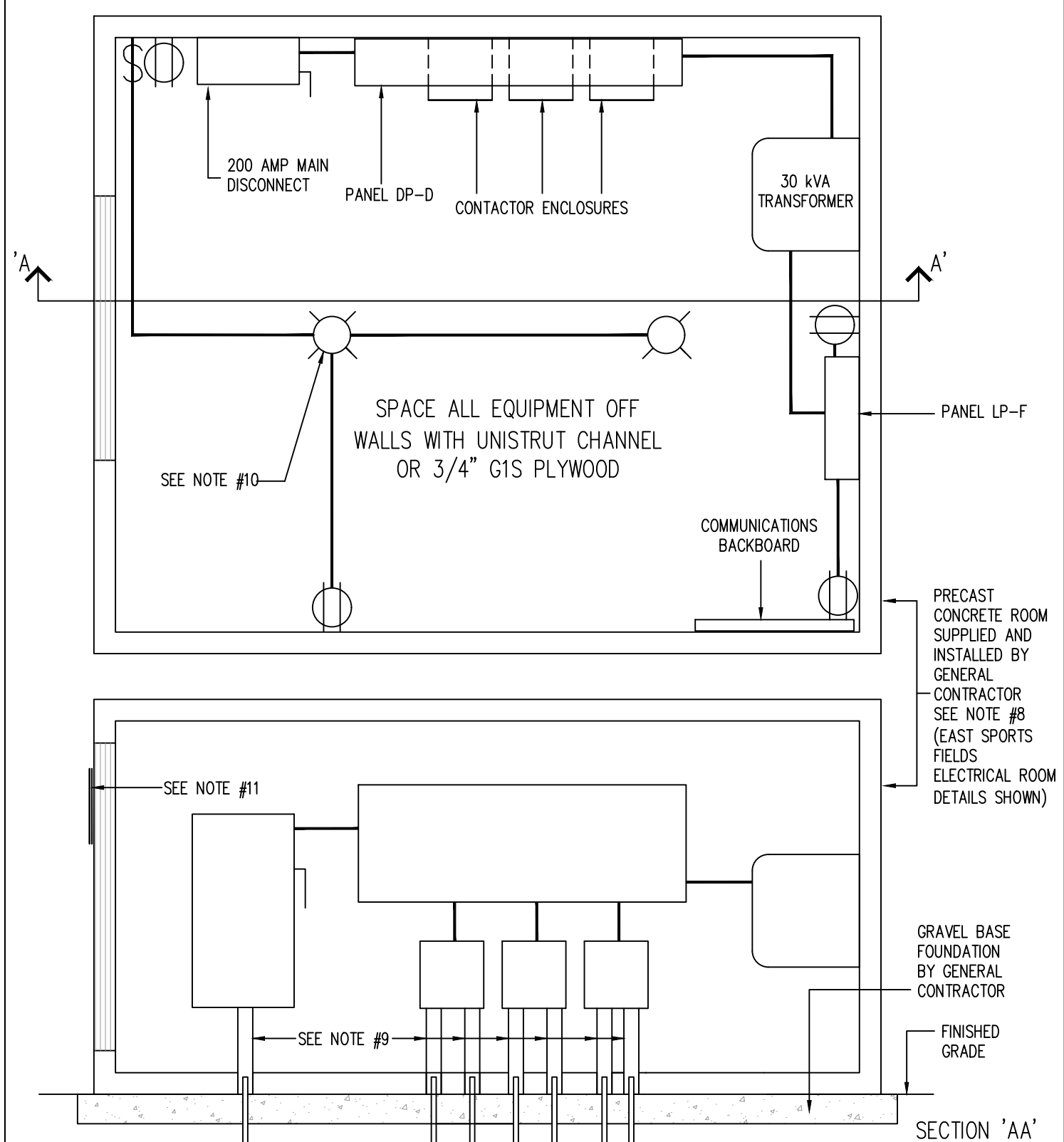
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DATE JULY, 2024	TRANSFORMER PAD AND GROUNDING	
SCALE NOT TO SCALE		



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DATE JULY, 2024	MAIN ELECTRICAL ROOM DETAIL	
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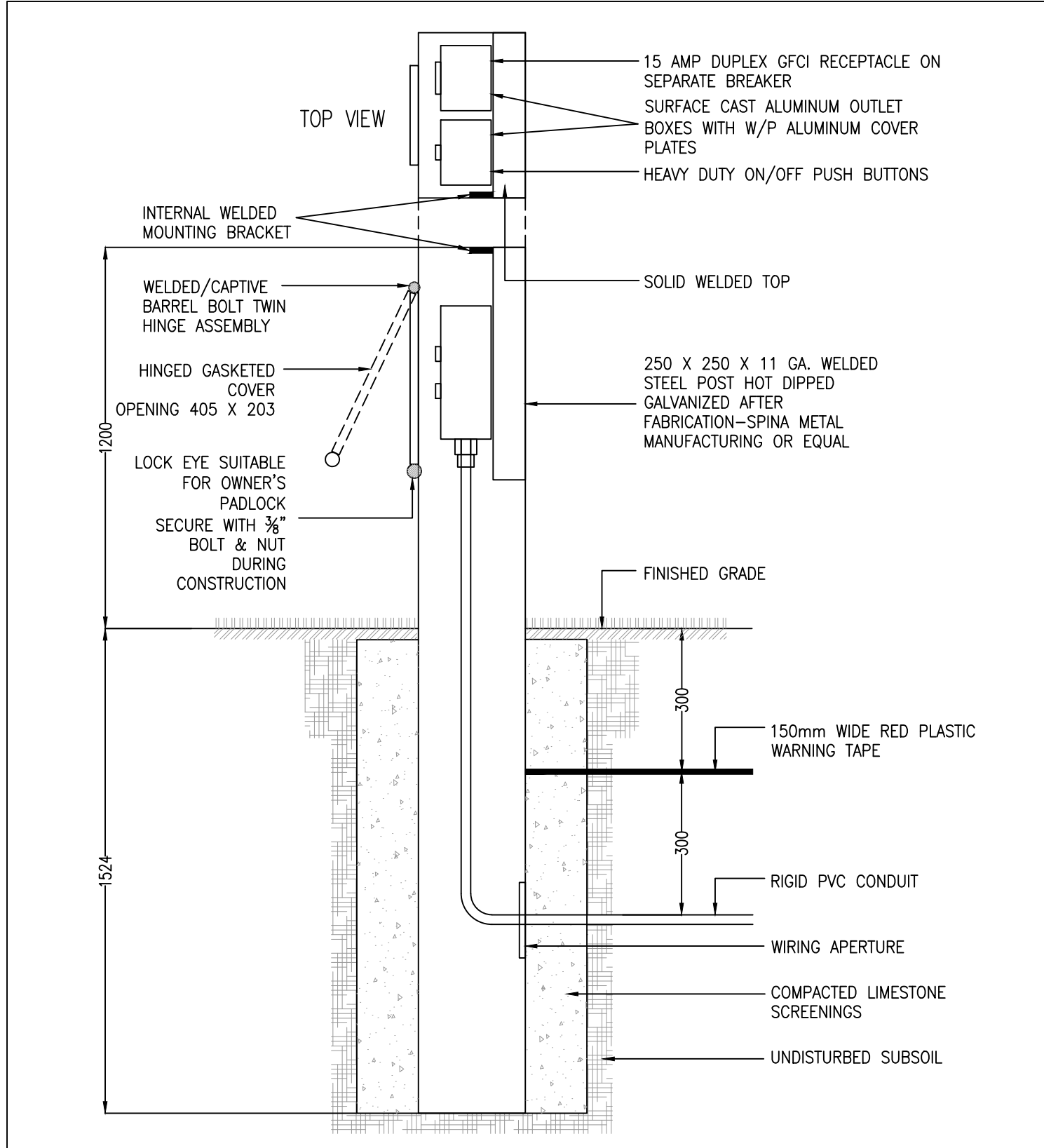


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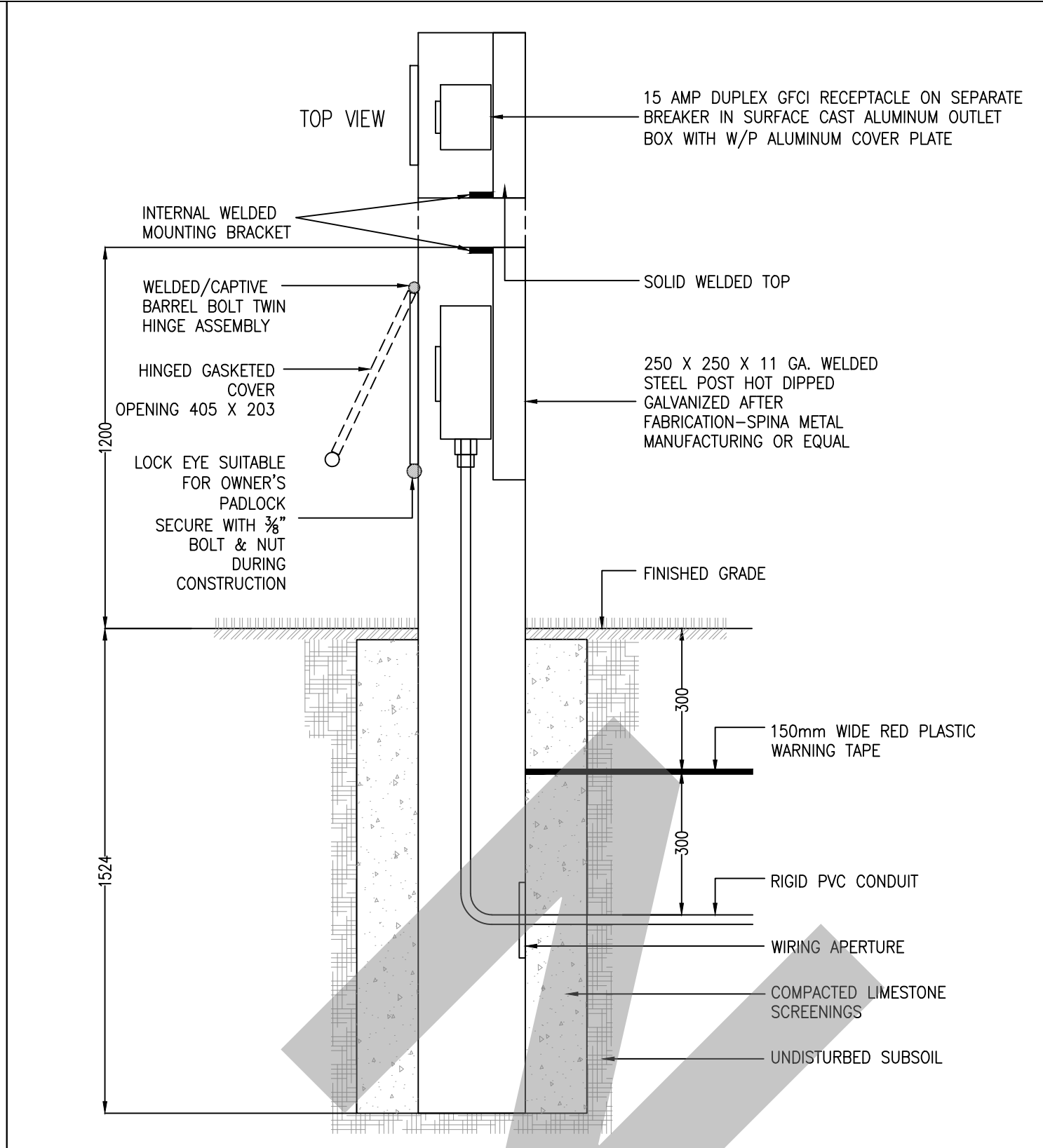


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DATE JULY, 2024	SPORTS FIELDS ELECTRICAL/IRRIGATION ROOMS DETAIL	
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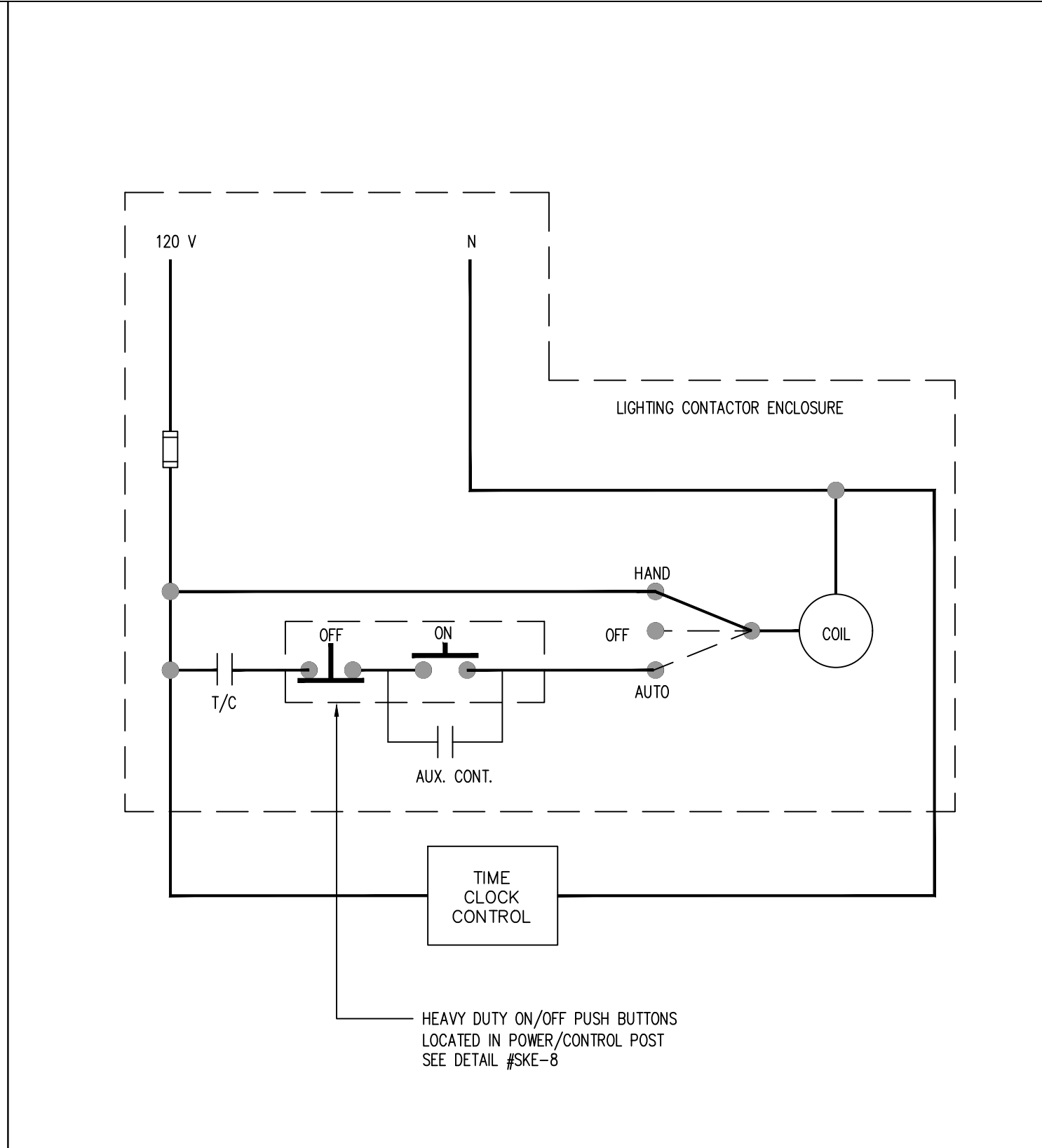
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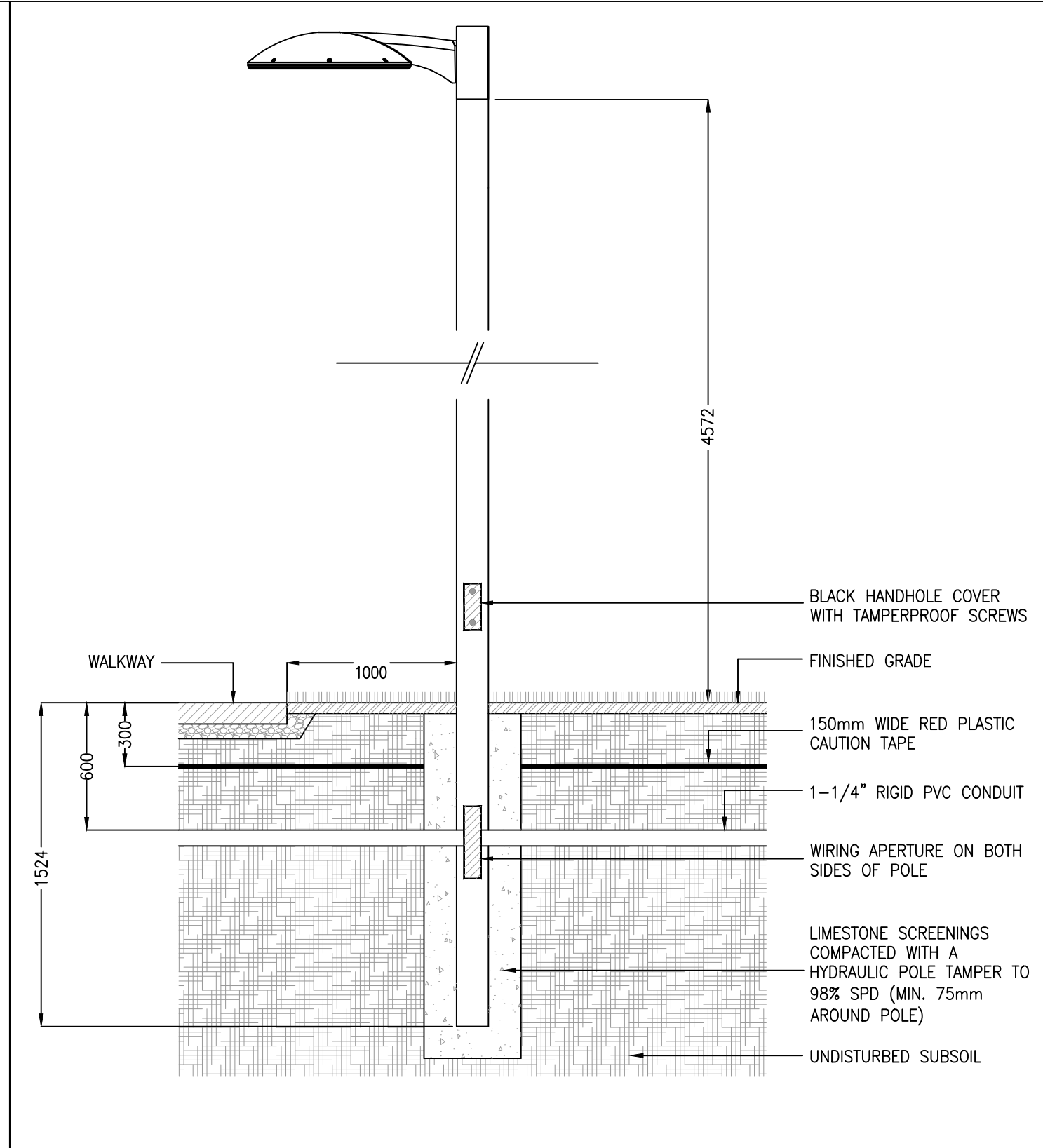
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DATE JULY, 2024	POWER/CONTROL POST	
SCALE NOT TO SCALE		



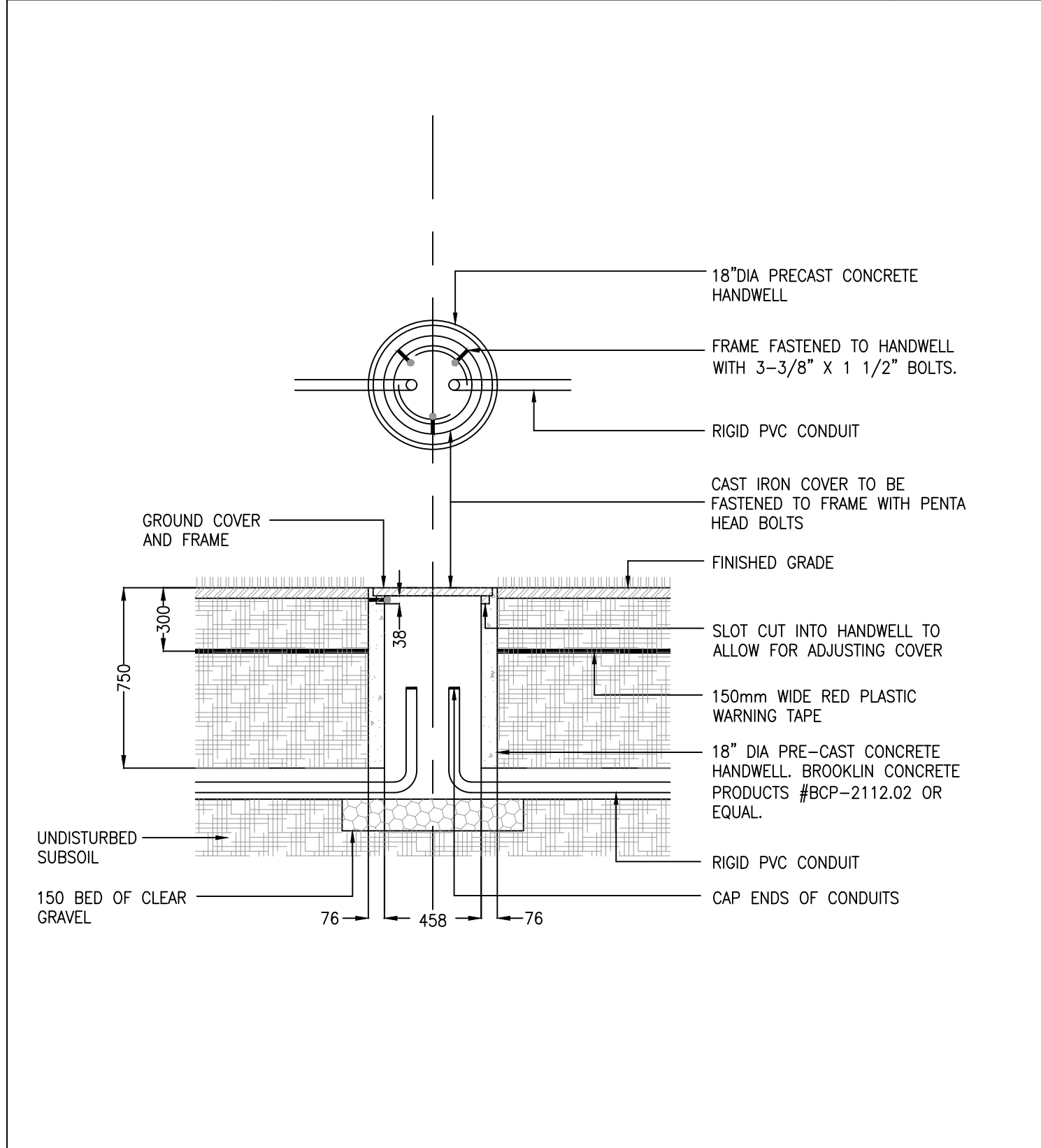
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DATE JULY, 2024	POWER POST	
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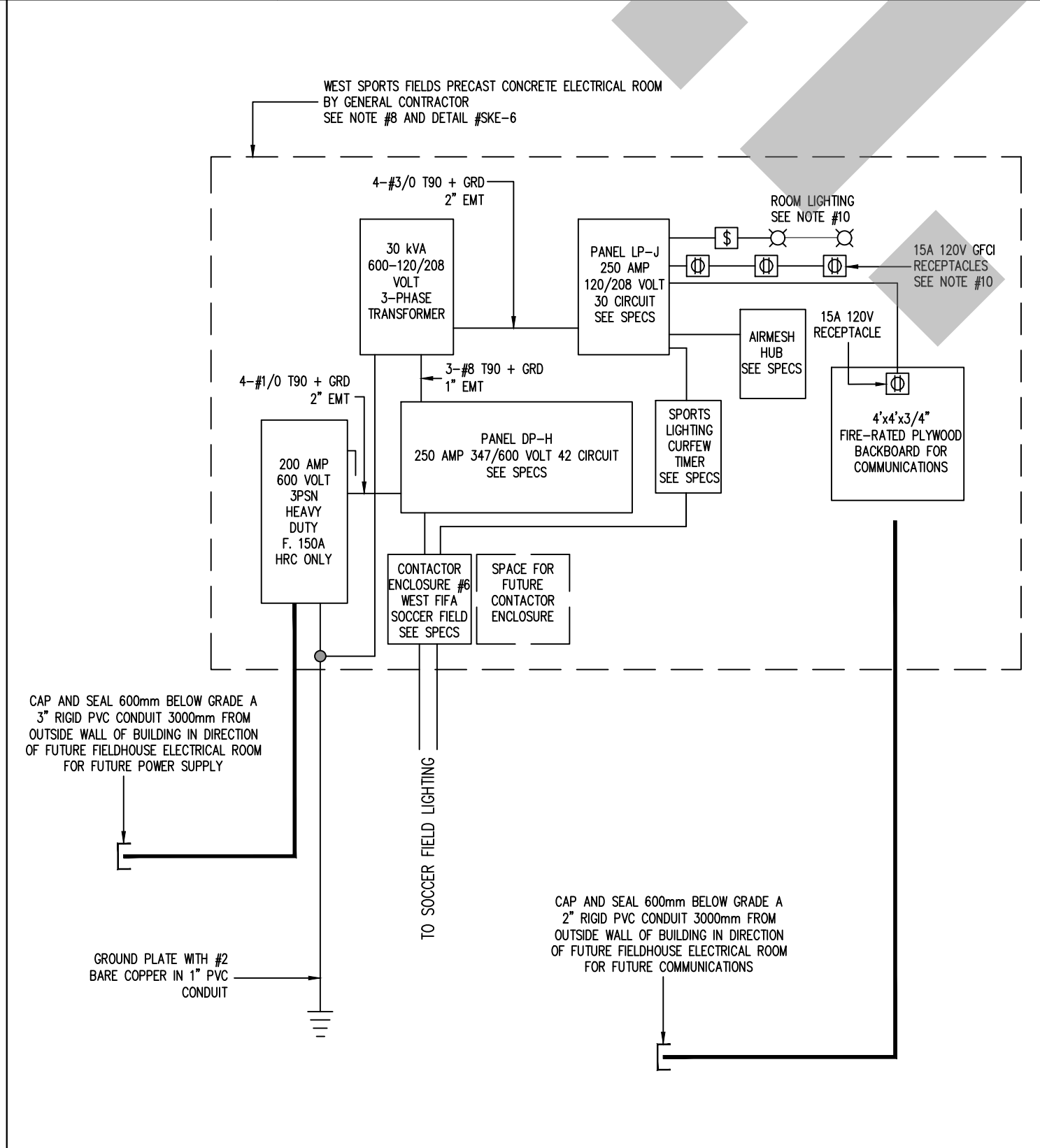
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DATE JULY, 2024	LIGHTING CONTROL SCHEMATIC	
SCALE NOT TO SCALE		



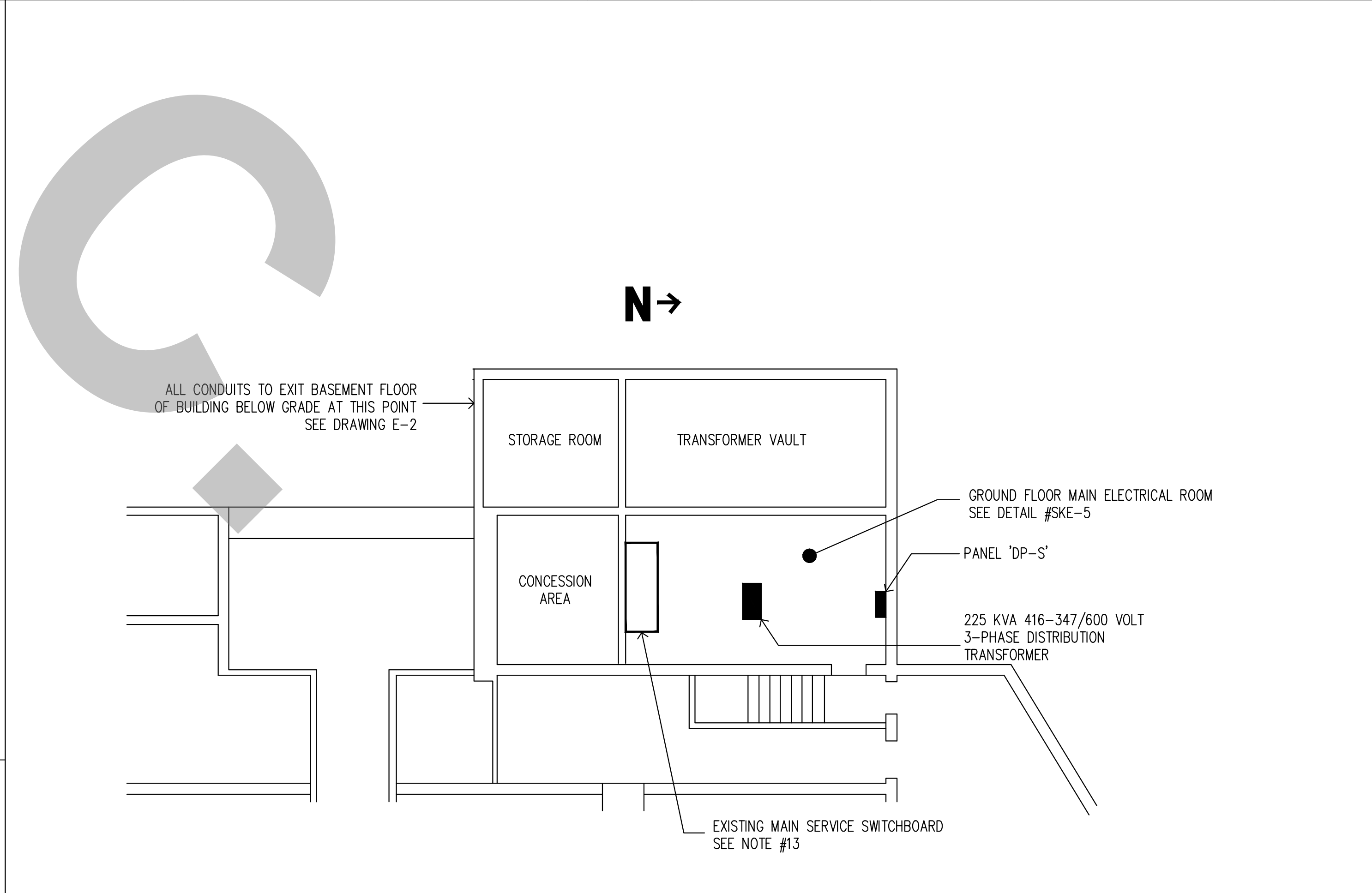
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DATE JULY, 2024	TYPE 'W' LIGHTING ASSEMBLY	
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DATE JULY, 2024	PRE-CAST CONCRETE HANDWELL	
SCALE NOT TO SCALE		



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DATE JULY, 2024	WEST SPORTS FIELDS SINGLE LINE DISTRIBUTION	
SCALE NOT TO SCALE		



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DATE JULY, 2024	GROUND FLOOR STADIUM BUILDING DETAIL
SCALE 1: 100	

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1 General

1.1 DESCRIPTION

1.2 The work of this Section includes the provision of all labour, materials, equipment, and services required to fabricate and install the exterior canopy concealed slat system. This includes miscellaneous anchors, fasteners, sealants, and related accessories for panel attachment, as indicated on the drawings, specified herein, and required for a complete project, in accordance with the Contract Documents.

1.3 REFERENCES

- .1 ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a
- .2 AWPA U1 – Use Category System: User specification for Treated Wood; 2012
- .3 EN 438-7 – High-Pressure Decorative Laminates (HPL); 2005

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination:
 - .1 Coordinate with installers of wall mounted items, equipment, mechanical, and electrical work so that installation will not subvert the integrity of the cladding system.
 - .2 Panel penetrations must be pre-approved by manufacturer before on-site work can commence.
 - .3 Coordinate interface, transition, lapping, flashings and compatibility of membranes with other trades specified in Section 07 27 00.
- .2 Pre-Installation Meeting:
 - .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.
 - .2 Ensure an independent inspection and testing company attends the pre-installation meeting.
 - .3 Pre-Installation Meeting: Two weeks prior to commencing work of this section, arrange for the manufacturer's qualified installer to visit the site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this section. Consultant is responsible for scheduling the date and time of the meeting.

1.5 SUBMITTALS

- .1 Submit all required submittals in accordance with Section 01 33 00.

- .2 Product Data Sheets: Provide the manufacturer's product data sheets for all products proposed for use in the work of this section.
- .3 Shop Drawings:
 - .1 Bearing seal and signature of the Professional Engineer who is registered in Ontario of location of project, and who is responsible for the engineering design of work of this section. Clearly indicate finish, type and thicknesses of system components, size, spacing and location of support framing, sub-girts, connections, types and locations of fastenings. Indicate provisions for structural and thermal movement between panel system and adjacent materials.
 - .2 Include plans, elevations, sections, and detailed drawings for the work in this section.
- .4 Samples:
 - .1 Submit two duplicate colour samples, 600 mm x 600 mm in size, of the specified finish for the Consultant's final selection and approval of colour and gloss.
 - .2 600mm long of support framing, trims and corners.
 - .3 600mm x 600mm mounted samples of four equal sized panels showing four-way joint.
 - .4 Identify samples with project number, date and name of contractor.

1.6 **QUALITY ASSURANCE**

- .1 Installer Qualification: Trained and approved by the manufacturer, and having the necessary experience, staff, and training to install manufacturer's products. Manufacturer's willingness to sell its products to installers does not in itself confer qualification on installer. Provide letter of certification from manufacturer stating that installer is a certified applicator of its products, and is familiar with proper procedures and installation requirements recommended by the manufacturer. Installer shall have proven experience with exterior facade systems for a minimum of ten (10) years and to have completed at least ten (10) major wall facade projects.
- .2 Manufacturer's Site Inspection: The manufacturer's qualified installer will inspect the site weekly, providing inspection reports and photographs, to verify that the work of this section is correctly installed.
- .3 Source Limitations: Obtain each type of product from a single manufacturer.
- .4 Panel Lines and Angles: sharp and true.
- .5 The Zero Carbon Building – Design Standard v4- Design Requirements:

- .1 The Zero Carbon Building – Design Standard v4 requirements shall apply to all relevant sections and work for this project, whether specifically indicated or not.
- .2 Compliance with the requirements needed to achieve The Zero Carbon Building – Design Standard v4 - Design certification will be used as one criterion to evaluate requests for substitutions or alternates.
- .6 Mock-up:
 - .1 Before proceeding with the final purchase of materials and fabrication of porcelain ceramic-faced wall panel system components, prepare a mock-up of the work. Ensure the mock-up incorporates materials and methods of fabrication and installation identical to the project requirements.
 - .2 Install the mock-up at a location directed by the Consultant. Retain the accepted mock-up as the quality standard for the acceptance of the completed cladding.
 - .3 Provide a mock-up of sufficient size and scope to demonstrate the typical pattern of seams, fastening details, edge construction, finish texture, and colour.
 - .4 Provide 4-panel mock-up, including samples of all 4 panel depths, demonstrating:
 - .1 Parapet return conditions.
 - .2 Edge return.
 - .3 Panel return.
 - .4 Curtain Wall jamb return.
 - .5 Soffit return.
 - .5 Notify 72 hours before installation of mock-up for inspection by Consultant. Do not proceed with panel system work until mock-up has been approved.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Store panels and installation system materials in a dry location; handle in a manner to prevent chipping or breakage. The panels should be stored in an upright position. Panels stored in their vertical position should be on their long side. This side must be protected by means of wooden crating, cardboard or polystyrene.

1.8 EXTENDED WARRANTY

- .1 The warranty is a total system warranty. The wood veneer laminate soffit system shall meet the specified system and building envelope performance requirements

throughout the warranty period.

- .2 The manufacturer shall additionally provide a 5 year warranty for the wood veneer laminate soffit system finish, covering defects such as crazing, blistering, and fading.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials, including packaging materials, in accordance with Section 01 74 21 Construction Waste Management and Disposal.

2 Products

2.1 MANUFACTURER

- .1 Specified Products: Work of this section is based on the PARKLEX PRODEMA USA, Inc distributed by Sound Solutions to meet this system's function, design, performance, and construction process, complying with requirements set forth in this section and subject to the consultant's acceptance. Or approved equivalent.
- .2 Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2 CANOPY CONCEALED SLAT SYSTEM DESCRIPTION

- .1 Canopy Concealed Slat System Types **SCS-1, SCS-2, SCS-3, SCS-4, SCS-5, SCS-6**:
 - .1 Description: Concealed Slat System
 - .2 Soffit Panel Type: PARKLEX PRODEMA NATURSOFFIT -W
 - .3 Fastening System: Concealed
 - .4 Finish to be selected by the Consultant from the full range of standard colours
- .2 Design, fabricate and erect work to satisfy the requirements of this section.
- .3 Design system based on rainscreen principle.
- .4 Structural & Thermal Movements: Accommodate movement of building structure and movement caused by thermal expansion and contraction of system component parts without causing bowing, buckling, cracking, oil canning, failure of joint seals, excessive stress on fasteners or any other detrimental effects.
- .5 Dead Loads: Support self-weight of system components.
- .6 Panel Removal: Design system to allow removal of any individual panel.

- .7 All outside panel corners to be reinforced, mitred and chamfered where detailed.
- .8 Ensure the design provides for positive drainage of any condensation occurring within the prefinished metal panel construction, as well as any water entering at joints, directing it to the exterior.
- .9 Design the system to accommodate the specified erection tolerances of the structure.

2.3 **MATERIALS**

- .1 NATURSOFFIT -W Panels: High Pressure Compact Laminate, composing of wood veneer and paper fibers treated with thermosetting resins, designed for flush assembly.
- .2 Slat Type: NATURSOFFIT -W
- .3 Sizes: 7.75 by 96 inches.
- .4 Thickness: 8 mm
- .5 Edge: Machined
- .6 Mounting Method: Siding
- .7 Finish: Finish to be selected by the Consultant from the full range of standard colours
- .8 Properties; EN438-7,:
 - .1 Dimensional Stability: 0.3 percent cumulative dimensional change
 - .2 Maximum Height of Impact with No Visible Signs of Cracking: $\geq 1,800$ mm
 - .3 Tensile Strength (Long Grain): ≥ 60 MPa
 - .4 Flexural Strength:
 - .1 Long Grain: ≥ 80 MPa
 - .2 Cross Grain: ≥ 80 MPa
 - .5 Thermal Resistance: Façade S: 0.266 k
 - .6 UV Resistance:
 - .1 Contrast, Gray Scale Rating: ≥ 3
 - .2 Aspect Rating: ≥ 4

- .7 Artificial Weathering Resistance:
 - .1 Contrast, Gray Scale Rating: ≥ 3
 - .2 Appearance Rating: ≥ 4
- .8 Water Vapor Permeability:
 - .1 Wet Cup Method: 100 μ
 - .2 Dry Cup Method: 250 μ
- .9 Density: $\geq 1.35 \text{ g/cm}^3$
- .10 Water Absorption: NATURSOFFIT -W: ≤ 5 percent
- .11 Fire Resistance: NATURSOFFIT -W: ASTM E84: Class A,

2.4 **ACCESSORIES**

- .1 Sub-framing System: Wood Furring: Pressure treated 2-by southern yellow pine, Southern Pine Inspection Bureau, No. 2 AA grade or better; width and depth as shown on Drawings.
- .2 Treatment to conform to AWPA U1, Use Category UC3B.
- .3 Metal Furring: Aluminum; Depth [1] [4.25] inch HAT channels
- .4 Siding System:
 - .1 Counter sinking fasteners are not allowed for attachment of panels
 - .2 Wood Screws: TWD-S-D12 with Torx head
 - .3 Metal Screws: SX3-L12 with Irius head
 - .4 Aluminum Rivets: AP16 or SSO-D15 based on PARKLEX PRODEMA's recommendation
 - .5 Clips
- .5 PVC joints or closed-cell polyethylene foam.
- .6 Ventilation: Molded plastic or woven polyethylene designed for provide air flow behind panels but restrict insect entering air space.
 - .1 Product: Cor-A-Vent SV-5 by Cor-A-Vent or equal.

2.5 **FINISHES**

- .1 Exterior Panel Finishes: Finish to be selected by the Consultant from the full range of standard colours
- 3 Execution**
- 3.1 EXAMINATION**
 - .1 Examine work of other sections upon which work of this section depends.
 - .2 Report any unsatisfactory conditions to consultant in writing. Do not start work until unsatisfactory conditions are rectified.
 - .3 Take accurate measurements at the Place of the Work to ensure the work of this section is fabricated to fit the structure, surrounding construction, and to accommodate obstructions and projections in place.
 - .4 Verify that the backup construction is properly aligned to allow for the correct installation of the prefinished metal panel system before commencing erection.
 - .5 Examine substrate and framing members for alignment
 - .6 Notify Architect of conditions that would adversely affect installation.
 - .7 Do not begin surface preparation or installation until unacceptable conditions are corrected.
 - .8 Ensure that weather barrier is properly installed and undamaged.
- 3.2 PREPARATION**
 - .1 Securely install wall furring system plumb and square and correctly spaced to accommodate panel or slat system.
- 3.3 INSTALLATION**
 - .1 Install panels in strict compliance with manufacturer's written instructions.
 - .2 Use manufacturer recommended cutting tools, equipment, and procedures.
 - .3 Provide a minimum of 1/4 inch (6 mm) open space for expansion movements between 2 consecutive slat heads.
 - .4 Do not seal joints.
 - .5 Follow shop drawings for sub-framing support, and fastener location and spacing.
 - .6 Provide 3/4 inch (19 mm) clear air gap behind panels and install vent strips at top and bottom of wall as detailed
 - .7 Provide 3/4 inch (19 mm) clear space around perimeter of the dropped ceiling.

3.4 NATURSOFFIT -W SIDING SYSTEM ON DROPPED CEILINGS

- .1 Ensure that sub-framing (furring) is not spaced greater than 24 inches apart and is set plumb and level.
- .2 Install the sub-framing according to the proposed piece layout following the manufacturer writing instructions.
- .3 Install the bottom row of clips aligned over profiles following the manufacturer writing instructions.
- .4 Install the last row of boards using the exposed screw fastening method following the manufacturer writing instructions.
- .5 The boards must be connected to the substructure vertical J-channels and Hat-channels using SX3 No.14-11, stainless steel (Austenitic stainless steel A2 n°1.4567, AISI 304) self-drilling screws for aluminium substructure.
- .6 The substructure includes 0.115" channel, including J- channel with a nominal width of 2.94" and depth of 1 inch and a Hat channels with nominal width of 4.25" and depth of 1". Extrusions- Made of 6063-t5 or t6 alloy aluminum. The J and Hat channels could be fixed over L profiles if deeper chamber is required. This substructure should be black coated.

3.5 INSTALLATION TOLERANCES

- .1 Variation in Line Over Entire Area: For positions shown in plan and continuous lines, do not exceed 1:500 or 15 mm, whichever is less.
- .2 Variation in Plumb Over Entire Area: Vertical lines, external corners and other vertical conspicuous lines, do not exceed 1:500.
- .3 Variation in Level, Panel to Panel: Horizontal bands, horizontal grooves, and other horizontal conspicuous lines, do not exceed 1:500.
- .4 Variation in Panel Joint Width: Do not exceed 3 mm.
- .5 Variation in Plane Between Adjacent Panels (Lipping or Step-in-Face): Do not exceed 1 mm difference between planes of adjacent panels.
- .6 Jog in Alignment of Edge of Adjacent Panels: Do not exceed 1 mm.

3.6 CLEAN-UP

- .1 Clean exposed panel surfaces in accordance with manufacturer's instructions.
- .2 Small chips, imperfections, blemishes, or other defects may be repaired with the approval of the Consultant.
- .3 Clean stains and excess adhesive from panels following manufacturer's instructions.

- .4 Do NOT use abrasive cleaning cloths or sponges, or harsh solvents such as acetone, ethyl acetate or MEK (Methyl Ethyl Keytone) on any surface to clean panels.
- .5 Exterior use panels have protective film that must be removed.
- .6 Completely remove protective film from panels immediately after installation
- .7 Upon completion of the work in this section:
 - .1 Remove all protective coverings and paper labels from exposed surfaces.
 - .2 Clean exposed surfaces of smears, dirt, and grime using cleaning materials recommended by the panel supplier.

3.7 PROTECTION

- .1 Protect panels from damage by placing thick cardboard corners at building corners, and lining passageways and walls adjacent to material handling routes with protective pads or sheet goods.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Design, labour, Products, equipment and services necessary for the installation of all gypsum board walls, ceilings, and exterior gypsum board wall sheathing.

1.2 REFERENCES

- .1 ASTM A653/A653M, Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM C475, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .3 ASTM C645, Specification for Nonstructural Steel Framing Members.
- .4 ASTM C665, Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- .5 ASTM C754, Specification for Steel Framing Members to Receive Screw-Attached Gypsum Board.
- .6 ASTM C834, Standard Specification for Latex Sealants.
- .7 ASTM C840, Specification for Application and Finishing of Gypsum Board.
- .8 ASTM C1002, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .9 ASTM C1047, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .10 ASTM C1178, Specification for Glass Mat Water-Resistant Gypsum Backing Board.
- .11 ASTM C1278, Specification for Fiber-Reinforced Gypsum Panel.
- .12 ASTM C1396, Specification for Gypsum Board.
- .13 ASTM C1629, Standard Classification for Abuse-Resistant Non-Decorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
- .14 ASTM D5420, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimens by Means of a Striker Impacted by a Falling Weight.

- .15 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .16 ASTM E695, Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading.

1.3 DESIGN REQUIREMENTS

- .1 Design ceiling suspension system in accordance with manufacturer's printed directions and ASTM C754.
- .2 Design ceiling system for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.
- .3 Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.
- .4 Design suspension system to support weight of mechanical and electrical items such as air handling boots and lighting fixtures, and with adequate support to allow rotation/relocation of light fixtures.
- .5 Design subframing as necessary to accommodate, and to circumvent, conflicts and interferences where ducts or other equipment prevent the regular spacing of hangers.
- .6 Design wall framing system and reinforce as necessary to accommodate and support items attached to and supported by wall framing system.
- .7 Design wall framing system for wall assemblies with a height greater than 3000 mm and those assemblies incorporating non-standard gypsum board assemblies including, but not limited to, abuse resistant gypsum board, large format tile applications, etc.

1.4 REGULATORY REQUIREMENTS

- .1 Provide fire separations and fire protection exactly as specified in test design specification that validates the specified rating. Verify that work specified in other Sections, as a part of the entire assembly, meets applicable validating test design specification.

1.5 SUBMITTALS

- .1 Product data:
 - .1 Submit copies of manufacturer's Product data in accordance with Section 01 33 00 indicating:

- .1 Performance criteria, compliance with appropriate reference standard, characteristics, and limitations.
 - .2 Product transportation, storage, handling and installation requirements.
- .2 Shop Drawings:
 - .1 Submit Shop Drawings in accordance with Section 01 33 00 indicating:
 - .1 Wall assemblies, suspension systems, adjacent construction, elevations, sections and details, dimensions, thickness, finishes and relationship to adjacent construction.
 - .2 Framing and blocking for items being supported of wall systems.
 - .3 Certifications: Submit written certification stating that suspended ceiling system is designed for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.

1.6 QUALITY ASSURANCE

- .1 Qualifications: Execute the work of this Section by skilled, qualified, and experienced workers trained in the installation of the work of this Section.
- .2 Retain a Professional Engineer, licensed in Province of Ontario, with experience in work of comparable complexity and scope, to perform following services as part of work of this Section:
 - .1 Design of wall systems with height greater than 3000 mm and at nonstandard gypsum board assemblies including, but not limited to, assemblies incorporating abuse resistant gypsum board, large format tile applications, etc.
 - .2 Design of suspended gypsum board assemblies.
 - .3 Review, stamp, and sign Shop Drawings and design calculations.
 - .4 Conduct shop and on-site inspections, prepare and submit written inspection reports verifying that this part of Work is in accordance with Contract Documents and reviewed Shop Drawings.
- .3 The Zero Carbon Building – Design Standard v4- Design Requirements:
 - .1 The Zero Carbon Building – Design Standard v4 requirements shall apply to all relevant sections and work for this project, whether specifically indicated or not.

- .2 Compliance with the requirements needed to achieve The Zero Carbon Building – Design Standard v4 - Design certification will be used as one criterion to evaluate requests for substitutions or alternates.

1.7 SITE CONDITIONS

- .1 Do not begin work of this Section until:
 - .1 Mechanical and electrical work above the ceiling is complete.
 - .2 Substrate and ambient temperature is above 15 degrees Celsius.
 - .3 Relative humidity is below 80%.
 - .4 Ventilation is adequate to remove excess moisture.
- .2 Install temporary protection and facilities to maintain Product manufacturer's, and above specification, environmental requirements 24 hours before, during, and 24 hours after installation.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials, including packaging materials, in accordance with Section 01 74 21 "Construction Waste Management and Disposal".

2 Products

2.1 MATERIALS

2.2 GYPSUM BOARD PRODUCTS

- .1 Abuse Resistant Panels (**GB-1**):
 - .1 ASTM Standards:
 - .1 ASTM C1629, Standard Classification for Abuse-Resistant Non-Decorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels, Level 3 (Surface Abrasion).
 - .2 ASTM D5420, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimens by Means of a Striker Impacted by a Falling Weight, Level 1 (Surface Indentation).
 - .3 ASTM E695, Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading, Level 3 (Soft-Body Impact Penetration).

- .4 ASTM C1629, Level 2 (Hard-Body Impact Penetration).
- .2 Thickness: 15.9 mm (5/8") minimum unless indicated otherwise on drawings.
- .3 Fire Rating: Type X where required for fire resistance rated assemblies
- .4 Mold and Moisture Resistance: Mold-resistant core with moisture-resistant facing.
- .5 Acceptable Products:
 - .1 'Air-Renew Extreme Impact Resistant Board' by CertainTeed Gypsum.
 - .2 'DensArmor Plus Impact-Resistant Panel' by Georgia-Pacific.
 - .3 'High-Impact XP' by National Gypsum.
 - .4 'Protecta HIR 300 Type X with Mold Defense' by Lafarge.
 - .5 'Sheetrock Brand Panels Mold Tough VHI Firecode X' by CGC Inc.
- .2 Abuse and Fire Resistant Panels (**GB-2X**):
 - .1 Paper-faced gypsum core panel with enhanced durability for mold, moisture, and abuse resistance, with a specially formulated core for use in fire-resistive Type X designs, to ASTM C1629 (Levels 3, 1, 1), ASTM D5420, and ASTM E695.
 - .2 ASTM Standards:
 - .1 ASTM C1629, Standard Classification for Abuse-Resistant Non-Decorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels, Levels 3 (Surface Abrasion), 1 (Surface Indentation), 1 (Soft-Body Impact).
 - .2 ASTM D5420, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimens by Means of a Striker Impacted by a Falling Weight, Level 1 (Surface Indentation).
 - .3 ASTM E695, Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading, Level 1 (Soft-Body Impact).
 - .3 Acceptable Products:
 - .1 'Air-Renew Extreme Abuse Resistant Board' by CertainTeed

- .2 'DensArmor Plus Abuse-Resistant Panel' by Georgia-Pacific
 - .3 'High-Abuse XP' by National Gypsum
 - .4 'Protecta AR 100 Type X with Mold Defense' by Lafarge
 - .5 'Sheetrock Brand Panels Mold Tough AR' by CGC
- .3 Moisture / Abuse resistant board (**GB-3**): 15.9MM thick of maximum practical lengths to minimize end joists, unless indicated otherwise; moisture and abuse resistant board "Fiberock Aquatough Interior Panel" by CGC Inc. or 'DensArmor Plus" by Georgia-Pacific Canada LP.
- .4 Abuse Resistant Panels (**GB-4**):
- .1 ASTM Standards:
 - .1 ASTM C1629, Standard Classification for Abuse-Resistant Non-Decorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels, Level 3 (Surface Abrasion).
 - .2 ASTM D5420, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimens by Means of a Striker Impacted by a Falling Weight, Level 1 (Surface Indentation).
 - .3 ASTM E695, Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading, Level 3 (Soft-Body Impact Penetration).
 - .4 ASTM C1629, Level 2 (Hard-Body Impact Penetration).
 - .2 Thickness: 15.9 mm (5/8") minimum unless indicated otherwise on drawings.
 - .3 Fire Rating: Type X where required for fire resistance rated assemblies
 - .4 Mold and Moisture Resistance: Mold-resistant core with moisture-resistant facing.
 - .5 Acceptable Products:
 - .1 'Air-Renew Extreme Impact Resistant Board' by CertainTeed Gypsum.
 - .2 'DensArmor Plus Impact-Resistant Panel' by Georgia-Pacific.
 - .3 'High-Impact XP' by National Gypsum.

- .4 'Protecta HIR 300 Type X with Mold Defense' by Lafarge.
- .5 'Sheetrock Brand Panels Mold Tough VHI Firecode X' by CGC Inc.
- .5 Glass Faced Gypsum Tile Backer Board (**GB-5**):
 - .1 ASTM Standards:
 - .1 ASTM C1178/C1178M, Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
 - .2 Composition:
 - .1 Moisture-resistant gypsum core with glass mat embedded on front and back surfaces.
 - .2 Acrylic coating on the face for enhanced water resistance.
 - .3 Edges and Ends:
 - .1 Ends square cut.
 - .2 Edges tapered.
 - .4 Fire Rating: Provide 'Type X' core where required as part of a fire-rated assembly.
 - .5 Acceptable Products:
 - .1 'Dens-Shield' and 'Dens-Shield Fire-Guard,' regular or Type X, by Georgia-Pacific.
 - .2 'DiamondBack Glasroc,' regular or Type X, by CertainTeed.
- .6 Exterior Sheathing (**GB-6**):
 - .1 ASTM Standards: ASTM C1177/C1177M, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - .2 Composition:
 - .1 Silicone-treated core with fibreglass mat face and back.
 - .2 Face side surfaced with a heat-cured copolymer water- and vapour-resistant coating.
 - .3 Fibreglass mat faced on front, back, and long edges.

- .4 Square ends and edges.
- .3 Thickness: 16 mm unless otherwise indicated.
- .4 Fire Rating: Use Firestop Type X fire-resistant board where indicated.
- .5 Service Grade: Exterior grade.
- .6 Acceptable Products:
 - .1 'GlasRoc Exterior Sheathing' by CertainTeed
 - .2 'Securock Glass-Mat Sheathing' by CGC
 - .3 'Dens-Glass Gold Fireguard Gypsum Sheathing' by Georgia-Pacific

2.3 **ATTACHMENT MATERIALS**

- .1 Fasteners for Gypsum Board: Use bugle head, fine thread, self-tapping screws such as Type W, S, or S-12, chosen to match the framing material and gauge, with a corrosion-resistant finish compliant with ASTM C1002-07/ASTM C954-11.
- .2 screw sizes:
 - .1 #6 x 25 mm (1") for attaching a single layer of gypsum board.
 - .2 #6 x 32 mm (1-1/4") for securing a single layer of 15.9 mm (5/8") board.
 - .3 #7 x 41 mm (1-5/8") for fastening double layers of board.
- .3 Fasteners for Exterior Sheathing: Follow the manufacturer's installation guidelines to ensure compliance with wind load requirements.
- .4 Tying Wire: Utilize 1.6 mm (0.063") diameter galvanized wire, soft annealed for flexibility.
- .5 Adhesive for Gypsum Panels:
 - .1 Use an adhesive recommended by the panel manufacturer and appropriate for the specific application.
 - .2 Ensure the adhesive has a VOC content not exceeding 50 g/L (1.8 oz/gal), determined according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 **JOINT TREATMENT MATERIALS**

- .1 General: Provide joint treatment materials complying with ASTM C475 and the

recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

- .2 Joint tape:
 - .1 For gypsum board: Paper reinforcing tape as recommended by the gypsum board manufacturer.
 - .2 For cement board: Alkali-resistant glass fibre tape as recommended by the cement board manufacturer.
- .3 Joint Compound for Gypsum Board: Factory-mixed, all-purpose compound formulated for both taping and topping compound.

2.5 ACCESSORIES

- .1 General Accessories: Comply with ASTM C1047-14a unless specified otherwise. Provide maximum length pieces for each location. Ensure flanges are clean and free from dirt, grease, or other materials that may impair joint treatment or decoration adherence.

2.6 TRIM ACCESSORIES

- .1 Accessories for Interior Installation: Cornerbead, edge trim, and control joints complying with ASTM C1047 and requirements indicated below:
 - .1 Shapes as required in accordance with ASTM C1047.
 - .2 Use preformed vent louvers made of corrosion-resistant metal with insect-proof design.
 - .3 Ventilation must comply with or exceed building code requirements, with a ratio not less than 1/300 (vent area to sheathing board cavity area).
 - .4 Casing Trim (L or LC Beads) (**T-1 Trim**): Bailey D200 and 4411, Nicholson Rollforming Metal Trim 200-A and 200-B, fillable edge trim with 0.55 mm (0.022") base thickness commercial-grade steel and zinc coating per ASTM A653/A653M-11; perforated flanges.
 - .5 Reveal Trim at Masonry and Concrete Junctions (**T-2 Trim**): Gordon Series 300 or 312-5/8, or equivalent by Fry Reglet.
 - .6 Z-Reveal Types (**T-3 Trim**): Fry Reglet DRMZ-625-100, DRMZ-625-50, or DRMZ-25-25, or equivalent by Gordon Interior Specialties.
 - .7 Control Joints:

- .1 No. 093 Zinc Control Joint by CGC Inc. or equivalent, certified for fire-resistant assemblies.
- .2 Fry Reglet DRM-50-25 2-PC, or equivalent by Gordon Interior Specialties.
- .3 093V Expansion Bead by Trim-Tex Drywall Products Inc.
- .8 Vinyl Casing Beads: Vinyl J-molds for gypsum board interface with aluminum-framed glazing.
- .9 Aluminum Gypsum Board Trim: Extruded aluminum alloy 6063-T5 conforming to ANSI H35.1/H35.1M-2013, with fin, tapered, grooved profiles prepunched for screw attachment and bonding agent, as manufactured by Gordon Inc., Softforms, or Fry Reglet.
- .10 Drywall Edge Trim: Gordon CA-4-DW Profile or equivalent by Fry Reglet.

2.7 MISCELLANEOUS MATERIALS

- .1 General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- .2 Laminating Adhesive: Special adhesive or joint compound Low VOC recommended for laminating gypsum panels.
- .3 Spot Grout: ASTM C475, setting-type joint compound recommended for spot-grouting hollow metal door frames.
- .4 Fastening Adhesive for Metal: Special adhesive Low VOC recommended for laminating gypsum panels to steel framing.
- .5 Fasteners: Steel drill screws complying with ASTM C954 for fastening gypsum board to steel members from 0.84 mm to 2.84 mm (21 ga to 12 ga) thick.
- .6 Acoustic sealant: Refer to Section 07 92 00 "Joint Sealants".

2.8 INSULATION – FIRE RATED AND ACOUSTIC WALL ASSEMBLY

- .1 Mineral fibre acoustic fire batt insulation. Mineral-fibre acoustic fire batts to comply with CAN/ULC S702-09, Type 1, fire-resistant, and non-combustible in accordance with CAN/ULC-S114-05, with high density for sag-free, tight-fitting installation.
- .1 Acceptable Products:

- .1 Johns Manville 'MinWool Sound Attenuation Fire Batts'.
 - .2 Roxul 'AFB'.
 - .2 Acoustic sealant for concealed locations: Non-skinning butyl sealant, non-hardening, and remains soft and tacky, in compliance with CGSB 19.21-M87.
 - .3 Sealant shall not deteriorate, stain, or bleed into painted surfaces.
 - .4 Acceptable Products:
 - .1 DAP 'Mono Acoustic Sealant'.
 - .2 Pecora 'BA98'.
 - .3 Quiet Solution 'QuietSeal'.
 - .4 Tremco 'Acoustical Sealant'.
 - .2 Acoustic sealant for exposed locations: Interior paintable sealant, in accordance with Section 07 92 00.
 - .1 Acoustic sealant for plenum locations: Smoke-seal sealant with a flame-spread rating of not more than 25 and a smoke-developed classification of not more than 50, compliant with CAN/ULC-S102-10
 - .2 Mass-loaded acoustic partition closure:
 - .1 Acceptable Product: Emseal 'QuietJoint-SHG'.
 - .2 Field measure for opening width and depth.
 - .3 Noise barrier sheeting: AcoustiGuard 'Barymat 5 B-05'.
 - .4 Noise control board: 10mm thickness, Kinetics SPR Perimeter Isolation Board.
 - .5 Neoprene pads: Closed cell neoprene, in compliance with ASTM D1056-14.
- 3 Execution**
- 3.1 EXAMINATION**

- .1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 COORDINATION

- .1 Examine the mechanical and electrical drawings and coordinate with appropriate other trades to establish openings, additional support, furring out and other special provisions required for mechanical and electrical fixtures and fittings and access hatches built into the work of this Section.
- .2 Examine the architectural drawings and coordinate with appropriate other trades to establish openings, additional support and other special provisions required for items built into or partially supported by the work of this Section.
- .3 Prior to installation of gypsum board or cement board, coordinate with all other trades responsible for wall-mounted items and verify that the required back up blocking is in place and properly located and installed.

3.3 SUSPENSION FRAMING

- .1 Install ceiling systems in accordance with reviewed Shop Drawings and manufacturer's written instructions.
- .2 Install hanger wires plumb and securely anchored to the building structural framing, independent of walls, pipes, ducts, and metal deck; install additional framing and hangers to bridge interference items.
- .3 Install hanger wires at 1200 mm maximum centres along carrying channels, not less than 25 mm, and not more than 150 mm from channel ends.
- .4 Install additional hangers at lighting fixture and ductwork locations. Do not attach hanger wires to mechanical or electrical equipment. Do not support mechanical and electrical fixtures and fitting on ceiling without the ceiling manufacturer's written acceptance.
- .5 Install main carrying channels transverse to structural framing members. Lap main carrying channels 200 mm minimum at splices and wire each end with two loops and prevent clustering or lining-up of splices.
- .6 Install furring channels at 400 mm o.c., not less than 25 mm, and not more than 150 mm from perimeter walls, at openings, at interruptions in ceiling continuity, and at change in plane. Install furring channels to a tolerance of 3 mm maximum in 3600 mm.

- .7 Install additional main carrying and furring channels to frame and to reinforce openings such as recessed lighting fixtures, access hatches, ceiling grilles, outlet boxes, ventilating outlets and similar items.

3.4 CEILING BULKHEADS

- .1 Frame for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .2 Frame for complex bulkheads in accordance with the drawings.
- .3 Frame above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

3.5 FIRE RATED ASSEMBLIES

- .1 Install Products in fire rated assemblies in strict accordance with applicable ULC tested and approved designs.
- .2 Stiffen fire rated walls over 3.66 m high, where linear length of wall is greater than 2.44 m between perpendicular wall supports, with diagonal bracing above the ceiling extending perpendicular to wall at a 45E angle to structure above. Locate diagonal bracing at maximum 2.44 m o.c.
- .3 Where double layers of gypsum board are shown, and required for fire rating, screw first layer to studs and furring and laminate the second layer to the first using joint filler as an adhesive. Stagger joints between first and second layers.

3.6 ACOUSTICAL INSULATION

- .1 Install acoustic insulation in partitions, between steel studs, and as indicated on Contract Drawings and in accordance with the manufacturer's instructions. Fill stud cavities to full height of partitions and carefully cut and fit acoustic insulation around services and protrusions.

3.7 ACOUSTICAL SEALANT

- .1 Install acoustical sealant to acoustically insulated partitions in accordance with the manufacturer's instructions and Contract Drawings.
- .2 Install acoustical sealant under floor runner track, at partition perimeter both sides and at openings, cut-outs, and penetrations, concealed from view in the final installation.
- .3 Install firestop fill material behind fire rated acoustical sealant and provide firestop identification tag.

- .4 Smooth acoustical sealant with trowel prior to skin forming.

3.8 BUILT-IN CORNER GUARDS

- .1 Install built-in corner guards in accordance with manufacturer's written instructions level, secure and rigid.

3.9 GYPSUM BOARD

- .1 Comply with ASTM C840. Install gypsum board in accordance with reviewed Shop Drawings and manufacturer's written instructions.
- .2 Install gypsum board vertically or horizontally, whichever results in fewer end joints. Locate end joints over supporting members.
- .3 Install gypsum board in lightly butted contact at edges and ends and with 1.6 mm maximum open space between boards; do not force gypsum board into place. Do not install imperfect, damaged or damp boards.
- .4 Install gypsum board butting paired tapered edge joints, and mill-cut or field-cut end joints; do not place tapered edges against cut edges or ends.
- .5 Install vertical joints minimum 300 mm from the jamb lines of openings and stagger vertical joints over different studs on opposite sides of partitions.
- .6 Do not locate joints within 200 mm of corners or openings, except where control joints occur at jamb lines or where openings occur adjacent to corners. Where necessary, place a single vertical joint over the centre of wide openings.
- .7 Cut, drill and patch gypsum board as may be necessary to accommodate the work of other trades.
- .8 Fire Separations:
 - .1 Construct gypsum board assemblies, where located, in accordance with tested assemblies to obtain required or indicated fire rated assemblies. As a minimum fire separations shall consist of metal framing covered on both sides by fire-rated gypsum board.
 - .2 Install assemblies tightly to enclosing constructions to maintain integrity of the separations. Install casing beads at all perimeter edges.

3.10 CORNER, CASING BEADS AND TRIM

- .1 Corner reinforcing bead: Install along all external angles, erect plumb, level and with a minimum of joints. Secure with screws at 225 mm o.c. apply filler over flanges flush

with nose of the bead and extending at least 75 mm onto surface of board each side of corner. When filler dries, apply a thin coat of topping cement and blend onto adjoining surfaces.

- .2 Casing bead: Install where wallboard butts against a surface having no trim concealing the juncture and where shown on drawings. Erect casing beads plumb or level, with minimum joints, and secure with screws at 300 mm o.c. apply filler over flange flush with bead and extending at least 75 mm onto surface of board. When dry, apply a thin coat of topping cement and blend onto adjoining surfaces.
- .3 Recess channels and trim: Install recess channels and special metal trim where shown. Secure to substrate. Provide casing beads full height on wallboard edges at recess channels and metal trim.

3.11 **JOINT TAPING AND FINISHING**

- .1 Install reinforcing tape and a minimum of 3 coats of joint compound over gypsum board joints, metal trim and accessories, and screw fasteners in accordance with the gypsum board manufacturer's instructions.
- .2 Fill gaps between, and any imperfections in, gypsum boards with joint compound, allow to dry, and sand smooth ready for painting.
- .3 Install finished gypsum board work smooth, seamless, plumb, true, flush, and with square, plumb, and neat corners.
- .4 Finish gypsum board in accordance with ASTM C840 to the following grades:
 - .1 Level 0: No taping, finishing, or accessories required. Use above suspended ceilings and within other concealed spaces, unless the assembly is fire rated, sound rated, sound or smoke controlled, or unless the space serves as an air plenum.
 - .2 Level 1: At joints and interior angles embed tape in joint compound. Leave surface free of excess joint compound. Tool marks and ridges are acceptable. Use above suspended ceilings and within other concealed spaces if the gypsum board assembly is fire rated, sound rated, sound or smoke controlled, or the space serves as an air plenum.
 - .3 Level 2: At joints and interior angles embed tape in joint compound with one separate coat of joint compound applied over joints, angles, fastener heads, and accessories. Use for water resistant gypsum board indicated for use as a substrate for ceramic tile.
 - .4 Level 3: At joints and interior angles embed tape in joint compound with two separate coats of joint compound applied over all joints, angles, fastener

heads, and accessories. Apply joint compound smooth and free of tool marks and ridges. Use where heavy grade wall coverings are the final decoration.

.5 Level 4: At joints and interior angles embed tape in joint compound with three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply joint compound smooth and free of tool marks and ridges. Use for all locations except those indicated for other finish levels.

.6 Level 5: At joints and interior angles embed tape in joint compound with three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply a thin skim coat of joint compound, or a material manufactured especially for this purpose, to the entire surface. Leave surface smooth and free of tool marks and ridges. Use where semi-gloss or gloss finish coatings are the final decoration.

3.12 **GLASS MAT GYPSUM TILE BACKER INSTALLATION**

- .1 Except in showers, install tile backer board in accordance with the manufacturer's recommendations and to the satisfaction of the ceramic tile installer.
- .2 Place temporary 6 mm spacer strips around the lips of plumbing fixtures.
- .3 Precut boards to required sizes and make necessary cutouts. Fit ends and edges closely but not tightly.
- .4 Start by installing the boards adjacent to the spacer strips.
- .5 Stagger end joints in successive courses.
- .6 Fasten boards to steel studs and/or steel furring spaced at maximum 400 mm o.c. and to bottom plates with 32 mm steel screws at 200 mm o.c. with perimeter fasteners between 10 mm and 16 mm from the edges of the boards.
- .7 Prefill panel joints, and joints where panels abut other surfaces such as gypsum board, with tile setting mortar or adhesive and then immediately embed joint tape and level the joints. Coordinate with the ceramic tile installer to ensure compatibility of joint treatment material.
- .8 On portions of wall not to be tiled, apply tape over joints and angles and embed tape in joint compound. Trowel joint compound over the entire surface to produce a smooth surface.

3.13 **EXTERIOR SHEATHING BOARD INSTALLATION**

- .1 Install glass mat gypsum sheathing where indicated, in accordance with

the manufacturer's recommendations.

- .2 Install yellow side facing out.
- .3 Lay out boards so that joints are centered on framing or furring members. Stagger end joints.
- .4 Cut boards to fit irregular shapes and to fit snugly around door and window openings. On curved surfaces, score boards if required to maintain curves.
- .5 Ensure that all edges are supported continuously. Provide additional furring if necessary.
- .6 Butt boards together in an easy fit.
- .7 Fasten in accordance with the manufacturer's recommendations for the specific application. Maximum fastener spacing: 200 mm o.c.
- .8 Locate fasteners no closer than 10 mm from the edges of the boards and drive firmly against and flush with the surface of the sheathing. Do not countersink.
- .9 Install sheathing as per the manufacturer's guidelines and applicable standards, including GA-253, ASTM C1280-13, and ASTM C1397-13. Avoid bridging building expansion joints with the support system and frame both sides of joints using furring and other specified supports.
- .10 Utilize the longest board lengths possible to minimize joints. Stagger joints by offsetting them by at least one framing member, maintaining a minimum offset of 150 mm (6") from the corners of openings.
- .11 Position the exterior board side to face outward. Butt edges and ends lightly together, ensuring a maximum gap of 1.6 mm (1/16") without forcing boards into position.
- .12 Drive fasteners tightly against and flush with the sheathing surface without countersinking them.
- .13 Maintain a minimum distance of 10 mm (3/8") from edges and ends when positioning fasteners.
- .14 Provide necessary clearances between sheathing and structural elements to avoid transferring structural loads, ensuring a minimum gap of 16 mm (5/8").
- .15 Tolerances:

- .1 Ensure the sheathing is flat to within 6 mm over 3050 mm (1/4" over 10') when acting as a substrate for direct-applied or insulated finishing systems, as specified in ASTM C1397-13.
- .2 Maintain a maximum gap of 1.6 mm (1/16") at board joints.
- .3 Replace any damaged or weathered sheathing boards to maintain quality and performance.

3.14 ACCESSORIES

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm o.c.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

3.15 CONTROL JOINTS

- .1 Confirm locations of control joints with Consultant before installation.
- .2 Construct control joints of preformed units except where otherwise shown. At junction of partitions with bulkheads, where indicated on the drawings, use two casing beads as indicated on the drawings.
- .3 Set gypsum board facing in the preformed units or casing beads and support independently on both sides of joint.
- .4 Provide continuous dust barrier behind and across control joints.
- .5 Install control joints straight and true.
- .6 Where not otherwise indicated, locate control joints at the following locations; verify exact locations with the Consultant before installation:
 - .1 Changes in substrate construction
 - .2 Maximum 5 m spacing on walls or partitions to receive ceramic, porcelain or thin brick cladding or similar.
 - .3 Maximum 9 m spacing, horizontally and vertically on walls or partitions

.4 Maximum 9 m spacing on ceilings without perimeter relief in both directions.

.5 Maximum 15 m spacing on ceilings with perimeter relief in both directions.

3.16 FIRE SEPARATIONS

- .1 Install fire-rated assemblies in compliance with the assembly listing requirements to achieve the specified fire ratings and meet the requirements of authorities having jurisdiction.
- .2 Construct vertical bulkheads in ceiling spaces above fire-rated partitions, doors, and similar elements with the same fire rating as the partition below. Bulkheads should be constructed using gypsum board unless otherwise indicated.
- .3 Use fire-rated gypsum wallboard as specified in the project requirements.
- .4 For recessed lighting fixtures, diffusers, or similar installations in fire-rated ceilings or bulkheads, provide enclosures to maintain the required fire rating. Include removable panels to allow access to fixture outlet boxes.
- .5 When fire hose cabinets, fixtures, or equipment are recessed into fire-rated walls or partitions, provide gypsum board enclosures or backing to maintain the specified fire rating unless detailed otherwise.

3.17 ACCESS DOORS

- .1 Install access doors, supplied as part of other parts of the work, in accordance with manufacturer's written instructions. Access Doors by SECTION 10 95 00.

3.18 SITE TOLERANCES

- .1 Install metal support systems to ensure that, within a tolerance of +3 mm and -1.5 mm for plaster thickness, finish surfaces will be flat within 3 mm under a 3 m straightedge, and with no variation greater than 1.5 mm in any running 300 mm, and that surface planes shall be within 3 mm of dimensioned location.

3.19 WORK IN EXISTING AREAS

- .1 In existing areas, where existing gypsum board work has been demolished and/or damaged and repair work is required, provide new gypsum board finish.
- .2 Thoroughly prepare areas to be repaired. Provide neat, clean and straight cuts.
- .3 Finish all repair work as specified for new work.

- .4 In existing areas where existing openings are to be filled in with gypsum board, provide new gypsum board wall and ceiling construction. Ensure new board faces are flush with faces of abutting existing walls and ceilings.

3.20 REPAIR

- .1 Make good cut-outs for services and other work, fill in defective joints, holes and other depressions with joint compound.
- .2 Make good defective work, and ensure that surfaces are smooth, evenly textured and within specified tolerances to receive finish treatments.

3.21 CLEANING

- .1 Upon completion of the work of this Section, remove from the premises all surplus material, dirt and debris caused by the work of this Section and leave the installation clean.
- .2 Clean any drippage and spills of surplus setting compound from adjacent surfaces.
- .3 Make good any damage caused by the work of this Section.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Design, labour, Products, equipment and services necessary for pre-manufactureed wood panels, exposed grig suspension system with all accessories work in accordance with the Contract Documents.

1.2 REFERENCES

- .1 ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- .2 ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot- Dip Process.
- .3 ASTM A 1008 Standard Specification for Steel, Sheet, and Cold Rolled Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- .4 ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- .5 ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- .6 ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- .7 ASTM E 580 Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.
- .8 ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- .9 ASTM E 1264 Classification for Acoustical Ceiling Products.
- .10 Hardwood Plywood & Veneer Association (HPVA)
- .11 International Building Code
- .12 ASHRAE Standard 62 1 2004 Ventilation for Acceptable Indoor Air Quality
- .13 NFPA 70 National Electrical Code
- .14 ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
- .15 International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

- .16 International Code Council-Evaluation Services Report - Seismic Engineer Report: ESR 1308 - Armstrong T-Bar or Dimensional Suspension
- .17 California Air Resources Board (CARB) compliant
- .18 LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

1.3 **SUBMITTALS**

- .1 Shop drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 indicating:
 - .1 Suspension system layout including hangers and supports for acoustic tile system.
 - .2 Wood panel system including suspension system, hangers, supports and panel sizes and locations.
 - .3 Conditions at abutting, intersecting, and penetrating construction.
 - .4 Dimensioned locations of lighting fixtures, diffusers, sprinkler heads and other items that pierce the ceiling plane.
 - .2 Samples:
 - .1 Submit following samples in accordance with Section 01 33 00:
 - .1 One full-size sample of each type of wood panels to be used.
 - .2 One of each type of suspension system members.
 - .3 Certificates:
 - .1 Submit written certification stating that suspended ceiling system is designed for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.
 - .2 Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.
 - .4 Non-Conformance: All products not conforming to the requirements of this specification and or the manufacturer's published values are to be disposed. The Contractor performing the work will replace with approved product at their expense.

1.4 **QUALITY ASSURANCE**

- .1 Mock-up:

- .1 Single-Source Responsibility: Provide ceiling panels by a single manufacturer.
 - .2 Construct one 3 m² mock-up for each type of ceiling system incorporating typical light fixture and other typical mechanical and electrical fixtures.
 - .3 Test the adequacy of the suspension system to support the fixtures without deflection of ceiling or failure of hanging wire anchorage. Supply copy of Test Results to Consultant.
 - .4 Change materials and installation methods if tests indicate proposed system is inadequate and re-test as necessary until system approved.
 - .5 Give early notice to Consultant and Mechanical and Electrical Trades and cooperate with them in selecting suitable location for sample ceiling and timing of installation and test.
 - .6 Do not commence general installation work until sample ceiling approved, then install ceiling to conform with approved samples.
 - .7 Mock-up may form part of final Work, if acceptable to Consultant. Remove and dispose of mock-ups which do not form part of Work.
 - .8 Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.
- .2 The Zero Carbon Building – Design Standard v4- Design Requirements:
- .1 The Zero Carbon Building – Design Standard v4 requirements shall apply to all relevant sections and work for this project, whether specifically indicated or not.
 - .2 Compliance with the requirements needed to achieve The Zero Carbon Building – Design Standard v4 - Design certification will be used as one criterion to evaluate requests for substitutions or alternates.

1.5 **SITE CONDITIONS**

- .1 Do not install the work of this Section until:
 - .1 Mechanical and electrical work above the ceiling is complete.
 - .2 Relative humidity is below 80 %.
 - .3 Ventilation is adequate to remove excess moisture.
 - .4 Areas are closed and protected against weather, and maintained at no less than 10°C.

- .2 Install temporary protection and facilities to maintain Product manufacturer's, and above specification, environmental requirements 24 h before, during, and after installation.

1.6 PROJECT CONDITIONS

- .1 Wood ceiling materials should be permitted to reach room temperature and have a stabilized moisture content for a minimum of 72 hours before installation. (Remove plastic wrap to allow panels to climatize).
- .2 The wood panels should not be installed in spaces where the temperature or humidity conditions vary from the temperatures and conditions that will be normal in the occupied space.
- .3 As interior finish products, the veneered panels are designed for installation in temperature conditions between 50 degrees F and 86 degrees F, in spaces where the building is enclosed, and HVAC systems are functioning and will be in continuous operation. Relative humidity should not fall below 25 percent or exceed 55 percent.

1.7 MAINTENANCE

- .1 Submit extra acoustic ceilings amounting to 5% of gross ceiling area, allowing proportionately for each pattern and type specified to nearest full carton. Submit Products which are part of same production run as installed Products. Store maintenance Products as directed by Consultant.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Store ceiling components in a dry interior location in their cartons prior to installation to avoid damage. Store cartons in a flat, horizontal position. The protectors between the panels should not be removed until installation.
- .2 Do not store in unconditioned spaces with humidity greater than 55 percent or lower than 25 percent relative humidity and temperatures lower than 50 degrees F or greater than 86 degrees F. Panels must not be exposed to extreme temperatures, for example, close to a heating source or near a window with direct sunlight.
- .3 Handle ceiling units carefully to avoid chipped edges or damage to units in any way.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials, including packaging materials, in accordance with Section 01 74 21 "Construction Waste Management and Disposal".

2 Products

2.1 MATERIALS

- .1 Acceptable Manufacturers:
 - .1 Au.diSlat: Atkar North America (Basis of Design), or
 - .2 2100 Panelized Linear by 9Wood.

- .2 Suspension Systems:
 - .1 Armstrong
 - .2 CGC/USG
 - .3 Certainteed

2.2 **WOOD CEILING UNITS**

- .1 Interior Linear Ceiling Panels Type C-5:
 - .1 Panel Width: 305mm (12") coverage
 - .2 Panel Length: as required per drawings, up to 10ft – panel lengths are nominal and will be provided 25mm (1") short to allow for the installation/expansion reveal.
 - .3 Core: Solid
 - .4 Species: Maple (WD-1)
 - .5 Cut: Flat-cut
 - .6 Finish (factory applied): Custom stain to match Douglas Fir, matte sheen
 - .7 Slat Width: 83mm (3-1/4")
 - .8 Slat Depth: 19mm (3/4")
 - .9 Slat Spacing (on centre)/# of slats per panel: 102mm (4") on centre, 3 slats/panel
 - .10 Backing: Integrated Acoustic Fabric (IAF), black
 - .11 Fire Rating (CAN/ULC-S102): provide components meeting the following:
 - .1 Flame Spread Rating (FSR): <25
 - .2 Smoke Developed Classification (SDC): <50
 - .12 Acceptable Product: Au.diSlat Linear AX6L/A083 as manufactured by Atkar North America. Or acceptable equivalent from:

- .1 Armstrong World Industries
 - .2 CertainTeed Architectural
 - .3 Geometrik Manufacturing
- .2 Interior Triangular Ceiling Panels Type C-6A:
 - .1 Panel Width: as required for triangular panels
 - .2 Panel Length: as required for triangular panels
 - .3 Core: Solid
 - .4 Species: Maple (WD-1)
 - .5 Cut: Flat-cut
 - .6 Finish (factory applied): Custom stain to match Douglas Fir, matte sheen
 - .7 Slat Width: 83mm (3-1/4")
 - .8 Slat Depth: 19mm (3/4")
 - .9 Slat Spacing (on centre): 102mm (4") on centre
 - .10 Backing: Integrated Acoustic Fabric (IAF), black
 - .11 Fire Rating (CAN/ULC-S102): provide components meeting the following:
 - .1 Flame Spread Rating (FSR): <25
 - .2 Smoke Developed Classification (SDC): <50
 - .12 Acceptable Product: Au.diSlat Linear AXS6L/A083 as manufactured by Atkar North America. Or acceptable equivalent from:
 - .1 Armstrong World Industries
 - .2 CertainTeed Architectural
 - .3 Geometrik Manufacturing
- .3 Exterior Triangular Ceiling Panels Type C-6B:
 - .1 Panel Width: as required for triangular panels
 - .2 Panel Length: as required for triangular panels

- .3 Core: Solid
- .4 Species: Douglas Fir, D & Better (WD-5)
- .5 Cut: Flat-cut
- .6 Finish (factory applied): Clear, matte sheen
- .7 Slat Width: 83mm (3-1/4")
- .8 Slat Depth: 19mm (3/4")
- .9 Slat Spacing (on centre): 102mm (4") on centre
- .10 Backing: Dorken Systems Delta Fassade S, black
- .11 Fire Rating (CAN/ULC-S102): provide components meeting the following:
 - .1 Flame Spread Rating (FSR): <25
 - .2 Smoke Developed Classification (SDC): <450
- .12 Acceptable Product: Au.diSlat Linear AXS6L/A083 as manufactured by Atkar North America. Or acceptable equivalent from:
 - .1 Armstrong World Industries
 - .2 CertainTeed Architectural
 - .3 Geometrik Manufacturing
- .13 Accessories:
 - .1 Access Panels – when access panels are consistent in size and large enough in quantity, order them pre-manufactured. For smaller quantities and custom sizes access panels, make them in the field.
 - .2 Touch-up Kit – extra edgebanding and finishing products as required for treating field cut panels.
 - .3 Trims – perimeter and other matching wood trims as detailed in the drawings.
- .4 **SUSPENSION SYSTEMS**
 - .1 Components: All main beams and cross tees shall be commercial quality hot dipped galvanized steel as per ASTM A653. Main beams and cross tees are double-web steel construction with 15/16-inch type exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel

in baked polyester paint. Main beams and cross tees shall have rotary stitching.

- .1 Structural Classification: ASTM C635 (Heavy Duty)
- .2 Color: Black.
- .3 Acceptable Product: Prelude XL 15/16" 12' HD Main beam item 7301BL, Prelude XL 2' Cross Tee XL8320BL as manufactured by Armstrong World Industries, or equivalent from: CGC/USG or CertainTeed
- .4 12-Gauge Hanger Wire
- .2 Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- .3 Wire for Hangers and Ties: ASTM A641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least three times design load, but not less than 12 gauge.
- .4 Accessories/Edge Moldings and Perimeter Trim:
 - .1 7/8" Angle Wall Molding
 - .2 Axiom Vector Straight Trim - Recommend in Black 6" and up, or equivalent from selected suspension manufacturer.
 - .3 Axiom Vector Curved Trim - Recommend in Black 6" and up, or equivalent from selected suspension manufacturer.

3 Execution

3.1 EXAMINATION

- .1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out.
- .3 Proper designs for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure supply air is properly filtered and the building interior is free of construction dust.

3.2 PREPARATION

- .1 Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.
- .2 Wood ceiling materials should be permitted to reach room temperature and have a stabilized moisture content for a minimum of 72 hours before installation. (Remove plastic wrap to allow panels to climatize).

3.3 INSTALLATION

- .1 Interior Wood products, the veneered wood panels are designed for installation in temperature conditions between 50 degrees F and 86 degrees F, in spaces where the building is enclosed, and HVAC systems are functioning and will be in continuous operation. Relative humidity should not fall below 25 percent or exceed 55 percent.
- .2 Install suspension system and panels in compliance with ASTM C636, ASTM E580, with the approval of the authorities having jurisdiction, and in accordance with the manufacturer's Installation Instructions.

3.4 SUSPENSION SYSTEM

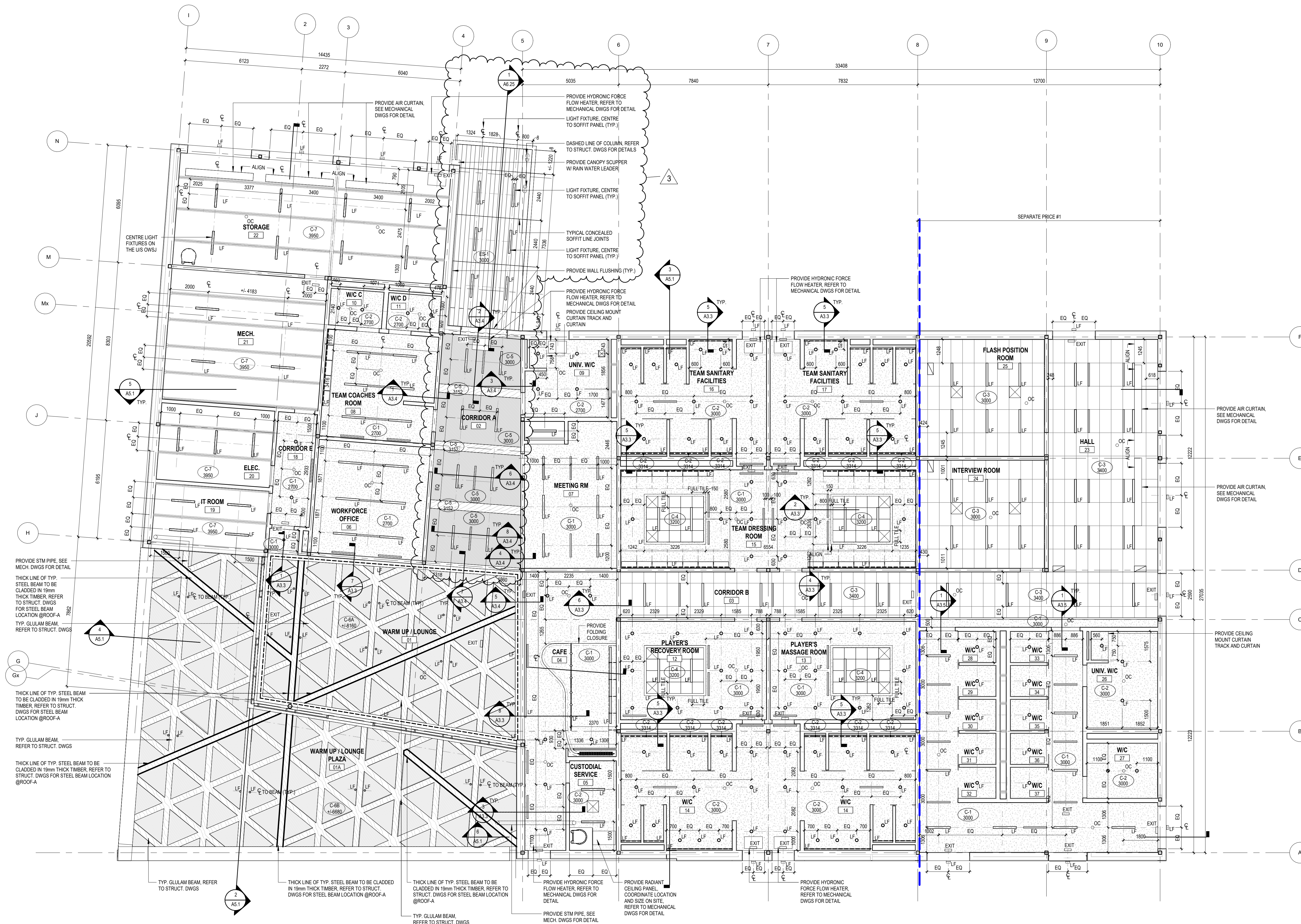
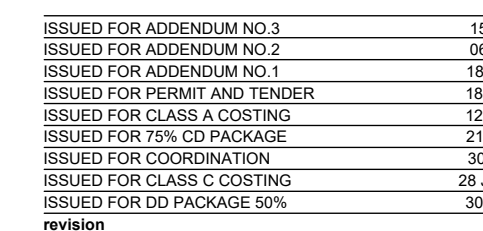
- .1 Coordinate locations and openings of mechanical and electrical services support, and penetration through the acoustical ceilings. Coordinate field conditions, clearances, measurements, and mechanical and electrical services testing and commissioning, above the acoustical ceilings.
- .2 Install hanger wires plumb and securely anchored to the building structural framing, independent of walls, pipes, ducts, and metal deck; install additional framing and hangers to bridge interference items.
- .3 Install hanger wires at 1200 mm maximum centres along carrying channels, not less than 25 mm, and not more than 150 mm from channel ends.
- .4 Install additional hangers at lighting fixture and air distribution ductwork locations. Do not attach hanger wires to mechanical or electrical equipment. Do not support mechanical and electrical fixtures and fitting on ceiling without the ceiling manufacturer's written acceptance.
- .5 Install wood ceiling suspension system to a tolerance of 1:1200 of span and 0.4 mm maximum between adjacent metal members. Tolerances are not cumulative. Refer to Electrical Contract Drawings for fixture layout.
- .6 Do not bend or twist hangers as a means of levelling. Form double loops tightly and lock to prevent vertical movement or rotation within the loop.
- .7 Install edge moulding at intersection of ceiling and vertical surfaces.

- .8 Centre acoustical ceiling suspension systems on room axis; install equal border pieces. Install hangers onto the ends of main tee runners at not more than 150 mm from ends of runners, adjacent and perpendicular to walls.
- .9 Support the suspension system independently of walls, columns, ducts, pipes and conduits.
- .10 Install main runners in maximum available lengths. Layout joints in suspension members to avoid the perimeters of recessed fixtures. Lock grid members to form a rigid assembly. Install additional tee, suspension system framing around recessed fixtures, diffusers, grilles and other items for a complete assembly.

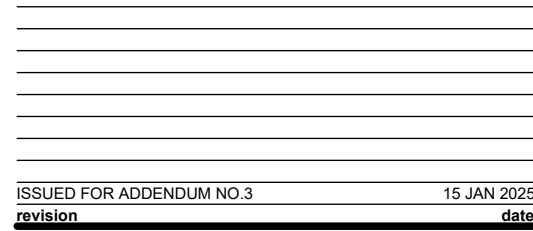
3.5 ADJUSTMENTS AND CLEANING

- .1 Clean soiled or discoloured surfaces of exposed work on completion of work.
- .2 Replace components which are visibly damaged, marred or uncleanable.
- .3 Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.

END OF SECTION

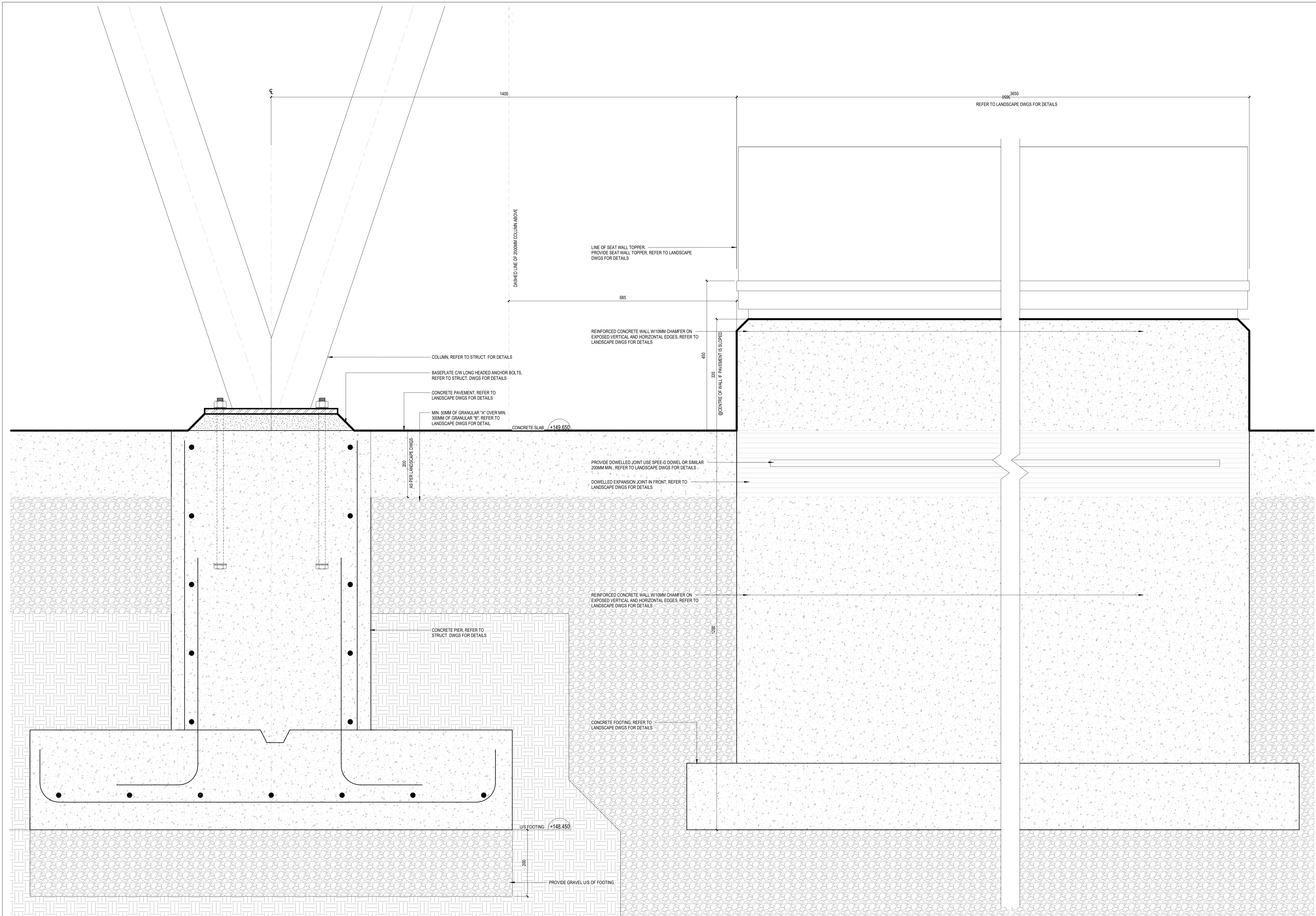


1 GAME REFLECTED CEILING PLAN
A3.1 1 : 100



GENERAL NOTES:

1. THESE CONTRACT DOCUMENTS ARE THE PROPERTY OF THE ARCHITECT. THE ARCHITECT BEARS NO RESPONSIBILITY FOR THE MISINTERPRETATIONS OF THESE DOCUMENTS BY THE CONTRACTOR. UPON WRITTEN APPLICATION THE ARCHITECT WILL PROVIDE WRITTEN / GRAPHIC CLARIFICATION OR SUPPLEMENTAL INFORMATION REGARDING THE INTENT OF THE CONTRACT DOCUMENTS. THE ARCHITECT WILL REVIEW SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR FOR DESIGN CONFORMANCE ONLY.
2. DRAWINGS ARE NOT TO BE SCALED FOR CONSTRUCTION. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS REQUIRED TO PERFORM THE WORK AND REPORT ANY DISCREPANCIES WITH THE CONTRACT DOCUMENTS TO THE ARCHITECT BEFORE COMMENCING WORK.
3. POSITIONS OF EXPOSED OR FINISHED MECHANICAL OR ELECTRICAL DEVICES, FITTINGS, AND FIXTURES ARE INDICATED ON THE ARCHITECTURAL DRAWINGS. THE LOCATIONS SHOWN ON THE ARCHITECTURAL DRAWINGS GOVERN OVER THE MECHANICAL AND ELECTRICAL DRAWINGS. THOSE ITEMS NOT CLEARLY LOCATED WILL BE LOCATED AS PER DIRECTED BY THE ARCHITECT.



ISSUED FOR ADDENDUM NO.3	15 JAN 2025
revision	date

**FIFA - EAST VSTS
CENTENNIAL PARK**
Address: 56 Centennial Park Rd, Toronto, ON
**SECTION DETAILS -
CANOPY COLUMN BASE
AND SEAT WALL TOPPER**

project no.: 2318E
scale: 1 : 5
date: 15 JAN 2025
drawing no.:

A6.26

ADDENDUM



To:	Cherie Ng Architect Inc. Toronto, ON	No.:	3
		Date:	January 15, 2025
		Project:	FIFA East VSTS - 56 Centennial Park Rd.
Fax/Email:	cng@cherieng.com		
Attention:	Cherie Ng		
From:	Cassandra Kani-Sanchez	Project No.:	2024-0112

This Addendum shall be attached to the drawings and specifications and shall form an integral part of the Contract Documents. The contents of this Addendum shall be brought to the attention of all concerned.

DRAWINGS

1. **DRAWING M-411.0 GROUND FLOOR HAME HVAC PIPING – BASE SCOPE (DRAWING RE-ISSUED)**
 - 1.1. Revised hydronic piping, as shown.
2. **DRAWING M-600.0 HEATING AND COOLING SCHEMATIC – BASE SCOPE (DRAWING RE-ISSUED)**
 - 2.1. Added note 8.
 - 2.2. Deleted 2 FFH-1 and 2 FFH-2, to match floor plans.
 - 2.3. Added 2 FFH-4, 1 FFH-3, 1 RP-1, to match floor plans.
 - 2.4. Deleted 2 2-way valves and 2 3-way valves.
3. **DRAWING M-700.0 CONTROL SCHEMATICS – BASE SCOPE (DRAWING RE-ISSUED)**
 - 3.1. Revised valves on Detail 6.
4. **DRAWING M-800.0 MECHANICAL SCHEDULES I – BASE SCOPE (DRAWING RE-ISSUED)**
 - 4.1. Revised pump schedule.
 - 4.2. Revised make-up air unit schedule.
 - 4.3. Revised expansion tank schedule.

No.: 3
To: CHERIE NG ARCHITEC INC.
Attention: CHERIE NG
Date: January 15, 2025
Project No.: 2024-0112

5. **DRAWING M-801.0 MECHANICAL SCHEDULES II – BASE SCOPE
(DRAWING RE-ISSUED)**

- 5.1. Revised water to water heat pump schedule.
- 5.2. Revised heat pump schedule.
- 5.3. Revised electric humidifier schedule.
- 5.4. Revised silencer schedule.

6. **DRAWING M-802.0 MECHANICAL SCHEDULES III – BASE SCOPE
(DRAWING RE-ISSUED)**

- 6.1. Revised hydronic force flow heater schedule.
- 6.2. Revised heat exchanger schedule.

7. **DRAWING M-600.1 HEATING AND COOLING SCHEMATIC – SEPARATE
PRICE 1 (DRAWING RE-ISSUED)**

- 7.1. Added note 8.
- 7.2. Added 2 sub-meters.
- 7.3. Adjusted hydronic line sizes to match floor plans.
- 7.4. Deleted 2 2-way valves and 2 3-way valves.
- 7.5. Revised location of FFH-1 and RP-1 to match floor plans.
- 7.6. Deleted 2 FFH-2, to match floor plans.
- 7.7. Added 1 RP-1 and 2 FFH-4, to match floor plans.

8. **DRAWING M-700.1 CONTROL SCHEMATICS – SEPARATE PRICE 1
(DRAWING RE-ISSUED)**

- 8.1. Revised valves on Detail 6.

9. **DRAWING M-800.1 MECHANICAL SCHEDULES I – SEPARATE PRICE 1
(DRAWING RE-ISSUED)**

- 9.1. Revised pump schedule.
- 9.2. Revised make-up air unit schedule.

No.: 3
To: CHERIE NG ARCHITEC INC.
Attention: CHERIE NG
Date: January 15, 2025
Project No.: 2024-0112

9.3. Revised expansion tank schedule.

10. **DRAWING M-801.1 MECHANICAL SCHEDULES II – SEPARATE PRICE 1 (DRAWING RE-ISSUED)**

10.1. Revised water to water heat pump schedule.

10.2. Revised heat pump schedule.

10.3. Revised electric humidifier schedule.

10.4. Revised silencer schedule.

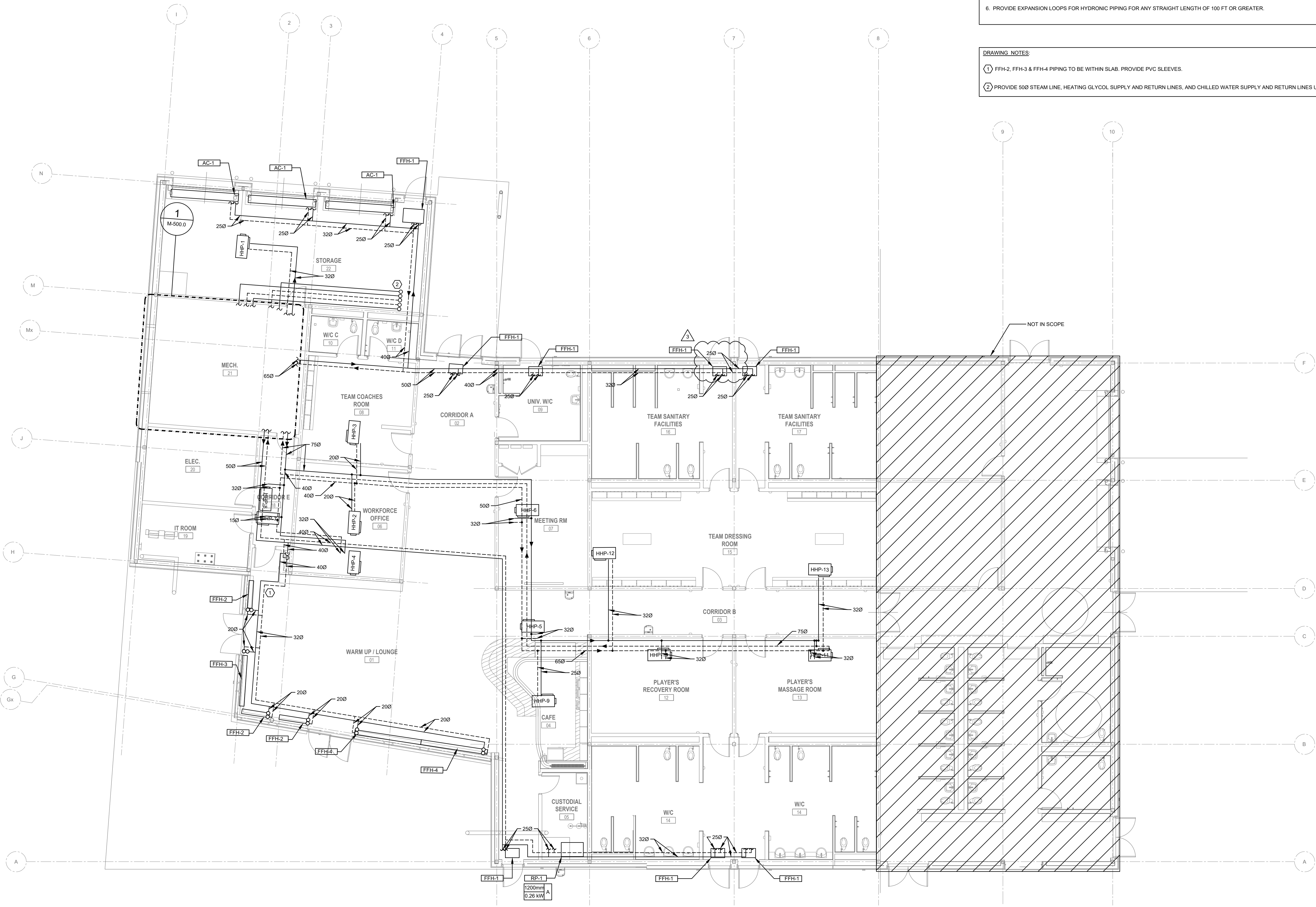
11. **DRAWING M-802.1 MECHANICAL SCHEDULES III – SEPARATE PRICE 1 (DRAWING RE-ISSUED)**

11.1. Revised hydronic force flow heater schedule.

11.2. Revised heat exchanger schedule.

End of Addendum



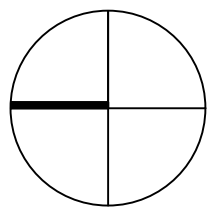


- GENERAL NOTES:
1. CONTRACTOR SHOULD REFER TO REFLECTED CEILING PLAN FOR COORDINATION WITH MECHANICAL EQUIPMENT.
 2. ALL EXPOSED PIPING WITH INSULATION TO BE COMPLETE WITH PVC JACKETING.
 3. PROVIDE ELECTRIC PIPE TRACING ON ALL PIPING SUBJECT TO FREEZING OR IN UNHEATED SPACES.
 4. COORDINATE WORK SHOWN ON DRAWINGS WITH STRUCTURAL BEAM LAYOUTS TO PROVIDE PIPE SLEEVE AND/OR DUCT OPENINGS NECESSARY TO MAINTAIN MECHANICAL WORK WITHIN ACCEPTABLE HEAD ROOM.
 5. ALL PIPING AND DUCTWORK IN CEILING SPACE SHALL BE INSTALLED AS TIGHT AS POSSIBLE TO UNDERSIDE OF FLOOR SLAB. WHERE POSSIBLE, RUN PIPES THROUGH OPEN WEB JOISTS. COORDINATE OPENINGS FOR PIPES THROUGH STRUCTURAL BEAMS WITH STRUCTURAL, AS REQUIRED.
 6. PROVIDE EXPANSION LOOPS FOR HYDRONIC PIPING FOR ANY STRAIGHT LENGTH OF 100 FT OR GREATER.

- DRAWING NOTES:
- ① FFH-2, FFH-3 & FFH-4 PIPING TO BE WITHIN SLAB. PROVIDE PVC SLEEVES.
 - ② PROVIDE 500 STEAM LINE, HEATING GLYCOL SUPPLY AND RETURN LINES, AND CHILLED WATER SUPPLY AND RETURN LINES UP TO MUA-1 ON ROOF.



ISSUED FOR ADDENDUM NO. 3	2025-01-15
ISSUED FOR ADDENDUM NO. 1	2024-12-18
ISSUED FOR TENDER	2024-11-06
ISSUED FOR PROGRESS	2024-09-02
ISSUED FOR PROGRESS	2024-06-15
revision	600



FIFA - EAST VSTS
CENTENNIAL PARK
Address: 56 Centennial Park Rd. Toronto, ON

EAST VSTS GROUND FLOOR
GAME HVAC PIPING
- BASE SCOPE

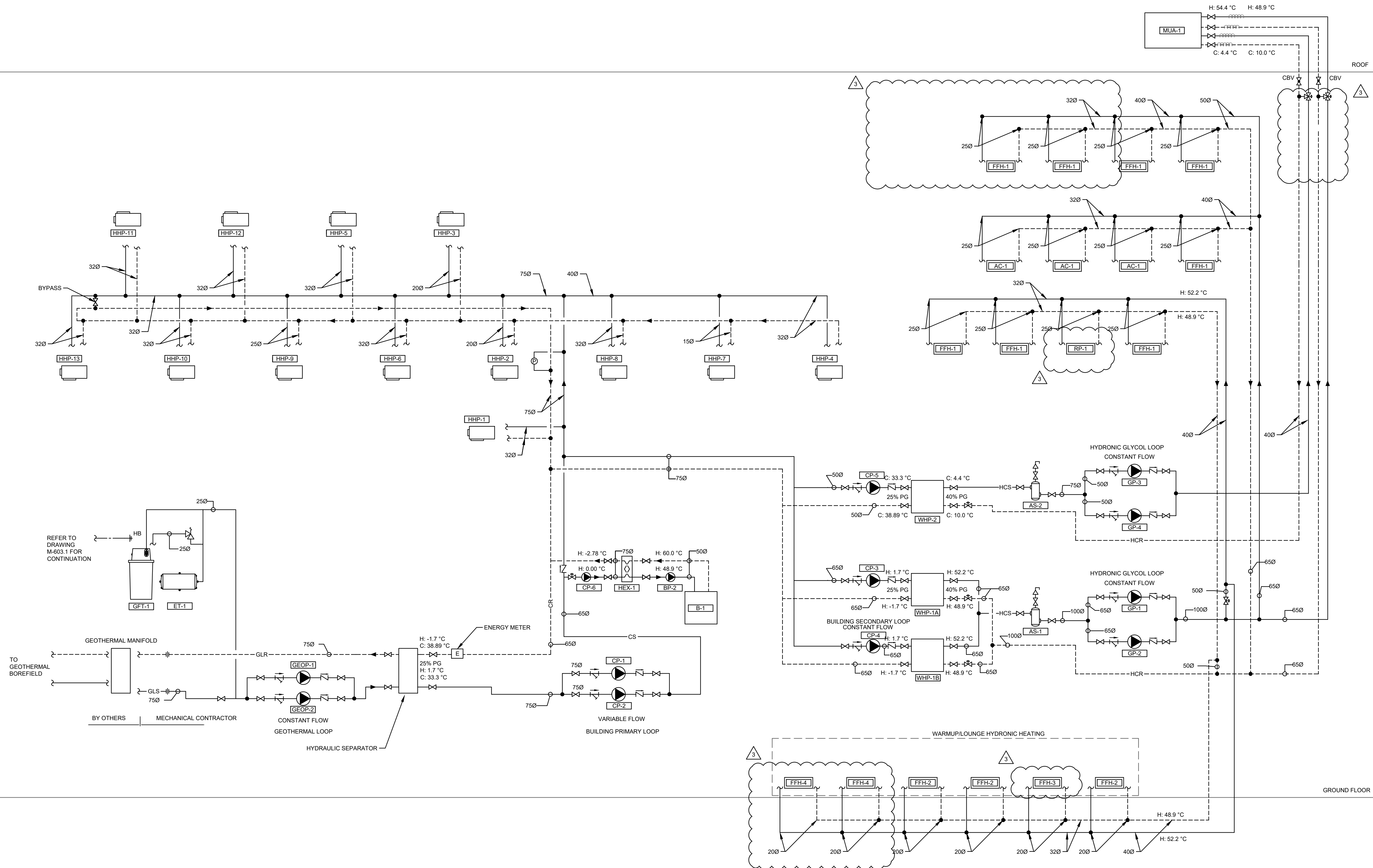
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date :
drawing no. :

M-411.0



GENERAL NOTES:

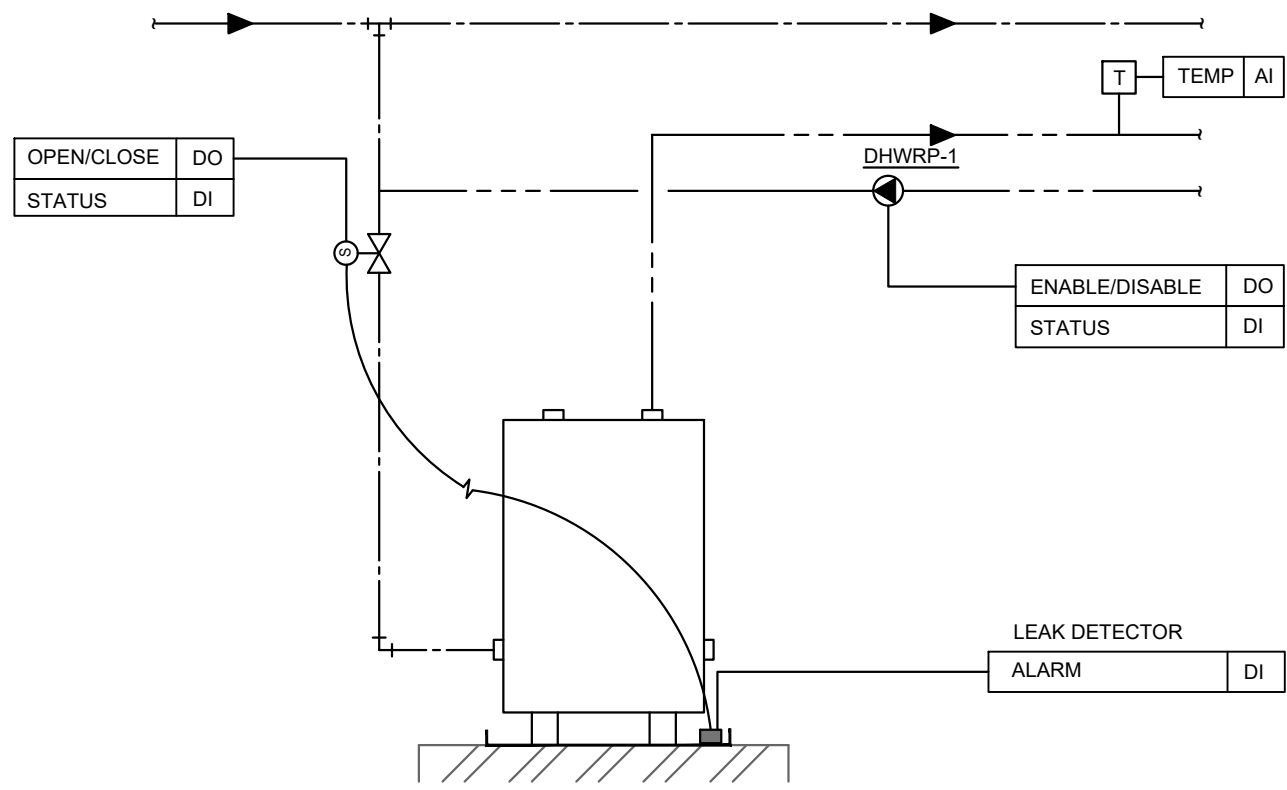
- ERV MAKE-UP WATER LINE DRAIN AND OVERFLOW TO BE ELECTRICALLY TRACED AND INSULATED, C/W WEATHER PROOF JACKET.
- PROVIDE ISOLATION VALVES ON ALL BRANCH LINES AND AT ALL EQUIPMENT.
- PROVIDE VIBRATION ISOLATION FOR ALL ROTATING EQUIPMENT.
- CONDENSER WATER PIPING OUTDOORS TO BE ELECTRICALLY TRACED AND INSULATED, C/W WEATHER PROOF JACKET.
- EXPANSION COMPENSATION AND ANCHORING SYSTEM SHOP DRAWINGS TO BE STAMPED BY A LICENSED PROFESSIONAL ENGINEER. PROVIDE EXPANSION LOOPS AS REQUIRED IN MIDDLE OF 100 FT (OR GREATER) HYDRONIC PIPING SECTIONS.
- HEAT TRACE ALL PIPING SUBJECT TO FREEZING.
- CENTRALLY METER PLANT MECHANICAL SERVICES ON DIGITAL METERING SYSTEM (DMS) (OR BAS). REFER TO CONTROL DIAGRAMS AND SEQUENCE OF OPERATIONS FOR METERING SCOPE.
- REFER TO CONTROL SCHEMATICS FOR LOCATIONS OF ALL CONTROL VALVES.



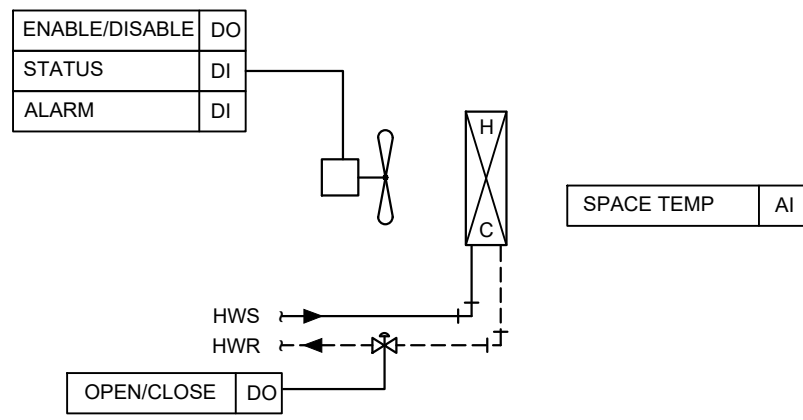
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ISSUED FOR ADDENDUM NO. 1	2024-12-18
ISSUED FOR TENDER	2024-11-08
ISSUED FOR PROGRESS	2024-09-23
revision	001

FIFA - EAST VSTS
CENTENNIAL PARK
Address: 56 Centennial Park Rd. Toronto, ON
EAST VSTS HEATING AND
COOLING SCHEMATIC - BASE
SCOPE

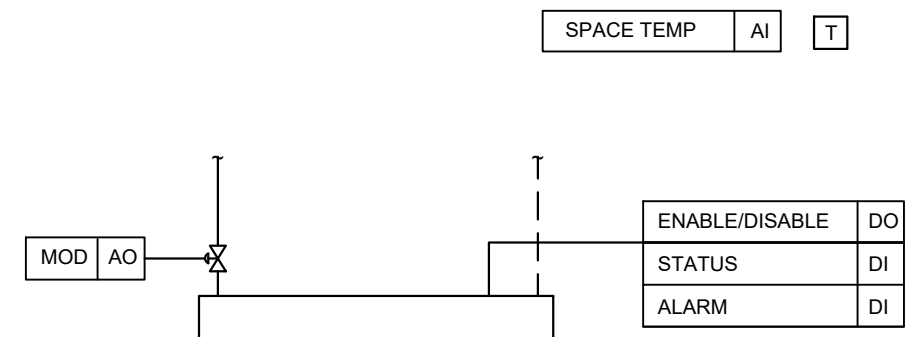
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scale: N.T.S.
date:
drawing no.: M-600.0



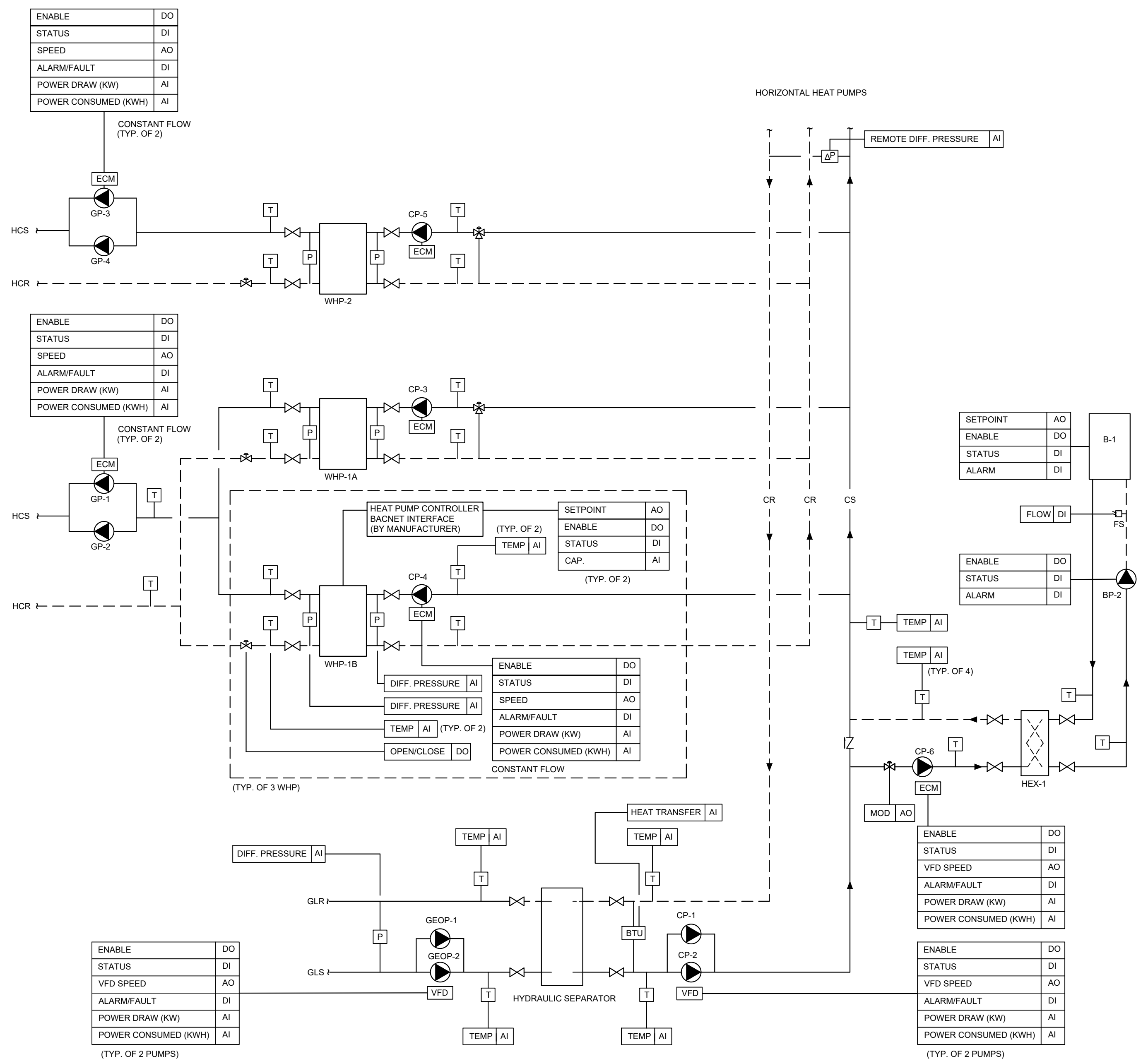
3 HWT W/ SOLENOID VALVE AND LEAK DETECTOR
M-700.0 SCALE: N.T.S.



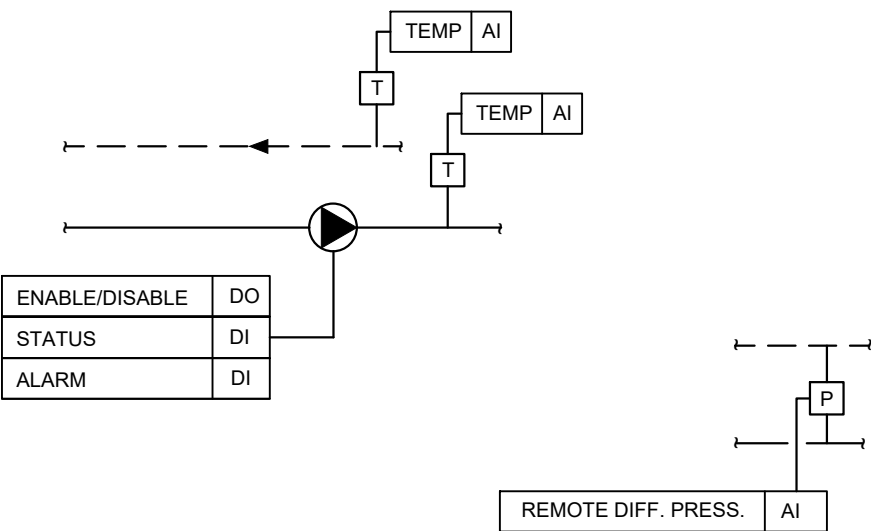
2 UNIT HEATER, FORCE FLOW HEATER
M-700.0 SCALE: N.T.S.



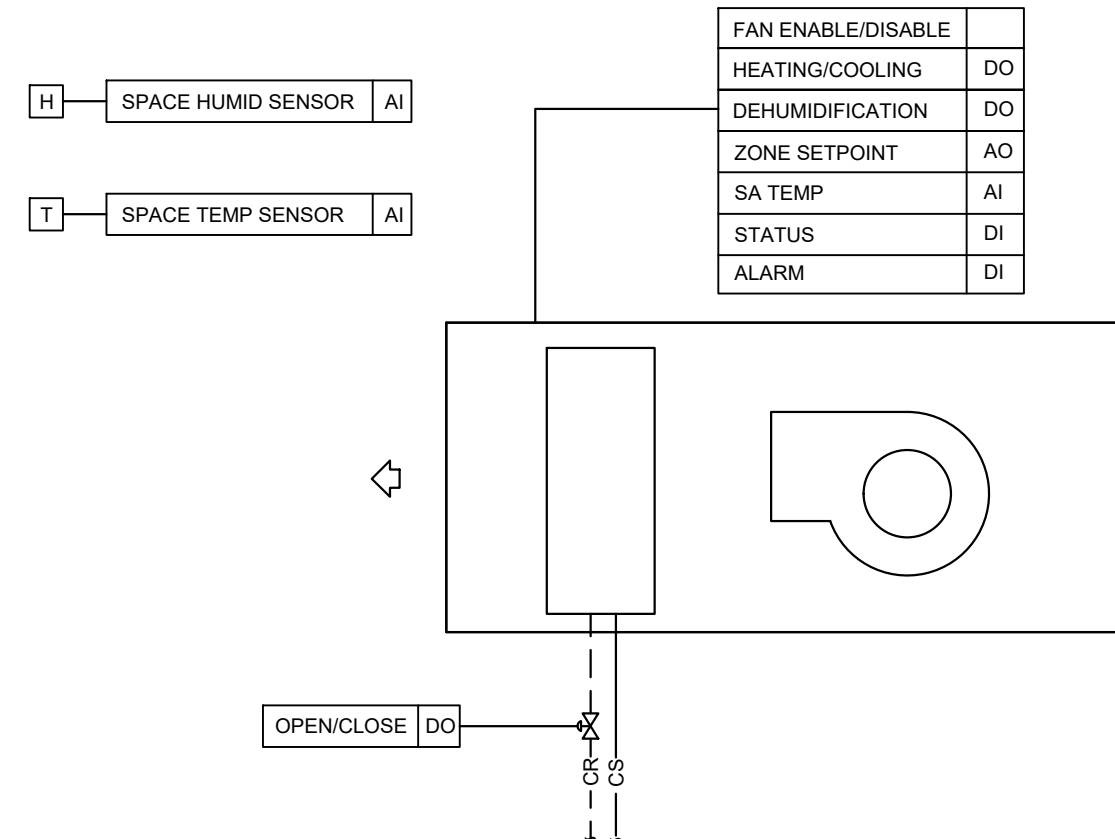
1 RADIANT PANEL HEATING
M-700.0 SCALE: N.T.S.



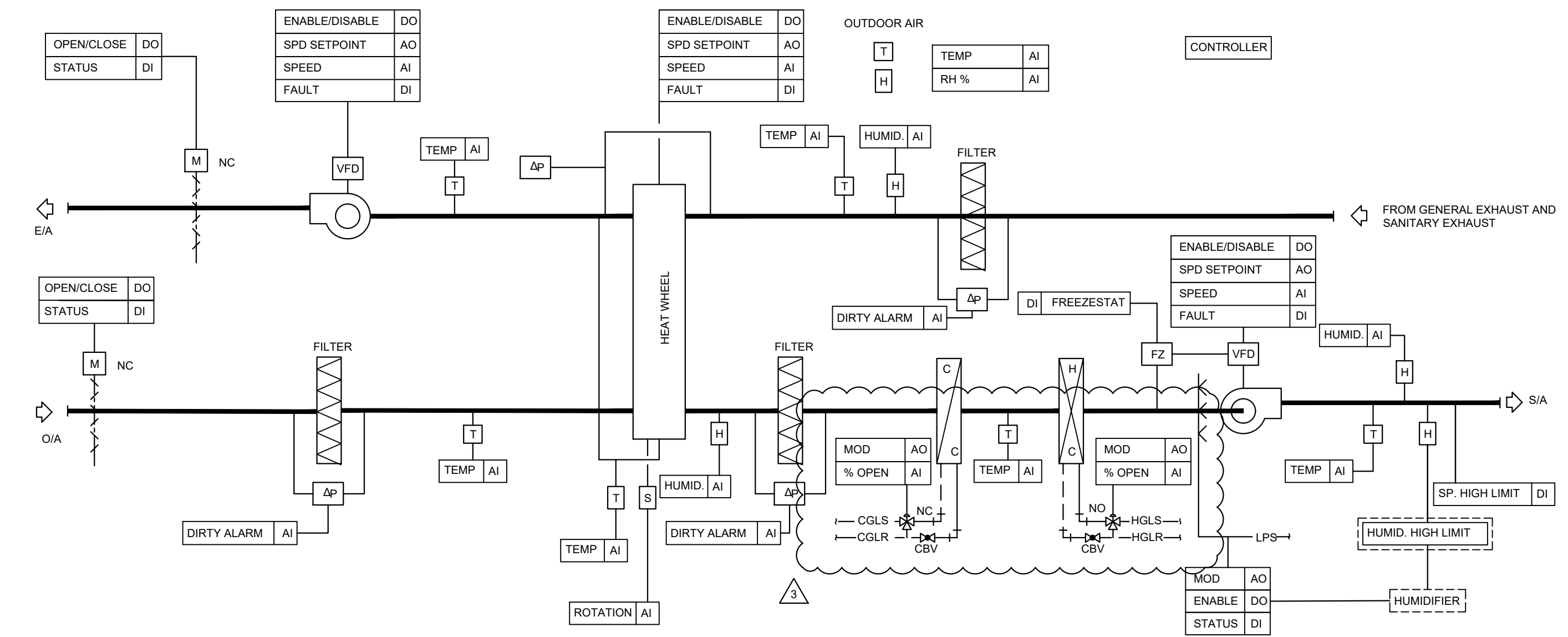
7 GEOTHERMAL HEATING AND COOLING PLANT CONTROLS
M-700.0 SCALE: N.T.S.



5 MISC HEAT CIRCULATING PUMP
M-700.0 SCALE: N.T.S.



4 HEAT PUMPS - HORIZONTAL
M-700.0 SCALE: N.T.S.



6 MAKE UP AIR UNIT
M-700.0 SCALE: N.T.S.

PUMP SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	PUMP SPECIFICATIONS					ELEC. (V/PH/Hz)	EMERGENCY POWER	PRESSURE RATING (kPa)	FLUID	VFD/ STARTER	WEIGHT (KG)	REMARKS
					FLOW (L/S)	HEAD (kPa)	SPEED (RPM)	MOTOR POWER (HP)	BHP (HP)							
GEOP-1/2	GEOTHERMAL GROUND LOOP	MECH ROOM	BELL & GOSSETT	e-80SC	6.90	209.23	3,600	7.50	3.02	575/3/60	-	-	25% PG	VFD	113	DUTY/STANDY
CP-1/2	BUILDING PRIMARY LOOP	MECH ROOM	BELL & GOSSETT	e-80SC	9.00	188.31	1,800	5.00	3.68	575/3/60	-	-	25% PG	-	118	PUMPS TO OPERATE IN PARALLEL EACH SIZED FOR 75% OF SYSTEM FLOW.
CP-3/4	HEATING WWHP SOURCE PUMPS	MECH ROOM	BELL & GOSSETT	PL-100	2.91	41.85	3,250	0.40	0.45	575/3/60	-	-	25% PG	-	7	DUTY/DUTY
GP-1/2	HEATING GLYCOL LOOP	MECH ROOM	BELL & GOSSETT	1.25AAB	6.40	170.38	3,600	3.00	2.45	575/3/60	-	-	40% PG	-	30	LEAD/LAG
BP-1	DOMESTIC HOT WATER	MECH ROOM	BELL & GOSSETT	NBF-25	0.38	44.84	2,950	-	-	115/1/60	-	-	25% PG	-	-	-
DHWRP-1	DHW RECIRCULATION	MECH ROOM	BELL & GOSSETT	NBF-45	0.32	62.77	3,300	0.17	-	115/1/60	-	-	DOMESTIC WATER	-	7	-
GP-3/4	COOLING GLYCOL LOOP	MECH ROOM	BELL & GOSSETT	PL-55	1.26	95.65	3,250	0.40	-	115/1/60	-	-	WATER	-	6	DUTY/STANDBY
CP-5	COOLING WWHP SOURCE PUMP	MECH ROOM	BELL & GOSSETT	1.5AB	1.77	67.85	1,725	0.75	0.43	575/3/60	-	-	25% PG	-	34	-
BP-2	SUPPLEMENTAL BOILER PUMP	MECH ROOM	BELL & GOSSETT	PL-55	1.51	80.70	3,250	0.40	-	115/1/60	-	-	WATER	-	6	-
CP-6	SUPPLEMENTAL BOILER LOOP	MECH ROOM	BELL & GOSSETT	1.5AAB	6.31	80.70	3,600	1.50	-	575/3/60	-	-	25% PG	-	29	-
NOTES:																

ELECTRIC DOMESTIC WATER HEATER SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	CAPACITY (L)	RECOVERY RATE (L/H)	HEATER ELEMENT (kW)	WEIGHT (KG)	ELEC. (V/PH/Hz)	MCA (A)	REMARKS
EHWH	DHW	MECH ROOM	AO SMITH	DSE-65A-90	246	84,490	90	-	600/3/60	-	-

DOMESTIC STORAGE TANK SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	CAPACITY (L)	DIMENSIONS (MM)		REMARKS
						DIAMETER	LENGTH	
T-1	DHW	MECH ROOM	AO SMITH	TJ-80A	303	673	1,397	-

MAKE-UP (VENTILATION) AIR UNIT SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL No.	SUPPLY FAN							EXHAUST FAN							HEATING COIL PERFORMANCE								COOLING COIL PERFORMANCE										
					AIR FLOW (L/S)	ESP (KPa)	SPEED (RPM)	MOTOR POWER (HP)	BHP (HP)	ELEC. (V/PH/Hz)	VFD/ STARTER	AIR FLOW (L/S)	ESP (KPa)	SPEED (RPM)	MOTOR POWER (HP)	BHP (HP)	ELEC. (V/PH/Hz)	VFD/ STARTER	HEATING CAPACITY (kW)	AIR SIDE			WATER SIDE (88% PG)				TOTAL COOLING CAPACITY (kW)	SENSIBLE COOLING CAPACITY (kW)	AIR SIDE			WATER SIDE					
																				AIR FLOW (L/S)	EAT (°C)	LAT (°C)	EWT (°C)	LWT (°C)	FLOW RATE (L/S)	PRESS. DROP (kPa)			AIR FLOW (L/S)	EAT DB/WB (°C)	LAT DB/WB (°C)	EWT (°C)	LWT (°C)	FLOW RATE (L/S)	PRESS DROP (kPa)		
MUA-1	BUILDING OA	ROOF	SWEGON	AD-10001912372	1368	0.66	1587	4.6	-	600/3/60HZ	-	1274	0.66	1587	4.6	-	600/3/60HZ	-	21.8	1274	13.3	26.6	52.5	48.8	1.57	2.5	7	4.7	1274	26.7/19.8	23.8/18.5	5.5	12.2	0.25	3.36		
TAG	ENERGY RECOVERY			ENERGY RECOVERY WHEEL - SUPPLY								ENERGY RECOVERY WHEEL - EXHAUST																						FILTERS	WEIGHT (KG)	EMERGENCY OR NORMAL POWER	REMARKS
	MOTOR POWER (HP)	ELEC (V/PH/Hz)	VFD/ STARTER	PURGE AIR FLOW (L/S)	TOTAL ENERGY RECOVERED (kW)		EFFECTIVENESS		EAT DB/WB (°C)		LAT DB/WB (°C)	EAT DB/WB (°C)		LAT DB/WB (°C)																							
					SUMMER	WINTER	SUMMER SENS/LATE NT	WINTER SENS/LATE NT	SUMMER	WINTER		SUMMER	WINTER	SUMMER	WINTER	SUMMER	WINTER	63	125	250	500	1000	2000	4000	8000	63	125	250	500	1000	2000	4000	8000				
MUA-1	4.6	600/3/60HZ	-	1368	29	57	79.2/67	84.2/83.5	31/24.4	-22/-21.6	25.7/19.8	12.8/8	23.8/16.6	22.2/13.9	29.6/22.5	-15.7/-15.6	⅔ ₅	⅔ ₁	⅔ ₃	⅔ ₅	⅔ ₅	⅔ ₂	⅔ ₁	⅔ ₅	⅔ ₄	⅔ ₈	⅔ ₆	⅔ ₅	⅔ ₄	⅔ ₂	⅔ ₂	MERV 13	1463	-	--		
NOTES:																																					

EXPANSION TANK SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	TYPE (H OR V)	MODEL No.	SYSTEM VOLUME (L)	ACCEPTANCE VOLUME (L)	MIN. TEMPERATURE (C)	MAX. TEMPERATURE (C)	FILL PRESSURE (kPa)	FLUID	DIMENSIONS (MM)		PRESSURE RATING (kPa)	WEIGHT (KG)
ET-1	GEO LOOP	MECH ROOM	AMTROL	V	AX-120	-	129	-	116	862	25% PG	610	1,041	-	-
ET-2	DOMESTIC LOOP	MECH ROOM	-	V	-	-	-	-18	116	-	-	-	-	-	-
NOTES:															

HYDRAULIC SEPARATOR SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL No.	FLUID	FLOW (L/S)	PRESS. DROP (kPa)	FLOODED VOLUME (M³)	PRESSURE RATING (kPa)	WEIGHT (KG)	REMARKS
HS	GEO LOOP (COOLING)	MECH ROOM	CALEFFI	SEP4 NA549082AM	25% PG	7.20	-	-	1724	50	-
NOTES:											

DIFFUSER & GRILLE SCHEDULE

TAG	UNIT				DAMPER		MATERIAL	FINISH	REMARKS
	MANUFACTURER	MODEL No.	APPLICATION	DUTY	PART OF UNIT	REMOVE IN DUCT			
A	PRICE	SPD	SUPPLY	SUPPLY	-	YES	-	-	-
B	PRICE	SDS100	LINEAR SLOT DIFFUSER	SUPPLY	-	YES	-	-	1" SLOT, 2 SLOTS
C	PRICE	SDR100	LOUVRED RETURN	EXHAUST	-	YES	-	-	-
D	PRICE	500	SUPPLY/RETURN	SUPPLY/RETURN	YES	-	-	-	C/W BALANCING DAMPER
E	PRICE	SDS150	LINEAR SLOT DIFFUSER	SUPPLY	-	YES	-	-	1.5" SLOT, 4 SLOTS
F	PRICE	SDR100	LINEAR SLOT RETURN	RETURN	-	YES	-	-	1" SLOT, 2 SLOTS
G	PRICE	SDR150	LINEAR SLOT RETURN	RETURN	-	YES	-	-	1.5" SLOT, 4 SLOTS
H	PRICE	SDR100	LINEAR SLOT RETURN	RETURN	-	YES	-	-	1" SLOT, 2 SLOTS
NOTES:									



WATER TO WATER HEAT PUMP SCHEDULE

TAG	SERVICE	LOCATION	MANU-FACTURER	MODEL No.	HEAT PUMP PERFORMANCE (AT FULL LOAD COOLING)													HEAT PUMP PERFORMANCE (AT FULL LOAD HEATING)													MCA (A)	MOP (A)	ELEC (V/PH/ HZ)	TOTAL SHIPPING WEIGHT (KG)	TOTAL OPERATING WEIGHT (KG)	NORMAL OR EMERGENCY POWER	REMARKS
					TOTAL COOLING CAPACITY (kW)	COP	POWER INPUT (kW)	PRIMARY SIDE					SECONDARY SIDE					TOTAL COOLING CAPACITY (kW)	COP	POWER INPUT (kW)	PRIMARY SIDE					SECONDARY SIDE											
								EWT (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID	EWT (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID				EWT (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID	EWT (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID							
WHP-1A/B	MUA-1 HEATING	MECH ROOM	WATER FURNACE	T1RM020SN25 AAAHN	-	-	-	-	-	-	-	-	-	-	-	54.84	2.40	22.50	1.67	-0.44	3.79	28.96	25% PG	48.89	52.30	3.79	23	40% PG	33	-	575/3/60	1,158	2,873	NORMAL	QTY: 2		
WHP-2	MUA-1 COOLING	MECH ROOM	WATER FURNACE	NSW075R50A2 CSSG	32	13	9	29	35	2	34	25% PG	10	7	2	33	WATER	-	-	-	-	-	-	-	-	-	-	-	10	-	575/3/60	179	400	NORMAL	REQUIRED COOLING CAPACITY 17.29 K		

HEAT PUMP SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL No.	FLUID	WATER FLOW (L/S)	COOLING COIL PERFORMANCE								HEATING COIL PERFORMANCE							FAN PERFORMANCE				ELEC (V/PH/HZ)	MCA (A)	VFD/ STARTER	WEIGHT (KG)	REMARKS
							FLUID PRESSURE DROP (Pa)	EWT (°C)	LWT (°C)	EAT (DB) (°C)	EAT (WB) (°C)	LAT (DB) (°C)	LAT (WB) (°C)	SENSIBLE COOLING CAPACITY (KW)	TOTAL COOLING CAPACITY (KW)	FLUID PRESSURE DROP (Pa)	EWT (°C)	LWT (°C)	EAT (DB) (°C)	EAT (WB) (°C)	HEATING CAPACITY (kW)	AIR FLOW (L/S)	ESP (Pa)	SPEED (RPM)	MOTOR POWER (HP)					
HHP-1	STORAGE/MECHANICAL	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.44	23.89	17.22	14.33	12.06	6.33	9.02	3,931	1.67	-0.67	21.11	33.11	7.95	547	130	-	0.50	208-230/1/60	25	-	99	-
HHP-2	WORKFORCE OFFICE	CEILING SPACE	DAIKIN	WSCH012	25% PG	0.19	18,174	33.33	38.44	23.89	17.22	12.72	10.33	1.97	3.12	1,716	1.67	-0.83	21.11	38.56	3.10	146	77	-	0.10	208-230/1/60	8	-	47	-
HHP-3	COACHES ROOM	CEILING SPACE	DAIKIN	WSCH012	25% PG	0.19	18,174	33.33	38.44	23.89	17.22	12.72	10.33	1.97	3.12	1,716	1.67	-0.83	21.11	38.56	3.10	146	77	-	0.10	208-230/1/60	8	-	47	-
HHP-4	WARMUP LOUNGE	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.39	23.89	17.22	14.22	11.89	6.22	8.97	3,931	1.67	-0.61	21.11	33.39	7.91	236	80	-	0.50	208-230/1/60	25	-	99	-
HHP-5	WARMUP LOUNGE	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.39	23.89	17.22	14.22	11.89	6.22	8.97	3,931	1.67	-0.61	21.11	33.39	7.91	531	80	-	0.50	208-230/1/60	25	-	99	-
HHP-6	MEETING ROOM	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.39	23.89	17.22	14.22	11.89	6.22	8.97	3,931	1.67	-0.61	21.11	33.39	7.91	236	80	-	0.50	208-230/1/60	25	-	99	-
HHP-7	IT	CEILING SPACE	DAIKIN	WSCH007	25% PG	0.09	6,157	33.33	38.39	21.11	12.78	12.00	8.83	1.36	1.36	583	1.67	-1.17	21.11	31.72	1.59	124	125	-	0.10	208-230/1/60	4	-	45	-
HHP-8	ELECTRICAL	CEILING SPACE	DAIKIN	WSCH019	25% PG	0.28	30,638	29.44	34.72	26.67	16.11	13.72	10.39	4.45	4.82	2,899	0.00	-2.50	21.11	32.94	4.06	283	199	-	0.30	208-230/1/60	12	-	68	-
HHP-9	CAFÉ	CEILING SPACE	DAIKIN	WSCH019	25% PG	0.28	30,429	33.33	38.61	23.89	17.22	14.11	11.56	3.14	4.73	2,874	1.67	-0.89	21.11	34.22	4.20	264	125	-	0.30	208-230/1/60	12	-	83	-
HHP-10	RECOVERY ROOM	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	42,624	29.44	34.61	23.89	17.78	14.06	11.78	5.80	9.37	4,018	0.00	-2.00	22.22	34.67	7.34	486	82	-	0.50	208-230/1/60	25	-	83	-
HHP-11	MESSAGE ROOM	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	42,624	29.44	34.61	23.89	17.78	14.06	11.78	5.80	9.37	4,018	0.00	-2.00	22.22	34.67	7.34	486	82	-	0.50	208-230/1/60	25	-	83	-
HHP-12	DRESSING ROOM A	CEILING SPACE	DAIKIN	WSCH030	25% PG	0.47	81,661	33.33	38.22	23.89	17.22	14.33	12.39	5.45	7.30	7,714	1.67	-0.72	21.11	32.28	6.41	472	82	-	0.30	208-230/1/60	17	-	83	-
HHP-13	MESSAGE ROOM	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	42,624	29.44	34.61	23.89	17.78	14.06	11.78	5.80	9.37	4,018	0.00	-2.00	22.22	34.67	7.34	486	82	-	0.50	208-230/1/60	25	-	83	-
HHP-14	CORRIDOR	CEILING SPACE	DAIKIN	WSCH030	25% PG	0.47	81,661	33.33	38.22	23.89	17.22	14.33	12.39	5.45	7.30	7,714	1.67	-0.72	21.11	32.28	6.41	472	82	-	0.30	208-230/1/60	17	-	83	-
HHP-15	HALL	CEILING SPACE	DAIKIN	WSCH048	25% PG	0.76	36,616	33.33	38.56	23.89	17.22	13.61	11.72	8.84	12.34	3,460	1.67	-0.89	21.11	34.22	11.28	708	77	-	0.75	208-230/1/60	31	-	134	-

NOTES:

SILENCER SCHEDULE

TAG	SYSTEM	LOCATION	MANUFACTURER	MODEL No.	AIR FLOW (L/S)	AIR VELOCITY (M/S)	PRESS. DROP (Pa)	MODULE SIZE (MM)			QTY OF PIECES	DYNAMIC INSERTION LOSS (dB)				[AIRFLOW GENERATED NOISE (dB)]				REMARKS
								W	H	L		63 Hz	125 Hz	250 Hz	500 Hz	1K Hz	2K Hz	4K Hz	8K Hz	
SL-1	MUA-1 SUPPLY	ROOF	KNC	800 KCRS-F	1369	5	15	650	400	2000	1	9	12	19	28	21	15	11	8	
SL-2	MUA-1 RETURN	ROOF	KNC	700 KCRS-F	1275	4	5	700	500	1500	1	6	10	15	27	19	13	11	6	

NOTES: 1. CONTRACTOR/SILENCER MANUFACTURER SHALL PROVIDE ACOUSTICAL ANALYSIS WITH PENG STAMP SHOWING SILENCER MEETS INSERTION LOSSES AND NC LEVEL AS SCHEDULED DURING SUBMITTAL REVIEW.
2. CONTRACTOR/SILENCER MANUFACTURER MUST PROVIDE PRESSURE DROP CALCULATIONS WITH PENG STAMP TO DEMONSTRATE THE PRESSURE DROP INCLUDING SYSTEM EFFECT AS SCHEDULED.
3. ALTERNATIVE SILENCER MANUFACTURER MUST PROVIDE SILENCER INTERNAL GEOMETRY FOR ENGINEER'S APPROVAL DURING SUBMITTAL REVIEW.
4. FOR NON-BASIS OF DESIGN PRODUCT SUPPLIES, CONTRACTOR TOR IS FINANCIALLY RESPONSIBLE TO ENSURE NOISE CONTROL SOLUTION IS DELIVERED AS PER NC LEVELS IN SPACES OR DBA NOTES:

ELECTRIC HUMIDIFIER SCHEDULE

TAG	LOCATION	TYPE (ELECTRODE, RESISTIVE ELEMENT)	MANUFACTURER	MODEL No.	NOMINAL STEAM CAPACITY (KG/HR)	SUPPLY WATER CONNECTION SIZE (MM)	ELEC. (V/PH/Hz)	MCA (A)	MOUNTING ARRANGEMENT	WEIGHT (KG)	ABSORPTION DISTANCE (MM)	REMARKS
EHUM	MECH ROOM	RESISTIVE ELEMENT	STEAM OVAP	IER09	53	19	600/3/60	-	WALL MOUNTED	34	-	-

NOTES:



AIR CURTAIN SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL No.	ARRANGEMENT	DIMENSIONS (L X W X H) (MM)	AIR FLOW (L/s)	EWТ (°C)	LWT (°C)	EAT (°C)	WPD (kPa)	HEATING CAPACITY (kW)	WATER FLOW (L/s)	MOTOR (kW)	ELEC. (V/PH/Hz)	MCA (A)	REMARKS
AC-1	OVERHEAD DOORS	BERNER	ARD12-3144W	HORIZONTAL DOWN DISCHARGE	3556 X 381 X 660	1783	52	41	65	0.30	13.72	0.32	3 @ 0.5	208/160		-

RADIANT CEILING PANEL SCHEDULE

TAG	SERVICE	MANUFACTURER	HEATER TYPE	LENGTH (MM)	HEATING CAPACITY (kW)	EWТ (°C)	LWT (°C)	REMARKS
RP-1	WASHROOM	SIGMA	BOTTOM RETURN CEILING MOUNTED RADIANT PANEL	REFER TO FLOORPLAN	REFER TO FLOORPLAN	52	48.89	9000mm WIDTH, 10 TUBE PASSES

HYDRONIC FORCE FLOW HEATER SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL No.	ARRANGEMENT	DIMENSIONS (L X W X H) (MM)	AIR FLOW (L/s)	EWТ (°C)	LWT (°C)	EAT (°C)	LAT (°C)	FLUID	WPD (kPa)	HEATING CAPACITY (kW)	WATER FLOW (L/s)	MOTOR (W)	ELEC. (V/PH/Hz)	MCA (A)	REMARKS
FFH-1	EXIT VESTIBULE HEATING	JAGA	BRIZA-22	FAN COIL, CEILING MOUNTED CABINET	950 X 625 X 270		52	48.89	18.0		WATER		5	0.38		115/160	2	-
FFH-2	WARMUP LOUNGE HEATING	JAGA	SLCM02014411/BNA	CURB MOUNTED	1440 X 180 X 200	59	52	48.89	18.3		WATER	61.6	2.26	0.16	8.60	120/160		1440 MM CABINET WITH STANDARD INTERNAL COMPONENT
FFH-3	WARMUP LOUNGE HEATING	JAGA	SLCM02010811/BNA	CURB MOUNTED	2160 X 180 X 200	130	52	48.89	18.3		WATER	143.4	3.10	0.22	12	120/160		2 x 1080 MM CABINETS WITH 1800 MM INTERNAL SECTION
FFH-4	WARMUP LOUNGE HEATING	JAGA	SLCM02010811/BNA	CURB MOUNTED	2880 X 180 X 200	130	52	48.89	18.3		WATER	143.4	3.10	0.22	12	120/160		2 x 1440 MM CABINETS WITH 1800 MM INTERNAL SECTION

ELECTRIC HEATING BOILER SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL No.	INPUT (kW)	MIN FLOW RATE (L/s)	MAX FLOW RATE (L/s)	MAX PRESSURE DROP (kPa)	EWТ (°C)	LWT (°C)	WEIGHT (KG)	ELEC. (V/PH/Hz)	MCA (A)	MOP (A)	EFF. (%)	REMARKS
B-1	SUPPLEMENTAL HEAT	LOCHINVAR	KEB0075	75	0.39	6.62	1	48.9	60	166	115/160	2	2	-	-

HEAT EXCHANGER SCHEDULE

TAG	SERVICE	LOCATION	TYPE (SHELL & TUBE OR PLATE & FRAME)	MANU-FACTURER	MODEL No.	MINIMUMHEAT TRANSFER(kW)	POWER INPUT (kW)	SOURCE SIDE					LOAD SIDE					MINIMUM PRESSURE RATING (KPA)	WEIGHT (KG)	REMARKS
								EWТ (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID	EWТ (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID			
HEX-1	SUPPLEMENTAL BOILER	MECH ROOM	PLATE & FRAME	BELL & GOSETT	-	75	-	0	-2.78	6.31	-	25% PG	60	48.9	1.51	-	WATER	-	-	-

NOTES:

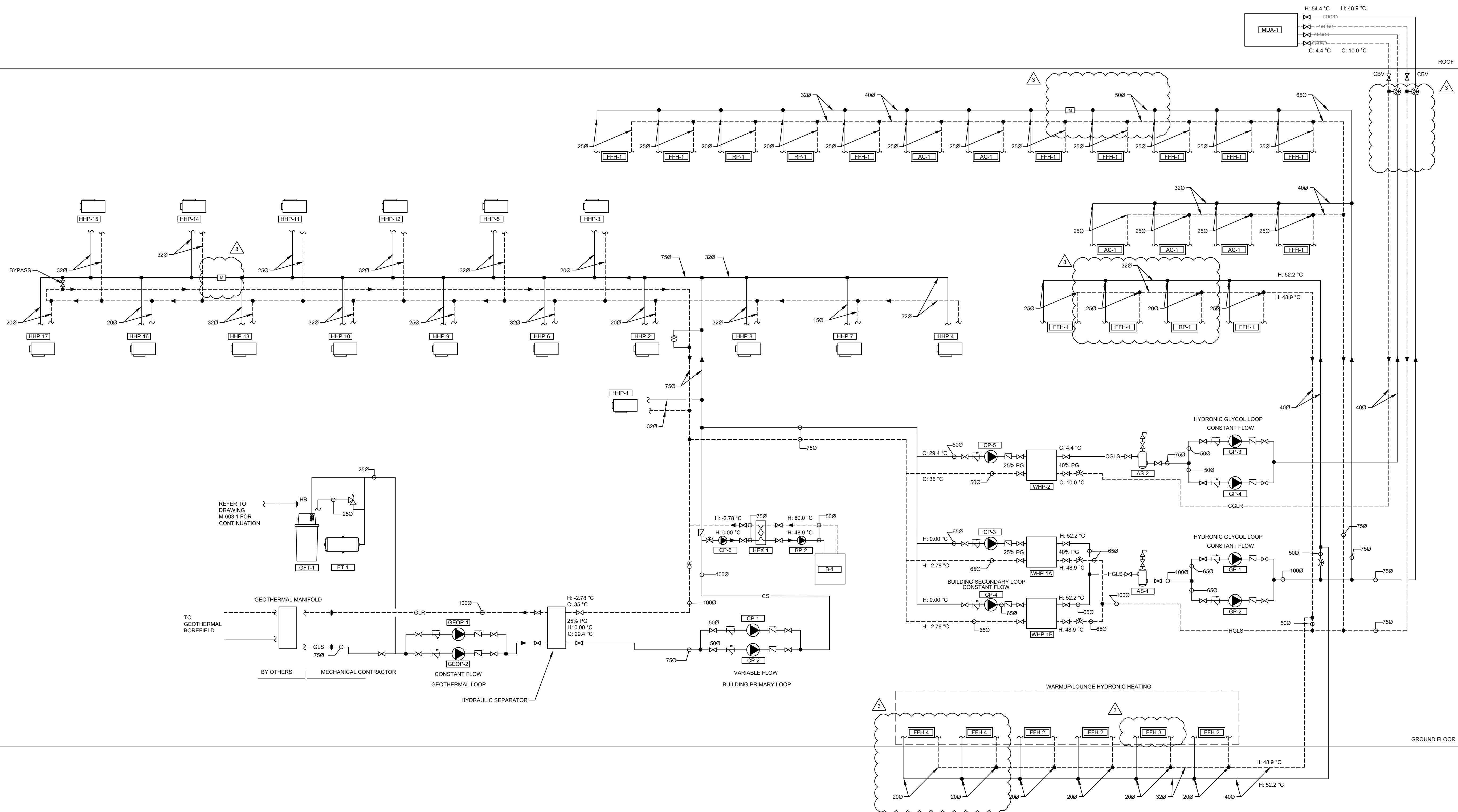


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ISSUED FOR ADDENDUM NO. 1	2024-12-18
ISSUED FOR TENDER	2024-11-08
ISSUED FOR PROGRESS	2024-08-23
revision	date



GENERAL NOTES:

- ERV MAKE-UP WATER LINE DRAIN AND OVERFLOW TO BE ELECTRICALLY TRACED AND INSULATED, C/W WEATHER PROOF JACKET.
- PROVIDE ISOLATION VALVES ON ALL BRANCH LINES AND AT ALL EQUIPMENT.
- PROVIDE VIBRATION ISOLATION FOR ALL ROTATING EQUIPMENT.
- CONDENSER WATER PIPING OUTDOORS TO BE ELECTRICALLY TRACED AND INSULATED, C/W WEATHER PROOF JACKET.
- EXPANSION COMPENSATION AND ANCHORING SYSTEM SHOP DRAWINGS TO BE STAMPED BY A LICENSED PROFESSIONAL ENGINEER. PROVIDE EXPANSION LOOPS AS REQUIRED IN MIDDLE OF 100 FT (OR GREATER) HYDRONIC PIPING SECTIONS.
- HEAT TRACE ALL PIPING SUBJECT TO FREEZING.
- CENTRALLY METER PLANT MECHANICAL SERVICES ON DIGITAL METERING SYSTEM (DMS) (OR BAS). REFER TO CONTROL DIAGRAMS AND SEQUENCE OF OPERATIONS FOR METERING SCOPE.
- REFER TO CONTROL SCHEMATICS FOR LOCATIONS OF ALL CONTROL VALVES.

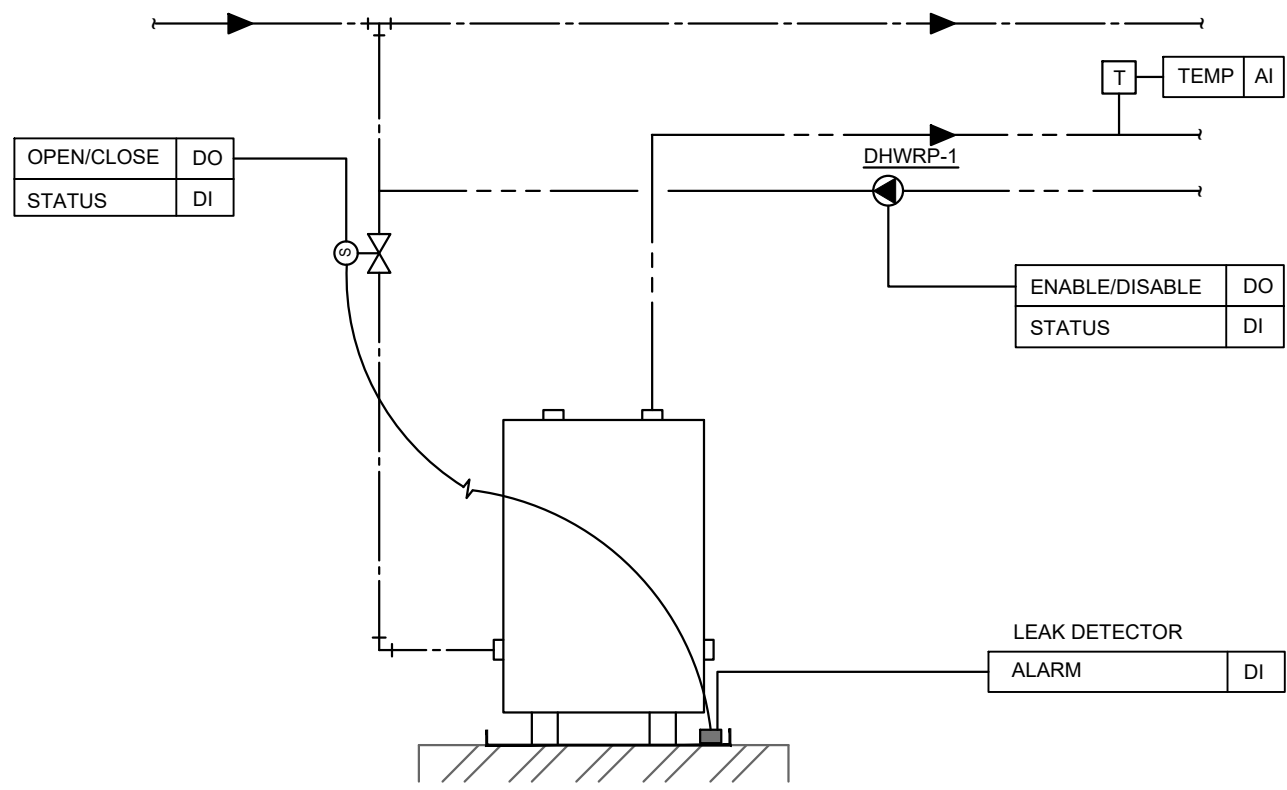


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ISSUED FOR ADDENDUM NO. 1	2024-12-18
ISSUED FOR TENDER	2024-11-08
ISSUED FOR PROGRESS	2024-08-23
ISSUED FOR PROGRESS	2024-08-15
ISSUED FOR COORDINATION	2024-07-30
ISSUED FOR CLASS C COSTING	2024-06-28
revision	001

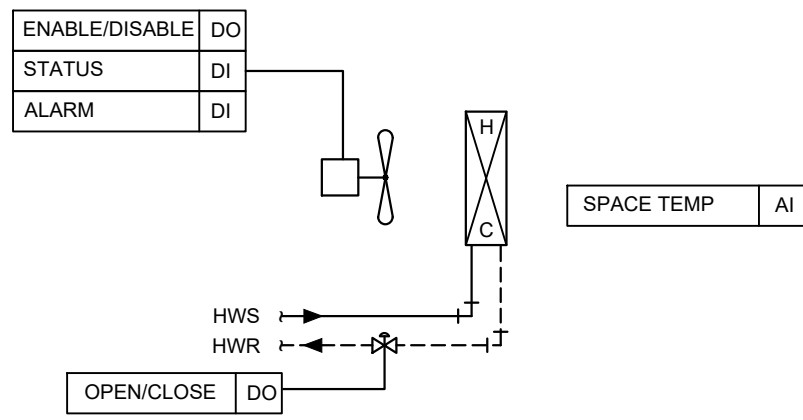
FIFA - EAST VSTS
CENTENNIAL PARK
Address: 56 Centennial Park Rd. Toronto, ON
EAST VSTS HEATING AND
COOLING SCHEMATIC -
SEPARATE PRICE 1

project no. : 2024-0112
scale : N.T.S.
date :
drawing no. :

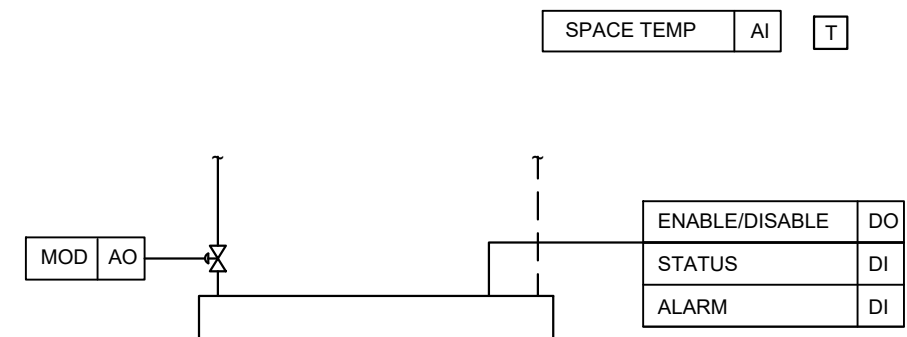
M-600.1



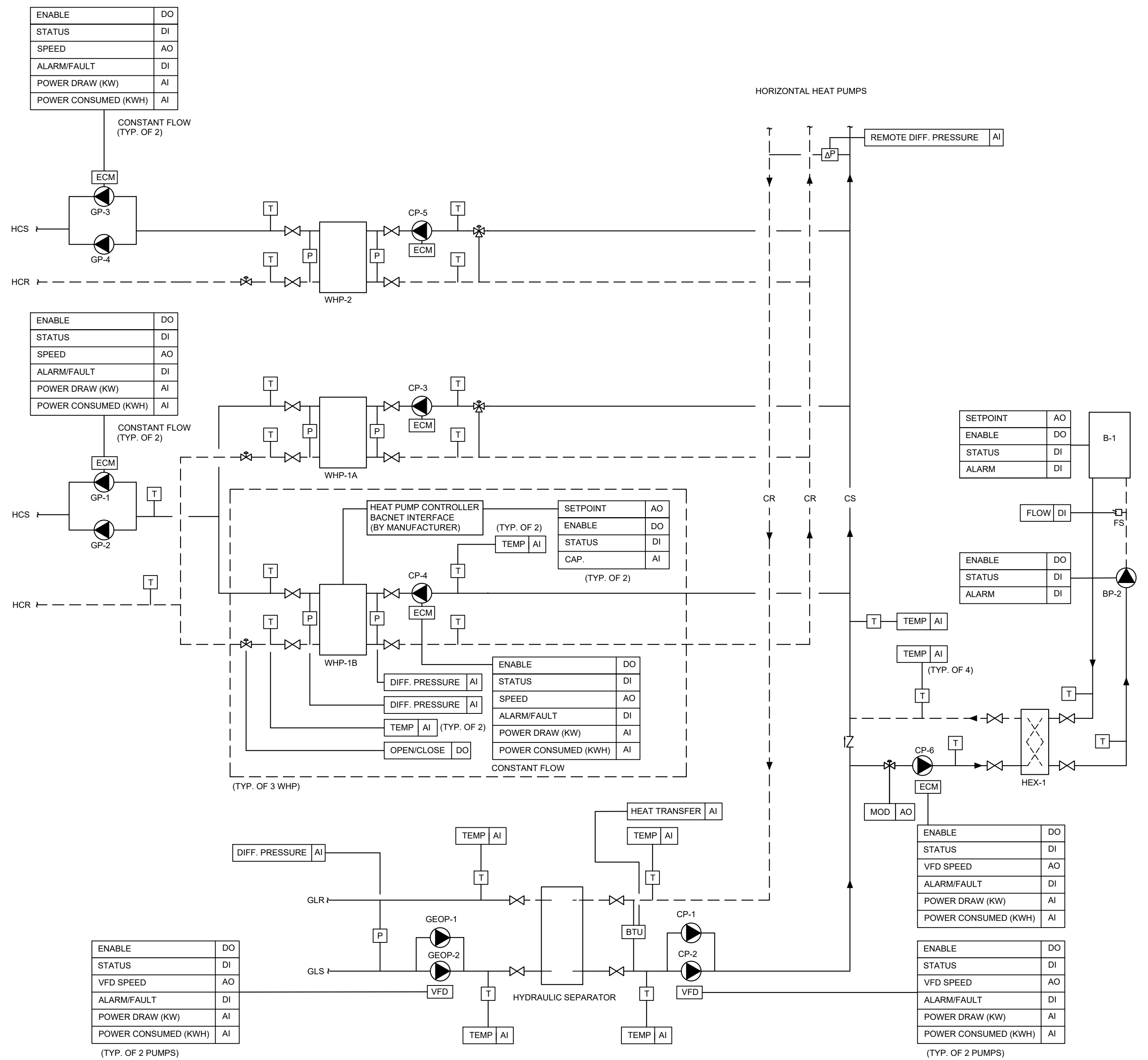
3 HWT W/ SOLENOID VALVE AND LEAK DETECTOR
M-700.1 SCALE: N.T.S.



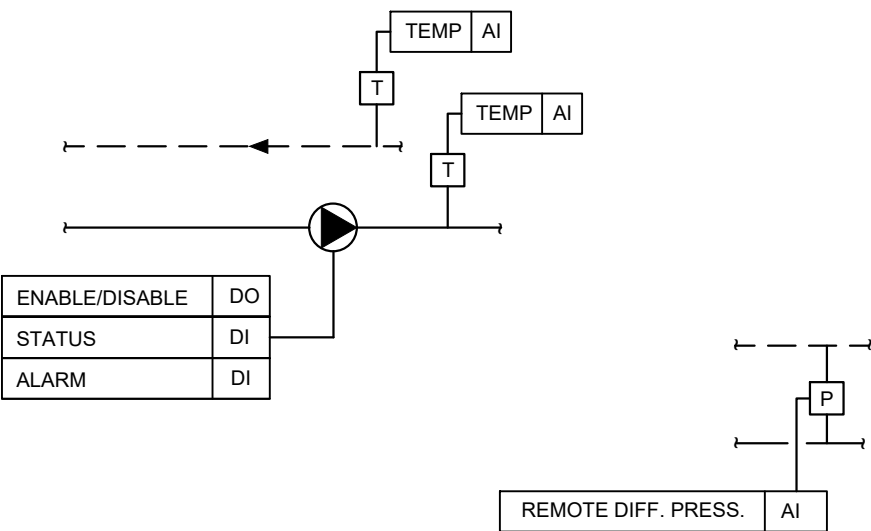
2 UNIT HEATER, FORCE FLOW HEATER
M-700.1 SCALE: N.T.S.



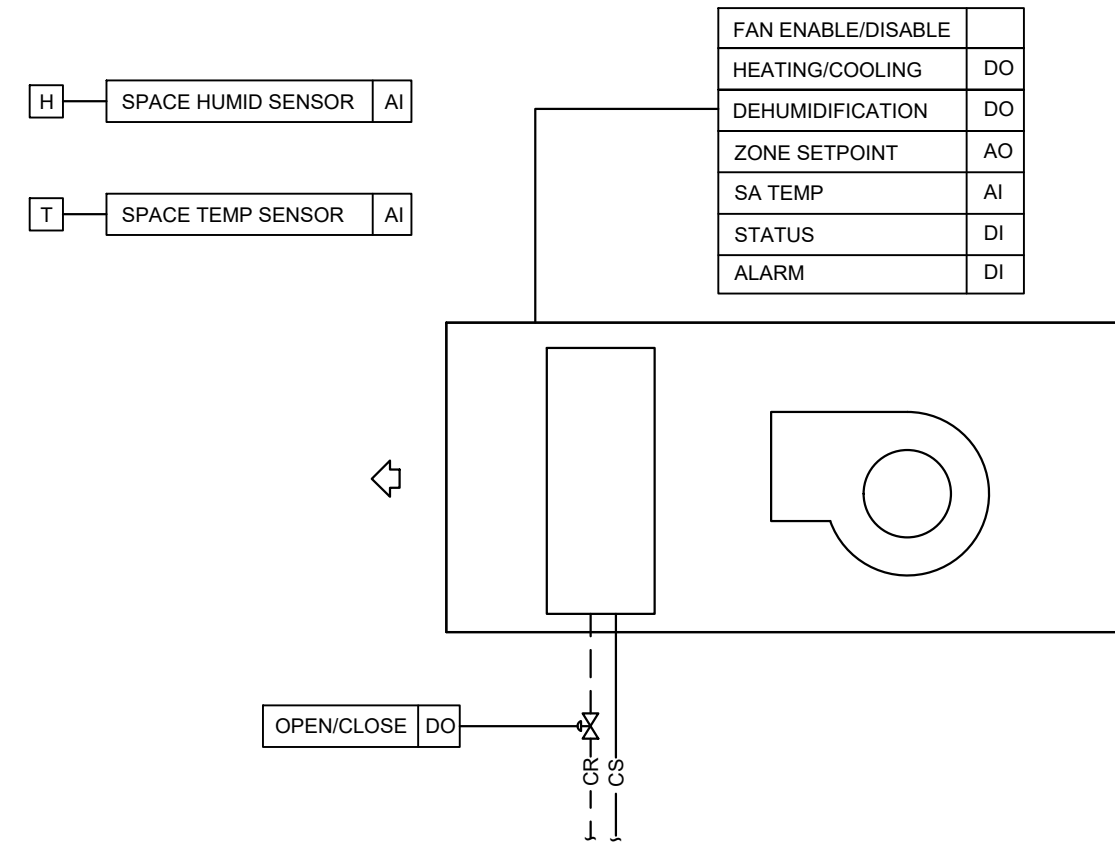
1 RADIANT PANEL HEATING
M-700.1 SCALE: N.T.S.



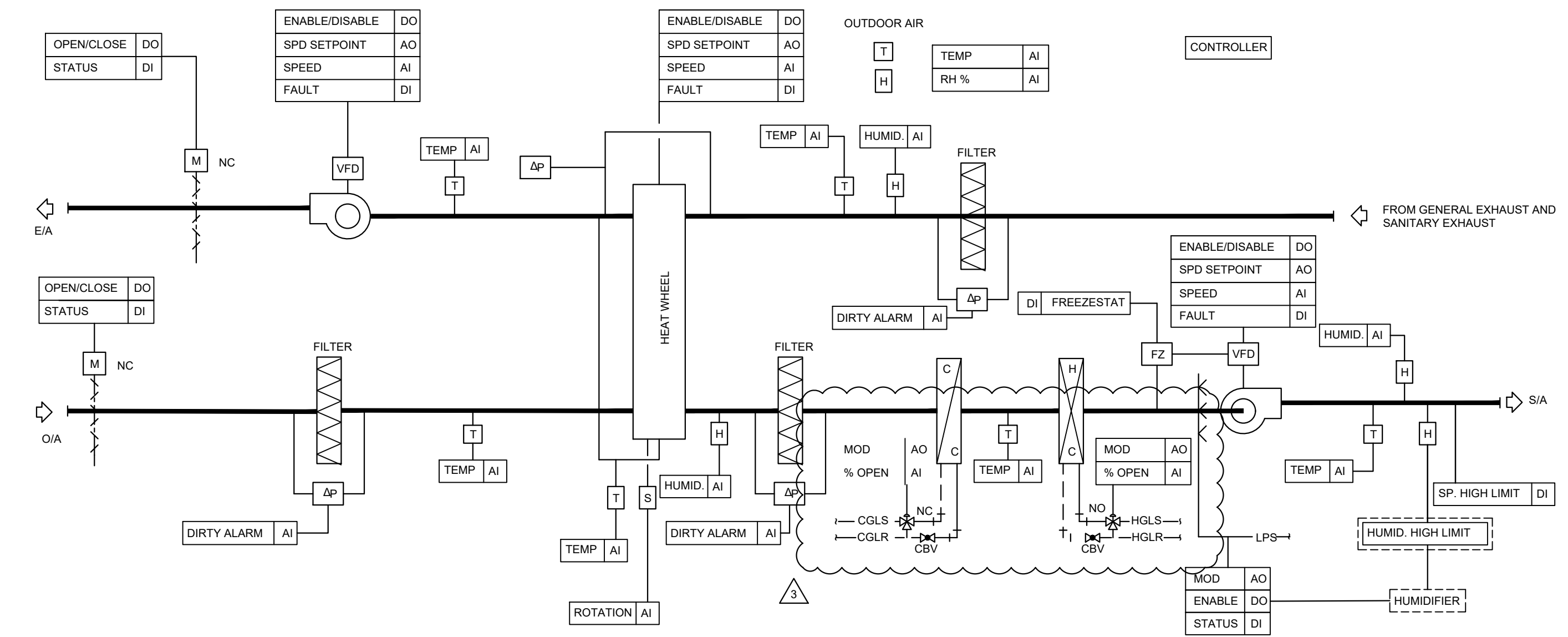
7 GEOTHERMAL HEATING AND COOLING PLANT CONTROLS
M-700.1 SCALE: N.T.S.



5 MISC HEAT CIRCULATING PUMP
M-700.1 SCALE: N.T.S.



4 HEAT PUMPS - HORIZONTAL
M-700.1 SCALE: N.T.S.



6 MAKE UP AIR UNIT
M-700.1 SCALE: N.T.S.

PUMP SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	PUMP SPECIFICATIONS					ELEC. (V/PH/Hz)	EMERGENCY POWER	PRESSURE RATING (kPa)	FLUID	VFD/ STARTER	WEIGHT (KG)	REMARKS
					FLOW (L/S)	HEAD (kPa)	SPEED (RPM)	MOTOR POWER (HP)	BHP (HP)							
GEOP-1/2	GEOTHERMAL GROUND LOOP	MECH ROOM	BELL & GOSSETT	e-80SC	6.90	209.23	3,600	7.50	3.02	575/3/60	-	-	25% PG	VFD	113	DUTY/STANDY
CP-1/2	BUILDING PRIMARY LOOP	MECH ROOM	BELL & GOSSETT	e-80SC	9.00	188.31	1,800	5.00	3.68	575/3/60	-	-	25% PG	-	118	PUMPS TO OPERATE IN PARALLEL EACH SIZED FOR 75% OF SYSTEM FLOW.
CP-3/4	HEATING WWHP SOURCE PUMPS	MECH ROOM	BELL & GOSSETT	PL-100	2.91	41.85	3,250	0.40	0.45	575/3/60	-	-	25% PG	-	7	DUTY/DUTY
GP-1/2	HEATING GLYCOL LOOP	MECH ROOM	BELL & GOSSETT	1.25AAB	6.40	170.38	3,450	3.00	2.45	575/3/60	-	-	40% PG	-	30	LEAD/LAG
BP-1	DOMESTIC HOT WATER	MECH ROOM	BELL & GOSSETT	NBF-25	0.38	44.84	2,950	-	-	115/1/60	-	-	25% PG	-	-	-
DHWRP-1	DHW RECIRCULATION	MECH ROOM	BELL & GOSSETT	NBF-45	0.32	62.77	3,300	0.17	-	115/1/60	-	-	DOMESTIC WATER	-	7	-
GP-3/4	COOLING GLYCOL LOOP	MECH ROOM	BELL & GOSSETT	PL-55	1.40	95.65	3,250	0.40	-	115/1/60	-	-	WATER	-	6	DUTY/STANDBY
CP-5	COOLING WWHP SOURCE PUMP	MECH ROOM	BELL & GOSSETT	1.5AB	2.27	67.85	1,725	0.75	0.43	575/3/60	-	-	25% PG	-	34	-
BP-2	SUPPLEMENTAL BOILER PUMP	MECH ROOM	BELL & GOSSETT	PL-55	1.51	80.70	3,250	0.40	-	115/1/60	-	-	WATER	-	6	-
CP-6	SUPPLEMENTAL BOILER LOOP	MECH ROOM	BELL & GOSSETT	1.5AAB	6.31	80.70	3,600	1.50	-	575/3/60	-	-	25% PG	-	29	-
NOTES:																

ELECTRIC DOMESTIC WATER HEATER SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	CAPACITY (L)	RECOVERY RATE (L/H)	HEATER ELEMENT (kW)	WEIGHT (KG)	ELEC. (V/PH/Hz)	MCA (A)	REMARKS
EHWH	DHW	MECH ROOM	AO SMITH	DSE-65A-90	246	84,490	90	-	600/3/60	-	-

DOMESTIC STORAGE TANK SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL NO.	CAPACITY (L)	DIMENSIONS (MM)		REMARKS
						DIAMETER	LENGTH	
T-1	DHW	MECH ROOM	AO SMITH	TJ-80A	303	673	1,397	-

MAKE-UP (VENTILATION) AIR UNIT SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL No.	SUPPLY FAN							EXHAUST FAN							HEATING COIL PERFORMANCE								COOLING COIL PERFORMANCE									
					AIR FLOW (L/S)	ESP (KPa)	SPEED (RPM)	MOTOR POWER (HP)	BHP (HP)	ELEC. (V/PH/Hz)	VFD/ STARTER	AIR FLOW (L/S)	ESP (kPa)	SPEED (RPM)	MOTOR POWER (HP)	BHP (HP)	ELEC (V/PH/Hz)	VFD/ STARTER	HEATING CAPACITY (kW)	AIR SIDE			WATER SIDE (88% PG)					TOTAL COOLING CAPACITY (kW)	SENSIBLE COOLING CAPACITY (kW)	AIR SIDE			WATER SIDE			
																				AIR FLOW (L/S)	EAT (°C)	LAT (°C)	EWT (°C)	LWT (°C)	FLOW RATE (L/S)	PRESS. DROP (kPa)	AIR FLOW (L/S)			EAT DB/WB (°C)	LAT DB/WB (°C)	EWT (°C)	LWT (°C)	FLOW RATE (L/S)	PRESS DROP (kPa)	
MUA-1	BUILDING OA	ROOF	SWEGON	AD-10001982997	1533	0.72	1680	4.6	2.52	600/3/60HZ	ECM	1700	0.77	1832	4.6	3.25	600/3/60HZ	ECM	21.3	1533	16.3	27.7	52.5	48.8	1.4	29.5	40.5	40.5	1274	26.4/19.8	23.0/17.7	4.4	10	0.25	6.0	
TAG	ENERGY RECOVERY			ENERGY RECOVERY WHEEL - SUPPLY								ENERGY RECOVERY WHEEL - EXHAUST																				FILTERS	WEIGHT (KG)	EMERGENCY OR NORMAL POWER	REMARKS	
	MOTOR POWER (HP)	ELEC (V/PH/Hz)	VFD/ STARTER	PURGE AIR FLOW (L/S)	TOTAL ENERGY RECOVERED (kW)		EFFECTIVENESS (%)		EAT DB/WB (°C)		LAT DB/WB (°C)	EAT DB/WB (°C)		LAT DB/WB (°C)																						
					SUMMER	WINTER	SUMMER SENS/LATE NT	WINTER SENS/LATE NT	SUMMER	WINTER		SUMMER	WINTER		SUMMER	WINTER	SUMMER	WINTER	63	125	250	500	1000	2000	4000	8000	63	125	250	500	1000					2000
MUA-1	4.6	600/3/60HZ	VFD	1533	33.7	69.1	78.8/64.5	84.4/82.7	31/24.4	-22/-21.5	25.4/19.3	15.3/9.7	23.9/16.6	22.2/13.9	29.0/21	-12.1/-12	7⁄ ₁₀	7⁄ ₁₆	7⁄ ₁₆	4⁄ ₁₆	3⁄ ₁₆	3⁄ ₁₆	4⁄ ₁₆	7⁄ ₁₆	7⁄ ₁₆	7⁄ ₁₆	4⁄ ₁₆	3⁄ ₁₆	3⁄ ₁₆	3⁄ ₁₆	3⁄ ₁₆	MERV 13	1463	N	--	
NOTES:																																				

EXPANSION TANK SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	TYPE (H OR V)	MODEL No.	SYSTEM VOLUME (L)	ACCEPTANCE VOLUME (L)	MIN. TEMPERATURE (C)	MAX. TEMPERATURE (C)	FILL PRESSURE (kPa)	FLUID	DIMENSIONS (MM)		PRESSURE RATING (kPa)	WEIGHT (KG)
ET-1	GEO LOOP	MECH ROOM	AMTROL	V	AX-120	-	129	-	116	862	25% PG	610	1,041	-	-
ET-2	DOMESTIC LOOP	MECH ROOM	-	V	-	-	-	-18	116	-	-	-	-	-	-
NOTES:															

HYDRAULIC SEPARATOR SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL No.	FLUID	FLOW (L/S)	PRESS. DROP (kPa)	FLOODED VOLUME (M³)	PRESSURE RATING (kPa)	WEIGHT (KG)	REMARKS
HS	GEO LOOP (COOLING)	MECH ROOM	CALEFFI	SEP4 NA549082AM	25% PG	7.20	-	-	1724	50	-
NOTES:											

DIFFUSER & GRILLE SCHEDULE

TAG	UNIT				DAMPER		MATERIAL	FINISH	REMARKS
	MANUFACTURER	MODEL No.	APPLICATION	DUTY	PART OF UNIT	REMO TE IN DUCT			
A	PRICE	SPD	SUPPLY	SUPPLY	-	YES	-	-	-
B	PRICE	SDS100	LINEAR SLOT DIFFUSER	SUPPLY	-	YES	-	-	1" SLOT, 2 SLOTS
C	PRICE	SDR100	LOUVRED RETURN	EXHAUST	-	YES	-	-	-
D	PRICE	500	SUPPLY/RETURN	SUPPLY/RE TURN	YES	-	-	-	C/W BALANCING DAMPER
E	PRICE	SDS150	LINEAR SLOT DIFFUSER	SUPPLY	-	YES	-	-	1.5" SLOT, 4 SLOTS
F	PRICE	SDR100	LINEAR SLOT RETURN	RETURN	-	YES	-	-	1" SLOT, 2 SLOTS
G	PRICE	SDR150	LINEAR SLOT RETURN	RETURN	-	YES	-	-	1.5" SLOT, 4 SLOTS
H	PRICE	SDR100	LINEAR SLOT RETURN	RETURN	-	YES	-	-	1" SLOT, 2 SLOTS
NOTES:									



WATER TO WATER HEAT PUMP SCHEDULE

TAG	SERVICE	LOCATION	MANU-FACTURER	MODEL No.	HEAT PUMP PERFORMANCE (AT FULL LOAD COOLING)												HEAT PUMP PERFORMANCE (AT FULL LOAD HEATING)												MCA (A)	MOP (A)	ELEC (V/PH/ HZ)	TOTAL SHIPPING WEIGHT (KG)	TOTAL OPERATING WEIGHT (KG)	NORMAL OR EMERGENCY POWER	REMARKS		
					TOTAL COOLING CAPACITY (kW)	COP	POWER INPUT (kW)	PRIMARY SIDE					SECONDARY SIDE					TOTAL COOLING CAPACITY (kW)	COP	POWER INPUT (kW)	PRIMARY SIDE					SECONDARY SIDE											
								EWT (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID	EWT (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID				EWT (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID	EWT (°C)	LWT (°C)	FLOW RATE (L/s)								PRESSURE DROP (kPa)	FLUID
WHP-1A/B	MUA-1 HEATING	MECH ROOM	WATER FURNACE	TSRS020SN25	-	-	-	-	-	-	-	-	-	-	-	62.28	2.83	21.99	1.67	-1.76	2.91	9.31	25% PG	48.89	52.31	4.51	27	40% PG	35	-	575/3/60	1,158	2,873	NORMAL	QTY: 2		
WHP-2	MUA-1 COOLING	MECH ROOM	WATER FURNACE	NDW180R5BN1SE	38	12	11	29	35	2	37	25% PG	10	7	3	41	WATER	-	-	-	-	-	-	-	-	-	-	-	-	12	-	575/3/60	188	420	NORMAL	-	

HEAT PUMP SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER	MODEL No.	FLUID	WATER FLOW (L/S)	COOLING COIL PERFORMANCE								HEATING COIL PERFORMANCE						FAN PERFORMANCE				ELEC (V/PH/HZ)	MCA (A)	VFD/ STARTER	WEIGHT (KG)	REMARKS	
							FLUID PRESSURE DROP (Pa)	EWT (°C)	LWT (°C)	EAT (DB) (°C)	EAT (WB) (°C)	LAT (DB) (°C)	LAT (WB) (°C)	SENSIBLE COOLING CAPACITY (KW)	TOTAL COOLING CAPACITY (KW)	FLUID PRESSURE DROP (Pa)	EWT (°C)	LWT (°C)	EAT (DB) (°C)	EAT (WB) (°C)	HEATING CAPACITY (kW)	AIR FLOW (L/S)	ESP (Pa)	SPEED (RPM)						MOTOR POWER (HP)
HHP-1	STORAGE/MECHANICAL	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.44	23.89	17.22	14.33	12.06	6.33	9.02	47,167	1.67	-0.67	21.11	33.11	7.95	547	130	-	0.50	208-230/1/60	25	-	99	-
HHP-2	WORKFORCE OFFICE	CEILING SPACE	DAIKIN	WSCH012	25% PG	0.19	18,174	33.33	38.44	23.89	17.22	12.72	10.33	1.97	3.12	20,595	1.67	-0.83	21.11	38.56	3.10	146	77	-	0.10	208-230/1/60	8	-	47	-
HHP-3	COACHES ROOM	CEILING SPACE	DAIKIN	WSCH012	25% PG	0.19	18,174	33.33	38.44	23.89	17.22	12.72	10.33	1.97	3.12	20,595	1.67	-0.83	21.11	38.56	3.10	146	77	-	0.10	208-230/1/60	8	-	47	-
HHP-4	WARMUP LOUNGE	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.39	23.89	17.22	14.22	11.89	6.22	8.97	47,167	1.67	-0.61	21.11	33.39	7.91	236	80	-	0.50	208-230/1/60	25	-	99	-
HHP-5	WARMUP LOUNGE	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.39	23.89	17.22	14.22	11.89	6.22	8.97	47,167	1.67	-0.61	21.11	33.39	7.91	531	80	-	0.50	208-230/1/60	25	-	99	-
HHP-6	MEETING ROOM	CEILING SPACE	DAIKIN	WSCH036	25% PG	0.57	41,638	33.33	38.39	23.89	17.22	14.22	11.89	6.22	8.97	47,167	1.67	-0.61	21.11	33.39	7.91	236	80	-	0.50	208-230/1/60	25	-	99	-
HHP-7	IT	CEILING SPACE	DAIKIN	WSCH007	25% PG	0.09	6,157	33.33	38.39	21.11	12.78	12.00	8.83	1.36	1.36	6,994	1.67	-1.17	21.11	31.72	1.59	124	125	-	0.10	208-230/1/60	4	-	45	-
HHP-8	ELECTRICAL	CEILING SPACE	DAIKIN	WSCH015	25% PG	0.24	23,793	29.44	34.39	26.67	16.11	14.39	10.83	3.51	3.73	26,902	0.00	-2.50	21.11	33.17	3.44	236	199	-	0.30	208-230/1/60	10	-	64	-
HHP-9	CAFÉ	CEILING SPACE	DAIKIN	WSCH019	25% PG	0.28	30,429	33.33	38.61	23.89	17.22	14.11	11.56	3.14	4.73	34,494	1.67	-0.89	21.11	34.22	4.20	264	125	-	0.30	208-230/1/60	12	-	83	-
HHP-10	RECOVERY ROOM	CEILING SPACE	DAIKIN	WSCH030	25% PG	0.47	81,661	33.33	38.17	23.89	17.22	14.11	12.06	5.22	7.21	92,571	1.67	-0.61	21.11	32.94	6.34	441	82	-	0.30	208-230/1/60	17	-	83	-
HHP-11	MASSAGE ROOM	CEILING SPACE	DAIKIN	WSCH030	25% PG	0.47	81,661	33.33	38.17	23.89	17.22	14.11	12.06	5.22	7.21	92,571	1.67	-0.61	21.11	32.94	6.34	441	82	-	0.30	208-230/1/60	17	-	83	-
HHP-12	DRESSING ROOM A	CEILING SPACE	DAIKIN	WSCH030	25% PG	0.47	81,661	33.33	38.22	23.89	17.22	38.22	33.33	5.45	7.30	92,571	1.67	-0.72	21.11	32.28	6.41	472	82	-	0.30	208-230/1/60	17	-	83	-
HHP-13	DRESSING ROOM B	CEILING SPACE	DAIKIN	WSCH030	25% PG	0.47	81,661	33.33	38.22	23.89	17.22	38.22	33.33	5.45	7.30	92,571	1.67	-0.72	21.11	32.28	6.41	472	82	-	0.30	208-230/1/60	17	-	83	-
HHP-14	CORRIDOR	CEILING SPACE	DAIKIN	WSCH030	25% PG	0.47	81,661	33.33	38.22	23.89	17.22	38.22	33.33	5.45	7.30	92,571	1.67	-0.72	21.11	32.28	6.41	472	82	-	0.30	208-230/1/60	17	-	83	-
HHP-15	HALL	CEILING SPACE	DAIKIN	WSCH048	25% PG	0.76	36,616	33.33	38.56	23.89	17.22	13.61	11.72	8.84	12.34	41,518	1.67	-0.89	21.11	34.22	11.28	708	77	-	0.75	208-230/1/60	31	-	134	-
HHP-16	INTERVIEW	CEILING SPACE	DAIKIN	WSCH009	25% PG	0.14	9,326	33.33	39.00	23.89	17.22	14.78	12.00	1.60	2.42	10,581	1.67	-1.11	21.11	34.61	2.46	145	80	-	0.10	208-230/1/60	6	-	45	-
HHP-17	FLASH POSITION	CEILING SPACE	DAIKIN	WSCH009	25% PG	0.14	9,326	33.33	39.00	23.89	17.22	14.78	12.00	1.60	2.42	10,581	1.67	-1.11	21.11	34.61	2.46	145	80	-	0.10	208-230/1/60	6	-	45	-

NOTES:

NOTES:

SILENCER SCHEDULE

TAG	SYSTEM	LOCATION	MANUFACTURER	MODEL No.	AIR FLOW (L/S)	AIR VELOCITY (M/S)	PRESS. DROP (Pa)	MODULE SIZE (MM)			QTY OF PIECES	DYNAMIC INSERTION LOSS (dB) [AIRFLOW GENERATED NOISE (dB)]								REMARKS
								W	H	L		63 Hz	125 Hz	250 Hz	500 Hz	1K Hz	2K Hz	4K Hz	8K Hz	
SL-1	MUA-1 SUPPLY	ROOF	KNC	800 KCRS-F	1535	6	17	650	400	2000	1	9	12	19	28	21	15	11	8	
SL-2	MUA-1 RETURN	ROOF	KNC	700 KCRS-F	1700	5	10	700	500	1500	1	6	10	15	27	19	13	11	6	

NOTES: 1. CONTRACTOR/SILENCER MANUFACTURER SHALL PROVIDE ACOUSTICAL ANALYSIS WITH PENG STAMP SHOWING SILENCER MEETS INSERTION LOSSES AND NC LEVEL AS SCHEDULED DURING SUBMITTAL REVIEW.
2. CONTRACTOR/SILENCER MANUFACTURER MUST PROVIDE PRESSURE DROP CALCULATIONS WITH PENG STAMP TO DEMONSTRATE THE PRESSURE DROP INCLUDING SYSTEM EFFECT AS SCHEDULED.
3. ALTERNATIVE SILENCER MANUFACTURER MUST PROVIDE SILENCER INTERNAL GEOMETRY FOR ENGINEER'S APPROVAL DURING SUBMITTAL REVIEW.
4. FOR NON-BASIS OF DESIGN PRODUCT SUPPLIES, CONTRACTOR TOR IS FINANCIALLY RESPONSIBLE TO ENSURE NOISE CONTROL SOLUTION IS DELIVERED AS PER NC LEVELS IN SPACES OR DBA

ELECTRIC HUMIDIFIER SCHEDULE

TAG	LOCATION	TYPE (ELECTRODE, RESISTIVE ELEMENT)	MANUFACTURER	MODEL No.	NOMINAL STEAM CAPACITY (KG/HR)	SUPPLY WATER CONNECTION SIZE (MM)	ELEC. (V/PH/Hz)	MCA (A)	MOUNTING ARRANGEMENT	WEIGHT (KG)	ABSORPTION DISTANCE (MM)	REMARKS
EHUM	MECH ROOM	RESISTIVE ELEMENT	STEAM OVAP	IER09	53	19	600/3/60	-	WALL MOUNTED	34	-	-

NOTES:



AIR CURTAIN SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL No.	ARRANGEMENT	DIMENSIONS (L X W X H) (MM)	AIR FLOW (L/S)	EWТ (°C)	LWT (°C)	EAT (°C)	WPD (kPa)	HEATING CAPACITY (kW)	WATER FLOW (L/s)	MOTOR (kW)	ELEC. (V/PH/Hz)	MCA (A)	REMARKS
AC-1	OVERHEAD DOORS	BERNER	ARD12-3144W	HORIZONTAL DOWN DISCHARGE	3556 X 381 X 660	1783	52	41	65	0.30	13.72	0.32	3 @ 0.5	208/1/60		-

RADIANT CEILING PANEL SCHEDULE

TAG	SERVICE	MANUFACTURER	HEATER TYPE	LENGTH (MM)	HEATING CAPACITY (kW)	EWТ (°C)	LWT (°C)	REMARKS
RP-1	WASHROOM	SIGMA	BOTTOM RETURN CEILING MOUNTED RADIANT PANEL	REFER TO FLOORPLAN	REFER TO FLOORPLAN	52	48.89	9000mm WIDTH, 10 TUBE PASSES

HYDRONIC FORCE FLOW HEATER SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL No.	ARRANGEMENT	DIMENSIONS (L X W X H) (MM)	AIR FLOW (L/S)	EWТ (°C)	LWT (°C)	EAT (°C)	LAT (°C)	FLUID	WPD (kPa)	HEATING CAPACITY (kW)	WATER FLOW (L/s)	MOTOR (W)	ELEC. (V/PH/Hz)	MCA (A)	REMARKS
FFH-1	EXIT VESTIBULE HEATING	JAGA	BRIZA-22	FAN COIL, CEILING MOUNTED CABINET	950 X 625 X 270		52	48.89	18.0		WATER		5	0.38		115/1/60	2	-
FFH-2	WARMUP LOUNGE HEATING	JAGA	SLCM02014411/BNA	CURB MOUNTED	1440 X 180 X 200	59	52	48.89	18.3		WATER	61.6	2.26	0.16	8.60	120/1/60		1440 MM CABINET WITH STANDARD INTERNAL COMPONENT
FFH-3	WARMUP LOUNGE HEATING	JAGA	SLCM02010811/BNA	CURB MOUNTED	2160 X 180 X 200	130	52	48.89	18.3		WATER	143.4	3.10	0.22	12	120/1/60		2 x 1080 MM CABINETS WITH 1800 MM INTERNAL SECTION
FFH-4	WARMUP LOUNGE HEATING	JAGA	SLCM02010811/BNA	CURB MOUNTED	2880 X 180 X 200	130	52	48.89	18.3		WATER	143.4	3.10	0.22	12	120/1/60		2 x 1440 MM CABINETS WITH 1800 MM INTERNAL SECTION

ELECTRIC HEATING BOILER SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL No.	INPUT (kW)	MIN FLOW RATE (L/s)	MAX FLOW RATE (L/s)	MAX PRESSURE DROP (kPa)	EWТ (°C)	LWT (°C)	WEIGHT (KG)	ELEC. (V/PH/Hz)	IMCA (A)	MOP (A)	EFF. (%)	REMARKS
B-1	SUPPLEMENTAL HEAT	LOCHINVAR	KEB0075	75	0.39	6.62	1	48.9	60	166	115/1/60	2	2	-	-

HEAT EXCHANGER SCHEDULE

TAG	SERVICE	LOCATION	TYPE (SHELL & TUBE OR PLATE & FRAME)	MANU-FACTURER	MODEL No.	MINIMUMHEAT TRANSFER(kW)	POWER INPUT (kW)	SOURCE SIDE					LOAD SIDE					MINIMUM PRESSURE RATING (KPA)	WEIGHT (KG)	REMARKS
								EWТ (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID	EWТ (°C)	LWT (°C)	FLOW RATE (L/s)	PRESSURE DROP (kPa)	FLUID			
HEX-1	SUPPLEMENTAL BOILER	MECH ROOM	PLATE & FRAME	BELL & GOSETT	-	75	-	0	-2.78	6.31	-	25% PG	60	48.9	1.51	-	WATER	-	-	-

NOTES:



ISSUED FOR ADDENDUM NO. 3	2025-01-15
ISSUED FOR ADDENDUM NO. 1	2024-12-18
ISSUED FOR TENDER	2024-11-08
ISSUED FOR PROGRESS	2024-08-22
ISSUED FOR PROGRESS	2024-08-15
revision	-026



To: Cherie Ng Architect Inc.
Toronto, ON

No.: 3

Date: January 15, 2025

Project: FIFA East VSTS - 56
Centennial Park Rd.

Fax/Email: cng@cherieng.com

Attention: Cherie Ng

From: Alex Tan

Project No.: 2024-0112

This Addendum shall be attached to the drawings and specifications and shall form an integral part of the Contract Documents. The contents of this Addendum shall be brought to the attention of all concerned.

GENERAL

Please see attached for ESA comments, for implementation and coordination. Provisions and notes for the solar PV systems to be incorporated into the PV design.

DRAWINGS

1. **DRAWING E-300.0 – FLOOR PLAN – GAME POWER & SYSTEMS – (DRAWING RE-ISSUED)**

- 1.1. Revised GEOP-1 & GEOP-2 to be 600V-3PH direct connections.
- 1.2. Revised CP-3 & CP-4 to be 120V-1PH direct connections.

2. **DRAWING E-500.0 – SINGLE LINE DIAGRAM – (DRAWING RE-ISSUED)**

- 2.1. Relocated GEOP-1 & GEOP-2 to be fed off of panel DP-6A02. Updated breaker.
- 2.2. Relocated CP-3 & CP-4 to be fed off of DP-2A01. Updated breaker.

3. **DRAWING E- 700.0 – SCHEDULES – (DRAWING RE-ISSUED)**

- 3.1. Revised GEOP-1, GEOP-2, CP-3, & CP-4 on mechanical schedule.

4. **DRAWING E-300.1 – FLOOR PLAN – GAME POWER & SYSTEMS – (DRAWING RE-ISSUED)**

- 4.1. Revised GEOP-1 & GEOP-2 to be 600V-3PH direct connections.
- 4.2. Revised CP-3 & CP-4 to be 120V-1PH direct connections.

No.: 3
To: Cherie Ng Architect Inc.
Attention: Cherie Ng
Date: January 15, 2025
Project No.: 2024-0112

5. **DRAWING E-500.1 – SINGLE LINE DIAGRAM – (DRAWING RE-ISSUED)**

- 5.1. Relocated GEOP-1 & GEOP-2 to be fed off of panel DP-6A02. Updated breaker.
- 5.2. Relocated CP-3 & CP-4 to be fed off of DP-2A01. Updated breaker.

6. **DRAWING E- 700.1 – SCHEDULES – (DRAWING RE-ISSUED)**

- 6.1. Revised GEOP-1, GEOP-2, CP-3, & CP-4 on mechanical schedule.

End of Addendum.



Low Voltage Report

THE HIDI GROUP
Attn: Neil Pasco & Alex Tan - no p
155 GORDON BAKER RD, STE200
TORONTO ON M2H 3N5

NOTICE DATE: January 14, 2025
NOTIFICATION #: 40064317
PLAN REVIEWER: Schillaci, David
INSPECTOR: Sinclair, David
TELEPHONE: (416)891-3097
PRINT DATE: January 14, 2025
CUSTOMER ID: 24188
CUST. ORDER #: N/A

Subject property:
FIFA EAST VSTS - CENTENNIAL PARK - 600A
SLD E-500.1 R2024.11.14
56 CENTENNIAL PARK RD
TORONTO ON M9C 5B6
ETOBICOKE

This office has examined the plans submitted by you for the low voltage portion of the above-noted installation. Work may commence on the project provided the installation is made in accordance with the submitted plans and specifications, the Ontario Electrical Safety Code and its supplements together with the following comments. Final approval of the installation is subject to field inspection.

1. This plan review is based on the Ontario Electrical Safety Code, 28th Edition / 2021.
2. The code compliance report for this project is limited to the low voltage secondary switchboard and PV Installation. The high voltage transformer is customer owned and therefore a complete set of high voltage drawings are required to be submitted to the Plan Review Department prior to commencement of work. Please refer to Rule 2-010, Bulletin 2-11-*. .
3. Available fault current not provided. All overcurrent protection shall be capable of interrupting the available fault current. Rule 14-012, Bulletin 14-4-*
4. Complete details for main disconnect not provided. Each consumer's service shall be provided with a single service box certified to standard CSA C22.2 No 31 and shall be marked in a permanent manner with the following or equivalent wording #SUITABLE FOR USE AS SERVICE EQUIPMENT#. A service box is defined as an assembly consisting of an enclosure that can be locked or sealed, containing either fuses and a switch, or a circuit breaker, and of such design that it is possible to operate either the switch or circuit breaker to the open position by manual means when the box is closed. Rules 2-024 and 6-200 1)
5. The drawings indicate a mobile connection box for the connection of a future generator. The generator neutral must be bonded as detailed in Bulletin 10-10-*. As the generator will be installed in the future, please provide labelling at the generator connection point stating the generator neutral bonding connection requirements.. Rule 2-100, Rule 10-210, and Rule 10-212
6. Where the point of connection of interactive inverters is on the load side of the service disconnecting means, the installation shall be in accordance with Rule 64-112 and Bulletin 64-1-*. .
7. The ampere rating of the 80% rated overcurrent device appears to be undersized based on the ac continuous rated output of the inverter. The ampere rating of inverter ac output circuit shall be considered as continuous loading. The maximum current of the inverter output circuit shall be the inverter continuous output current rating. Rule 64-100, Rule 8-104
Maximum O/C cont. loading: $150\text{A} \times 80\% = 120\text{Amps}$
Actual cont. load: 132.3Amps
8. Photovoltaic source and output circuits with maximum voltages higher than 750 V dc but not exceeding 1500 V dc shall not be required to comply with Rules 36-204, 36-208 and 36-214, provided that the installation is serviced by qualified persons; inaccessible to the public; and enclosures in which photovoltaic source and output circuits exceeding 750 V dc are present are marked with the word #DANGER# followed by the maximum rated photovoltaic circuit voltage of the equipment. Inaccessible to the public (for the purposes of exemption to Section 36 requirements) is considered to be an area:
 - a) located within a fenced enclosure complying with Rule 26-304, 26-312 and 26-314, or equivalent (such as a property boundary fence around an industrial facility with controlled access);

- b) guarded by locked doors;
 - c) elevated 3 m or more above grade level or above any surface that a person can stand on; or
 - d) where access is restricted by other effective means.
- Rule 64-202 5), Bulletin 64-3-*

9. Notwithstanding Rules 12-904 and 12-3030, junction boxes, enclosures, fittings, and raceways or compartments of multiple-channel raceways shall be permitted to contain insulated conductors of a single renewable energy system that are connected to different sources of voltage where:

- a) all conductors are insulated for at least the same voltage as that of the circuit having the highest voltage and
- b) a suitable warning notice is placed at each enclosure and junction box giving access to the insulated conductors, indicating where multiple photovoltaic source and photovoltaic output circuits are available within the junction boxes, enclosures, and raceways or compartments of a multiple-channel raceway.

Rule 64-210 10)

10. All PV module connectors are required to be installed as mated pairs, per their certification and the manufacturer's instructions. The CSA Standard for pin and sleeve connectors only allows them to be tested as a mated pair, which typically means that mated connectors are from the same manufacturer. It is the responsibility of the designer of the system and/or those making these connections, to ensure these requirements are met. Rule 64-220 1) g), Bulletin 64-4-*

11. The connections to a photovoltaic module shall be arranged so that removal of a single photovoltaic module from a photovoltaic source circuit does not interrupt bonding continuity to the inverter or controller. Rule 64-222 4), Bulletin 64-2-*

12. DC photovoltaic source and output circuit conductors shall be colour coded as detailed in Rule 64-212.

13. Where the dc arc-fault protection referred to in Rule 64-216 is not located at the module, photovoltaic source circuit insulated conductors and cables installed on or above a building, and installed in accordance with Rule 64-210 1), 2), and 3) shall be provided with mechanical protection in the form of an enclosed raceway or other acceptable material to protect against damage from rodents. Rule 64-210 5), Bulletin 64-4-*

14. Photovoltaic rapid shutdown shall be provided for a photovoltaic system installed on or in buildings where the photovoltaic source or output circuit insulated conductors or cables installed on or in buildings are more than 1 m from a photovoltaic array. Rule 64-218 1), Bulletin 64-6-*

15. A photovoltaic rapid shutdown shall limit photovoltaic source or output circuits located more than 1m from the photovoltaic array to not more than 30v within 30 s of rapid shutdown initiation. Rule 64-218 3), Bulletin 64-6-*

16. A photovoltaic system with rapid shutdown in accordance with Rule 64-218 shall be provided with a permanent marking in an accessible location at the disconnecting means for the photovoltaic output circuit stating the photovoltaic system

is equipped with rapid shutdown. Rule 64-200 2)

17. The following notice and diagram shall be installed:

1) A warning notice of an interconnected system shall be installed in a conspicuous place at the supply authority disconnecting means of Rule 84-022 and the supply authority meter location.

2) A single-line, permanent, legible diagram of the interconnected system shall be installed in a conspicuous place at the supply authority disconnecting means.

Rule 84-030

18. A warning sign for a photovoltaic system shall be in capital letters with a minimum height of 9.5 mm, in white on a red background. Rule 64-200 3)

19. An underground trench detail was not provided. All secondary underground wiring shall be installed per Diagrams D8 to D11 and cable ampacities as determined from the applicable #D# Table. Ensure your configuration conforms to the #D# Diagrams, or provide a calculation per IEEE 835 stating the revised cable ampacity specific to this installation. Rule 4-004, Rule 12-012

20. Rule 12-012 11) requires adequate markings for all underground installations. Bulletin 12-2-*

21. Raceways entering a building and forming part of an underground service shall be sealed and shall:

a) Enter the building above ground where practicable; or

b) Be suitably drained; or

c) Be installed in such a way that moisture and gas will not enter the building.

Rule 6-300 2)

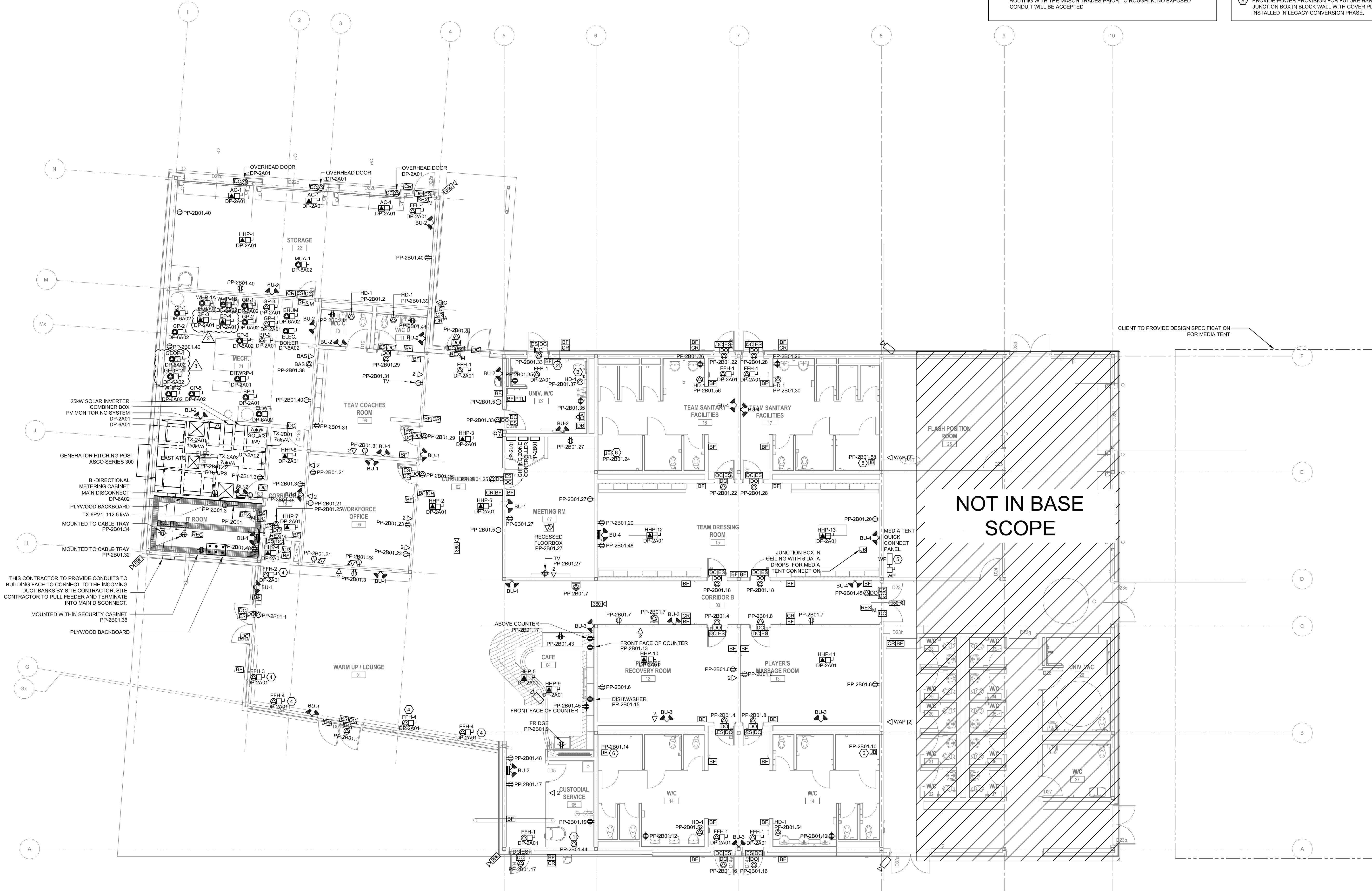
22. The identified conductor shall be installed at each location of a manual or automatic control device for the control of permanently installed luminaires at a branch circuit outlet. Rule 4-022 4), Bulletin 4-15-*

23. All equipment must be approved by an accredited Certification Body, or accepted through field evaluation, or accepted by an Inspector under the provisions of Rule 2-024 of the current Ontario Electrical Safety Code. Rule 2-022, Rule 2-024, Bulletin 2-7-*

24. All electrical equipment shall be installed in accordance with any specific manufacturer's instructions in addition to the minimum Code requirements. Rule 2-034

An invoice will be sent directly to your Accounts Payable Department. If we may be of any assistance regarding any aspect of this installation, particularly with respect to clarification of the above comments and regulations, please contact the Plan Review Department or the Inspector listed above.

Pour obtenir une version française du rapport, veuillez appeler 1-877-372-7233.



- GENERAL NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND DOCUMENTS
 2. REFER TO ARCHITECTURAL DRAWINGS AND ELEVATIONS FOR FINAL DEVICE LOCATIONS. COORDINATE ALL LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECT PRIOR TO INSTALLATION
 3. COORDINATE FINAL MECHANICAL EQUIPMENT LOCATIONS WITH MECHANICAL CONTRACTOR ON SITE
 4. ALL RECEPTACLES SHALL BE CLEARLY LABELED WITH PANEL DESIGNATION AND CIRCUIT NUMBER FOLLOWING FINAL INSTALLATION
 5. CONDUITS SHALL BE RUN IN CONCRETE MASON UNIT. COORDINATE ROUTING WITH THE MASON TRADES PRIOR TO ROUGH-IN. NO EXPOSED CONDUIT WILL BE ACCEPTED

- NOTES
1. ELECTRICAL CONNECTION TO SUPPLY HEAT TRACING TO GROUND FLOOR AND BELOW-GRADE PIPES GOING TO OUTSIDE BOTTLE FILLER
 2. PROVIDE HORIZONTAL STRIP PANIC BUTTON TO BE TIED TO UNIVERSAL WASHROOM EMERGENCY ASSISTANCE SWITCH.
 3. PROVIDE VERTICAL STRIP PANIC BUTTON TO BE TIED TO UNIVERSAL WASHROOM EMERGENCY ASSISTANCE SWITCH.
 4. ELECTRICAL CONTRACTOR TO COORDINATE POWER CONNECTION TERMINATION WITH MECHANICAL CONTRACTOR.
 5. QUICK CONNECT PANEL SHALL BE BY ASCO.
 6. PROVIDE POWER PROVISION FOR FUTURE HAND DRYER IN A RECESSED JUNCTION BOX IN BLOCK WALL WITH COVER PLATE. HAND DRYER TO BE INSTALLED IN LEGACY CONVERSION PHASE.

general notes :

1. These Contract Documents are the property of the Architect. The Architect bears no responsibility for the misinterpretations of these documents by the Contractor. Upon written application the Architect will provide written / graphic clarification or supplemental information regarding the intent of the Contract Documents. The Architect will review Shop Drawings submitted by the Contractor for design conformance only.
2. Drawings are not to be scaled for construction. Contractor to verify all existing conditions and dimensions required to perform the Work and report any discrepancies with the Contract Documents to the Architect before commencing work.
3. Positions of exposed or finished mechanical or electrical devices, fittings, and fixtures are indicated on the Architectural drawings. The locations shown on the Architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly located will be located as per directed by the Architect.



ISSUED FOR ADDENDUM NO 3	2025.01.15
ISSUED FOR ADDENDUM NO 1	2024.12.18
ISSUED FOR TENDER	2024.11.08
ISSUED FOR PROGRESS	2024.08.23
ISSUED FOR PROGRESS	2024.08.15
ISSUED FOR PROGRESS	2024.07.30
ISSUED FOR CLASS C COSTING	2024.06.28
ISSUED FOR COORDINATION	2024.05.31
Revision	0000

**FIFA - EAST VSTS
CENTENNIAL PARK**

Address: 58 Centennial Park Rd, Toronto, ON

**FLOOR PLAN - GAME
POWER & SYSTEMS**

project no. : 2024-0112
scale : 1:100
date :

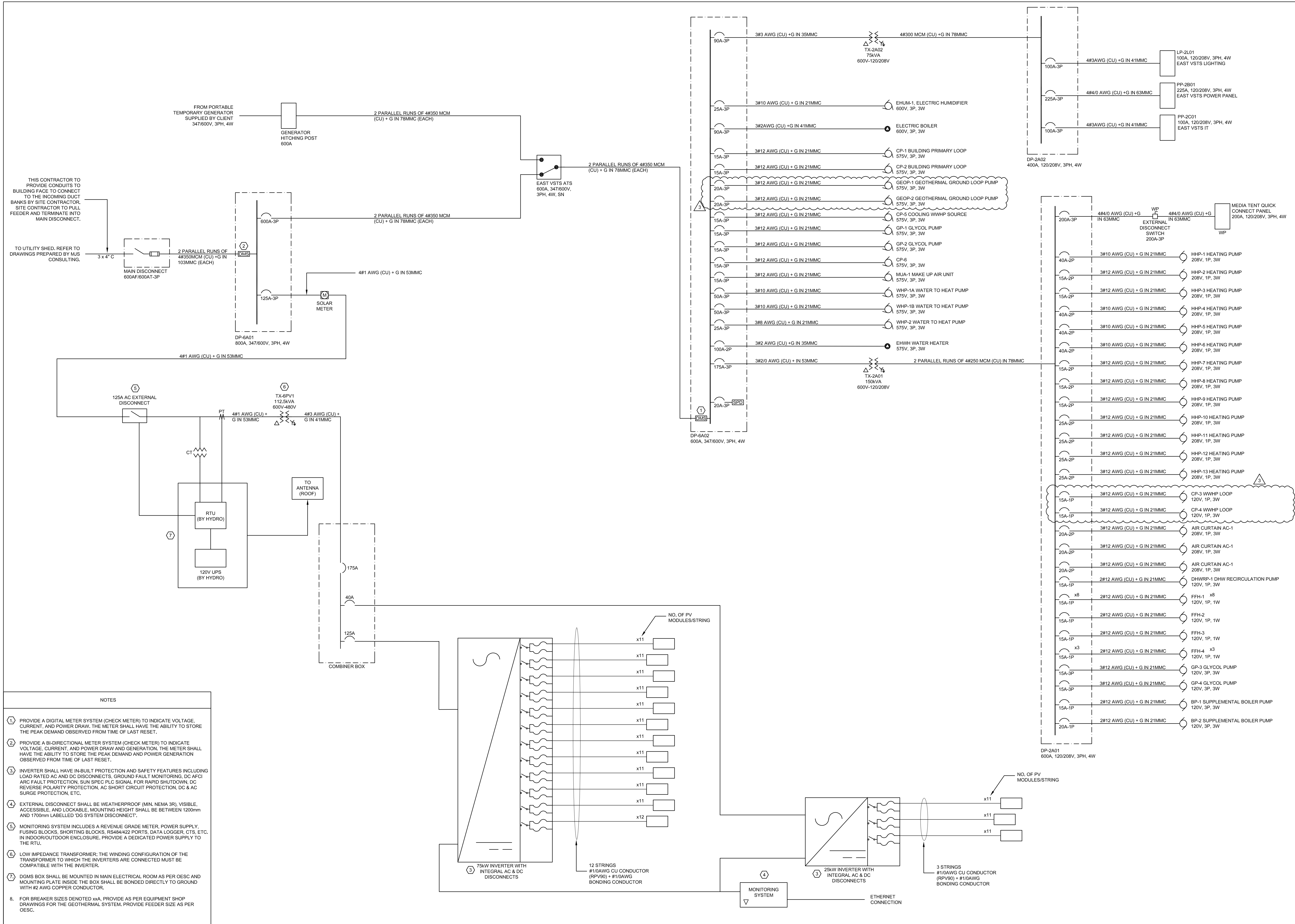
drawing no. :

general notes :

1. These Contract Documents are the property of the Architect. The Architect bears no responsibility for the misinterpretations of these documents by the Contractor. Upon written application the Architect will provide written / graphic clarification or supplemental information regarding the intent of the Contract Documents. The Architect will review Shop Drawings submitted by the Contractor for design conformance only.

2. Drawings are not to be scaled for construction. Contractor to verify all existing conditions and dimensions required to perform the Work and report any discrepancies with the Contract Documents to the Architect before commencing work.

3. Positions of exposed or finished mechanical or electrical devices, fittings, and fixtures are indicated on the Architectural drawings. The locations shown on the Architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly located will be located as per directed by the Architect.



ISSUED FOR ADDENDUM NO 3 2025.01.15
ISSUED FOR ADDENDUM NO 1 2024.12.18
ISSUED FOR TENDER 2024.11.08
ISSUED FOR PROGRESS 2024.08.23
ISSUED FOR PROGRESS 2024.08.15
Revision 000

FIFA - EAST VSTS
CENTENNIAL PARK
Address: 58 Centennial Park Rd, Toronto, ON
SINGLE LINE DIAGRAM

project no. : 2024-0112
scale : N.T.S.
date :
drawing no. :

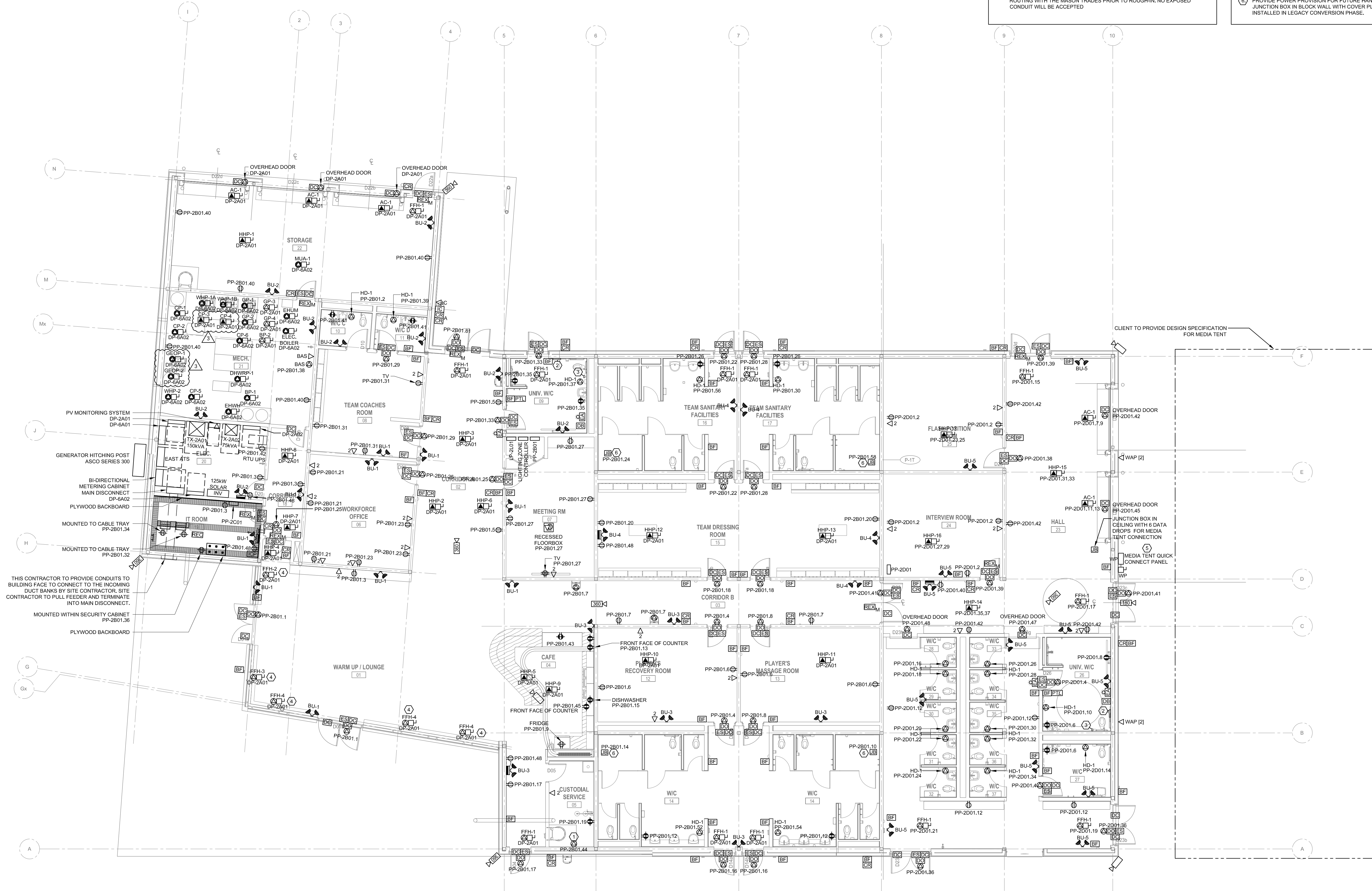
- HIDI** **THE HIDI GROUP**
155 Gordon Baker Road, Suite 200
Toronto, ON M2H 3N5 Canada
t. 416 364 2100 | HIDI.com



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ISSUED FOR PROGRESS	2024.08.15
revision	date

project no. :	2024-0112
scale :	N.T.S.
date :	

drawing no. :



- GENERAL NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND DOCUMENTS
 2. REFER TO ARCHITECTURAL DRAWINGS AND ELEVATIONS FOR FINAL DEVICE LOCATIONS. COORDINATE ALL LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECT PRIOR TO INSTALLATION
 3. COORDINATE FINAL MECHANICAL EQUIPMENT LOCATIONS WITH MECHANICAL CONTRACTOR ON SITE
 4. ALL RECEPTACLES SHALL BE CLEARLY LABELED WITH PANEL DESIGNATION AND CIRCUIT NUMBER FOLLOWING FINAL INSTALLATION
 5. CONDUITS SHALL BE RUN IN CONCRETE MASON UNIT. COORDINATE ROUTING WITH THE MASON TRADES PRIOR TO ROUGH-IN. NO EXPOSED CONDUIT WILL BE ACCEPTED

- NOTES
1. ELECTRICAL CONNECTION TO SUPPLY HEAT TRACING TO GROUND FLOOR AND BELOW-GRADE PIPES GOING TO OUTSIDE BOTTLE FILLER
 2. PROVIDE HORIZONTAL STRIP PANIC BUTTON TO BE TIED TO UNIVERSAL WASHROOM EMERGENCY ASSISTANCE SWITCH.
 3. PROVIDE VERTICAL STRIP PANIC BUTTON TO BE TIED TO UNIVERSAL WASHROOM EMERGENCY ASSISTANCE SWITCH.
 4. ELECTRICAL CONTRACTOR TO COORDINATE POWER CONNECTION TERMINATION WITH MECHANICAL CONTRACTOR.
 5. QUICK CONNECT PANEL SHALL BE BY ASCO.
 6. PROVIDE POWER PROVISION FOR FUTURE HAND DRYER IN A RECESSED JUNCTION BOX IN BLOCK WALL WITH COVER PLATE. HAND DRYER TO BE INSTALLED IN LEGACY CONVERSION PHASE.

CHERIE NG
ARCHITECT INC
www.cherieneng.com
t. 416.898.1979

general notes :

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ISSUED FOR ADDENDUM NO 3	2025.01.15
ISSUED FOR ADDENDUM NO 1	2024.12.18
ISSUED FOR EBA	2024.11.14
ISSUED FOR TENDER	2024.11.08
ISSUED FOR PROGRESS	2024.08.23
ISSUED FOR PROGRESS	2024.08.15
ISSUED FOR PROGRESS	2024.07.30
ISSUED FOR CLASS C COSTING	2024.06.28
ISSUED FOR COORDINATION	2024.05.31
Revision	0000

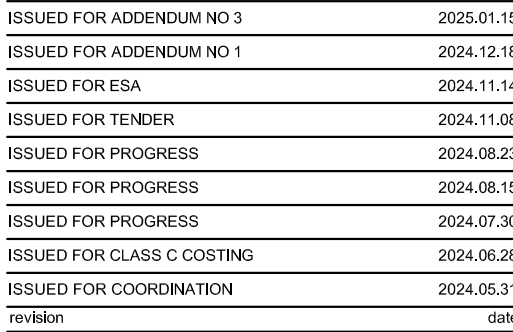
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FLOOR PLAN - GAME
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E-300.1



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**FIFA - EAST VSTS
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SCHEDULES