



Royal Canadian Mounted Police  
Gendarmerie royale du Canada

**RETURN BIDS TO:  
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RCMP-GRC

Bid Receiving/Réception des sousmissions  
Attention: Jordan McKenna  
Mail Stop/Arrêt postal 15  
73 Leikin Drive,  
Ottawa, ON K1A 0R2

**AMENDMENT - INVITATION TO TENDER**

**MODIFICATION - APPEL D'OFFRES**

**Tender to: Royal Canadian Mounted Police**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services and construction listed herein and on any attached sheets at the price(s) set out therefore.

**Soumission aux: Gendarmerie royale du Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqués(s).

**Comments - Commentaries**

**Vendor/Firm Name and Address  
Raison sociale et adresse du fournisseur/de l'entrepreneur  
Facsimile No. - No de télécopieur:  
Telephone No. - no de telephone:**

<b>Title-Sujet:</b> Construction – Wabasca-Desmarais Detachment	
<b>Solicitation No. - No. de l'invitation</b> 201804138	<b>Date</b> Feb. 1st, 2018
<b>Client Reference No. - No. De Référence du Client</b> 201804138	<b>Amend No.- No. du modif.</b> 007
<b>GETS Reference No. - No. de Référence de SEAG</b> 201804138	
<b>Solicitation Closes –L'invitation prend fin</b>  <b>at - à</b> 16 :00 ET <b>on - le</b> Feb. 6th, 2018	
<b>F.O.B. - F.A.B.</b> Destination	
<b>Address Enquiries to: - Adresser toutes questions à:</b>  <a href="mailto:jordan.mckenna@rcmp-grc.gc.ca">jordan.mckenna@rcmp-grc.gc.ca</a>	
<b>Telephone No. - No de telephone</b> 613.843.5518	<b>Fax No. - N° de FAX:</b>
<b>Destination of Goods, Services, and Construction: Destinations des biens, services et construction:</b>	
<b>Delivery Required - Livraison exigée:</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Name and title of person authorized to sign on behalf of Vendor/Firm Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur</b>	



Amendment #7 of Solicitation 201804138 has been issued to **make changes to the Tender documents via Addendum 5 and respond to Questions PART 4 as follows:**

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**THE FOLLOWING CHANGES IN THE TENDER DOCUMENTS ARE EFFECTIVE IMMEDIATELY.**

- 1) Please see addendum 5 attached.

**Questions and Answers Part 4:**

**Q1)** I have gone through the latest Addendum #5 this morning and I just wanted to clarify that the cash allowances are NOT to be included in our base bid?

Q&A #19 notes cash allowances are excluded, although the added Allowance Section 01 21 00 notes "include in Contract Price specified cash allowances".

Are we to include the cash allowance for "Geotechnical Sitework Testing" and "Utility Service Connections (Electrical)" only? Please clarify.

**A1)** Within Section 01 21 00 - Allowances, Part 1.1 CASH ALLOWANCES, delete part "1.1.1 Include in Contract Price specified cash allowances". DO NOT INCLUDE CASH ALLOWANCE AMOUNTS IN YOUR BID AMOUNT. Bid as per direction within 'Appendix 1 - Combined Price Form. All Cash Allowances listed in Table D of Appendix 1 will be included in the contract price upon contract award.

Please Note: This addendum does cover many questions that were not specifically responded to via a 'Questions and Answers' list. Additional questions will be responded to as of tomorrow. For all questions that were not responded to, please bid as per current Specification. All accepted proposed alternate products have been included in an addendum.

**ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME**



17225 – 102 Avenue  
Edmonton, Alberta, T5S 1J8, Canada  
Ph: 780-486-6400, Fax: 780-486-6401

**ADDENDUM No. 05**

Date: January 31, 2018

Number of Pages: 36

This Addendum varies the Contract Documents entitled:

**GOVERNMENT OF CANADA  
WABASCA-DESMARAIS GOVERNMENT BUILDING**

Project No.: 9031

This Addendum forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts. The cost of all work contained herein is to be included in the Contract sum. The following revisions supersede the information contained in the original drawings and specifications issued for the above named project to the extent referenced and shall become part thereof. Acknowledge receipt of this Addendum by inserting its number and date on the Tender form. Failure to do so may subject bidder to disqualification.

**ADDENDUM NO. 05**

Architectural Addendum Includes: Architectural Addendum No. 05 (3 pgs), Section 07 42 33 (8 pgs), Section 07 44 56 (8 pages), Mechanical Addendum M2 (8 pgs), Electrical Addendum E3 (2 pgs), Electrical Addendum E4 (7 pgs).

**ADDENDUM 5**

**SPECIFICATIONS**

- .1 Section 07 42 33 – Plastic Wall Cladding
  - .1 Replace section in its entirety with attached Section 07 42 33R – Plastic Wall Cladding.
- .2 Section 08 44 13 – Glazed Aluminum Curtain Walls and Aluminum Windows
  - .1 Clarification: Article 2.1.1.1 - Alumicor is an acceptable substitute manufacturer.
  - .2 Clarification: Article 2.11 refers to windows in room 142 and 144. See detail 2 on Drawing A6.6 – Interior Sections and Details.
  - .3 Clarification: Article 2.12 refers to window W11 between rooms 103 and 105. See details 1 and 2 on drawing A9.1 – Door Schedule and Door and Window Elevations.

- .4      Revise Article 2.4.1.1 to read “Frame Dimensions: Nominal 65 mm wide x 100 mm deep back section having a 28 mm glazing throat.
- .5      Revised Article 2.4.1.2. to read “Cover Depth: Nominal 50 mm wide x 19 mm depth, square profile.
- .6      Revise Article 2.4.1.3.1 to read “Kawneer 1602 Series”.
- .7      Clarification Article 2.3.9.1 to read “Transition membranes to be provided by the same manufacturer as the exterior wall membrane to maintain full system warranty.”
- .8      Clarification Article 2.9.2 – Aluminum frames are to have anodized finish. No colours will be used on frames.
- .3      Section 08 81 00 – Glass and Glazing
  - .1      Article 3.4.3 – Delete article in its entirety.
  - .2      Clarification – All exterior glazing will receive security film except exterior windows in rooms 121 and 123. Security film to be based on 3M’s Ultra Series, 42 Micro-layers, tear resistant safety film, clear.
- .4      Section 12 21 23 – Roll-Down Blinds
  - .1      Article 3.1.1 - Clarification: Rooms 121, 123 and 124 do not require blinds. Glazing film is required as noted on Drawing A10.1 - Finishes Plan.
  - .2      Article 2.3.1 – Clarification: Room 105
  - .3      Article 2.3.5 – Add: “Shading Fabric: woven extruded reinforced vinyl coated polyester yarn, 0.76 mm (0.030”) thick, max. 3% open area, colour to be selected by Consultant from manufacturer’s standard range. Room 103.”
- .5      Section 32 31 13 – Chainlink Fences
  - .1      Clarification: RCMP standards Section 2.5.1.6 is a minimum requirement. Chainlink fences are to galvanized with black vinyl coating finish.

## DRAWINGS

- .6      Drawing A2.2 Main Floor Plan
  - .1      Revise Exterior Wall Legend to read:
    - .1      **X2**      COMPOSITE PHENOLIC PANEL
    - HORIZONTAL METAL SUSPENSION RAIL
    - VERTICAL METAL PROFILE
    - 75 SEMI-RIGID INSULATION
    - 50 SEMI-RIGID INSULATION – SEAMS STAGGERED
    - WALL BRACKET (T-CLIP)
    - THERMAL SEPARATOR
    - AIR/VAPOUR BARRIER

16 GYPSUM BOARD SHEATHING  
203 STEEL STUDS @ 400 O.C.  
16 GYPSUM BOARD

- .2      **X3**      FIBRE REINFORCED CEMENT BOARD PANEL  
                         HORIZONTAL METAL SUSPENSION RAIL  
                         VERTICAL METAL PROFILE  
                         75 SEMI-RIGID INSULATION  
                         50 SEMI-RIGID INSULATION – SEAMS STAGGERED  
                         WALL BRACKET (T-CLIP)  
                         THERMAL SEPARATOR  
                         AIR/VAPOUR BARRIER  
                         16 GYPSUM BOARD SHEATHING  
                         203 STEEL STUDS @ 400 O.C.  
                         16 GYPSUM BOARD

.7      Drawing A7.1 – Interior Elevations

- .1      Clarification – Roller blind shown on elevation 3 is to be added to drawing A10.1 –  
                         Finishes Plan. Electrical is shown on Drawing E2.0 – Main Floor Power & Data Plan.

Attachments:

- 1) Section 07 42 33R Plastic Wall Panel Cladding.
- 2) Section 07 44 56R Mineral Fiber Reinforced Cementitious Panels.
- 3) Mechanical Addendum M2.
- 4) Electrical Addendum E3.
- 5) Electrical Addendum E4.

END OF ADDENDUM NO. 05

**PART 1      General**

**1.1          INTENT**

- .1 This specification Section specifies the supply, fabrication and installation of the wall panel system specified, including panel supports and anchorage to the building structure.
- .2 It is expected that the same subcontractor will supply and install the vapour and air seal membrane and the wall insulation.

**1.2          RELATED SECTIONS**

- .1 Section 07 21 13 – Board Insulation.
- .2 Section 07 26 00 – Vapour Retarders.
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.

**1.3          SUSTAINABILITY REQUIREMENTS**

- .1 Refer to Section 01 35 43 - Environmental Procedures for requirements relevant to this section.

**1.4          REFERENCES**

- .1 International Code Council (ICC) Evaluation Service Evaluation Report ESR-1687.

**1.5          DESIGN AND PERFORMANCE REQUIREMENTS**

- .1 Design panel system so that all finishes, support and attachment systems conform to requirements of authority having jurisdiction.
- .2 Panel deflection shall not exceed  $L/175$ . Panels shall exhibit no permanent deformation when subjected to positive and negative pressures caused by local  $1/50$  design wind loads indicated in Table C-2, Division B, Appendix C of the latest edition of the Alberta Building Code.
- .3 Deflection of panel support framing shall not exceed  $L/175$ .
- .4 Make allowance in the panel design for movement within the system caused by deflection of the building structure and to accommodate variations in plane of system substrate.
- .5 Provide adequate stiffening to prevent wind induced vibration and materials fatigue.
- .6 Design and install system to accommodate panel expansion and contraction without causing visible panel warping or deformation of fastening system, singly or in combination, caused by:

- .1 Temperature range from 1% January design temperature to 2.5% July dry design temperature for the project location indicated in Table C-2, Division B, Appendix C of the latest edition of the National Building Code.
- .2 Surface temperature variation of 85 centigrade degrees.
- .3 Anticipated ambient relative humidity range.
- .7 Water Ingress and Egress: Panel system shall be designed in accordance with the rain screen principles published by the National Research Council of Canada. The intent is to:
  - .1 Provide a barrier to:
    - .1 Rain.
    - .2 Snow.
    - .3 Insects.
  - .2 Equalize air pressure between the exterior and interior of the panels such that exterior moisture is not drawn into the system.
  - .3 Facilitate drainage to the exterior of any moisture that does enter the system.
- .8 Thermal Transmission:
  - .1 Wall insulation and panel support framing shall be in two layers having the same profile thickness to minimize thermal bridging.
  - .2 The first layer of framing shall be anchored to the building structure.
  - .3 The second support framing layer shall be perpendicular to the first layer and separated from the first layer by 6mm thick neoprene pads.
- .9 Design panel system to transmit all loads to the main structure without exceeding the capacity of any fastener.
- .10 Panel cladding system shall have a flush appearance from the exterior with no visible irregularities and with no reveal other than the design module joint width.
- .11 Minimize penetrations through sheet membrane air and vapour barrier.
- .12 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 as follows:
  - .1 Outdoor exposure period: 2500 hours.
  - .2 Humidity resistance exposure period: 5000 hours.

## **1.6 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

- .1 Comply with requirements of Section 01 33 00 - Submittal Procedures.

*(Revised in Addendum 5)*

- .2 Shop drawings shall incorporate design and performance criteria and requirements of related work which may affect work of this Section, including the following:
  - .1 Panel layout on building elevations and if applicable, reflected soffit plan.
  - .2 Panel dimensions.
  - .3 Fastening and anchoring methods.
  - .4 Layout of exposed fasteners. Identify fixed and “loose” fastener locations.
  - .5 Detail and location of joints.
  - .6 Provisions to minimize thermal bridging.
  - .7 Provision for expansion and contraction of system components.
  - .8 Rain screen principles for pressure equalization and drainage.
  - .9 Details at openings and at mechanical and electrical fixtures and penetrations.
  - .10 Head, jamb and sill details.
  - .11 Materials and finish.
  - .12 Transition to adjoining exterior wall finishes.
- .3 Shop drawings shall be signed and sealed by a Professional Engineer specializing in structural design and licensed to practice in the Province, attesting to the ability of the metal panel assembly to meet requirements related to movement and distortion under the specified thermal and wind induced loads, including inward and outward loads, and loads induced by deflection of the building structure.
- .3 Submit product data sheets for panel system materials. Include product characteristics, performance criteria, limitations and colours.
- .4 Submit duplicate 400 x 400 mm samples of panels, including typical joint intersection, secured to an assembly of fastening system to building, representative of materials, finishes and colours.

## **1.7 QUALIFICATIONS**

- .1 Fabrication and installation shall be by a firm approved for the project by panel manufacturer.

## **1.8 DELIVERY, STORAGE AND HANDLING**

- .1 Store and protect material from weather and from damage due to construction activities.

## **1.9 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.



## 1.10 MOCK-UP

- .1 Provide a mock up wall approximately 3 m x 3 m illustrating vapour and air seal membrane, insulation, panel anchorage system, panels and joints, coping, corner detail and transitions to adjacent dissimilar exterior finishes.
- .2 Mock-up shall include all components of the wall system and if approved by Consultant may be incorporated into finished work.
- .3 Notify 72 hours before installation of mock-up for inspection by Consultant. Do not proceed further with panel system work until mock-up has been approved.

## 1.11 EXTENDED WARRANTY

- .1 Provide panel manufacturer's standard written warranty covering failure of factory-applied exterior finish on panels, occurring after expiry of standard contract warranty period.

## 1.12 PRODUCT OPTIONS AND SUBSTITUTIONS

- .1 Refer to Section 01 62 00 – Product Options and Substitutions for requirements related to product options and substitutions.

## PART 2 Products

### 2.1 PERFORMANCE REQUIREMENTS

- .1 Delegated Design: Design fibre reinforced cement panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- .2 Structural Performance: Provide fibre reinforced cement panel assembly capable of withstanding the effects of the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 330:3
  - .1 Wind Loads: Uniform pressure of 40 psf inward and outward wind pressures.
  - .2 Deflection Limits: fibre reinforced cement panel assemblies shall provide L/180 maximum deflection stiffness required by the panel manufacturer.
  - .3 Condensation: Panels shall accommodate positive drainage for moisture entering or condensation occurring within panel system.
- .3 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and night time-sky heat loss.
  - .1 Temperature Change (Range): Temperature range from 1% January design temperature to 2.5% July dry design temperature for the project location indicated

in Table C-2, Division B, Appendix C of the latest edition of the National Building Code.

- .2 Surface temperature variation of 85 centigrade degrees.
- .4 Design to accommodate, by means of control joints, movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to in fills or racking of joints.
- .5 Air space at top and bottom of building, or each wall termination, for buildings less than 18m (60'), shall be 25mm (1") to facilitate airflow from behind the panels. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. Airflow shall be continuous from bottom to top so there is air movement behind each panel. Fasteners shall accommodate thermal expansion/contraction without excessive stress to the panel. Each panel shall have central lock points to support gravity loads.
- .6 Design members and suspension system to withstand gravity load, live loads, including negative loads, as calculated in accordance with the building code.
- .7 Structural panel supports shall provide the minimum L/300 deflection stiffness required by the panel manufacturer. Panels themselves shall not deflect more than L/180 maximum at serviceability limit states.

## 2.2 PANEL SYSTEM COMPONENTS

- .1 Panels:
  - .1 Acceptable Product: Trespa Meteon FR, minimum 8 mm thick, manufactured by Trespa International B.V. represented in North America by:  
Trespa North America Ltd.  
62 Greene Street  
New York, NY 10012  
Tel: 1 800 487 3772  
[Info.NorthAmerica@Trespa.com](mailto:Info.NorthAmerica@Trespa.com)  
Represented in Alberta by:  
Contact: Greg Gerhart  
Allied Technical Sales Ltd.  
Tel: 403 461 3188
  - .2 Decorative high-pressure laminate to EN 438-6:2005 and having properties published on manufacturer's web site.
  - .3 Acceptable Substitution: Fundermax (HPL) Exterior F-Quality Panels. Minimum 8mm thick as distributed by Pilot Group Inc. Fundermax 0428NT Cave in place of Trespa NW25, Hesbania, Wood Decors; Fundermax 0075NT Dark Grey in place of Trespa A05.5.0 Quartz Grey, Uni Colours; Fundermax 0935 NT Voyager in place of Trespa NW18 Light Mahogany, Wood Decors.

*(Revised in Addendum 5)*

- .2 Exposed Panel and Joint Face Colours: Refer to drawings.
- .3 Exposed Fasteners – Panel Anchors: stainless steel, head compatible with panel manufacturer's standard caps coloured to match specific panel faces on which caps are located.
- .4 Non-Exposed Fasteners – System fasteners: hot dip galvanized steel or stainless steel.
- .5 Substructure:
  - .1 Vertical Girts:
    - .1 Vertical girts supporting panels are 1.2mm (18 gauge) thick, galvanized zinc-coated steel to ASTM A653 with Grade A coating Z275. Painted black.
      - .1 Shop Primers: Provide primers that are compatible with paint systems specified in Section 09 91 00.
    - .2 Preformed galvanized metal sheet, 1.2mm (18 gauge) thick, minimum base steel nominal thickness, notched or perforated for drainage.
    - .3 Girt locations as determined and approved by engineer of record, to align with modular panel fasteners spaced based on manufacturer's panel load data.
    - .4 Front fastened systems:
      - .1 Girts behind panels to be vertical to allow vertical ventilation.
      - .2 Preformed black galvanized steel girts to be used at inside and outside corners to ensure corners are straight and closed visually, and used at intermediary panel locations and where panels come together.
      - .3 Girts provided by Engineered Assemblies; [info@engineeredassemblies.com](mailto:info@engineeredassemblies.com) or (905) 816-2218.
  - .5 Cavity behind panel: Minimum 25mm (1") of unrestricted space.
  - .6 Gap between panels: Minimum of 8mm (5/16") to allow for expansion and contraction.
  - .7 EPDM Rubber Separation Strip: Designed and supplied by Engineered Assemblies to be installed between the panel and the vertical girt to allow movement between panel and support system, meeting the following:
    - .1 Shore "A" Hardness: ASTM D2240.
    - .2 Compression Set, 22h at 212°F (100°C): ASTM D395.
    - .3 Ozone Resistance, 100 mPa 100h @ 104°F (40°C) 20%
    - .4 Elongation: ASTM D1149.
    - .5 Tensile Strength: ASTM D412.
    - .6 Elongation at Rupture: ASTM D412.
    - .7 Tear Strength: ASTM D624.
    - .8 Brittleness Temperature at -40°F (-40°C): ASTM D746.

- .9 Flame Propagation, Option II; ASTM C1166.
- .8 Substructure to account for control joints of building to ensure a girt is not connected across the control joint.
- .9 Install panels across one set of horizontal suspension rails to ensure that expansion and contraction of the substrate is controlled within framing members.
- .2 Clip System: 38mm (1-1/2") wide, die cut aluminum extruded clip, adjustable to plumb structure, minimum 1.2mm (18 gauge) thick galvanized zinc-coated steel to ASTM A653. System to provide compliance to ASHRAE 90.1 and thermally broken façade requirements of the building code.
  - .1 Adaptable horizontal framing members.
  - .2 Clip Depth: to accommodate insulation depth.
    - .1 150mm (6")
  - .3 Vertical Clip Spacing:
    - .1 864mm (34")
    - .2 1041mm (41")
    - .3 1220mm (48")
- .3 Basis of Design Product: EA RVRS TClip and Girt, Model T150, by Engineered Assemblies.
- .6 Fasteners:
  - .1 Colour matched stainless steel rivets, as per Engineered Assemblies recommendations. No dissimilar materials allowed, in selection of fasteners.
  - .2 All holes are pre-drilled in the panel at same diameter
  - .3 Fixed holes include a stainless steel grommet on the rivet stem.
  - .4 Floating holes have rivet only.
- .7 Bird and Vent Screen:
  - .1 Continuous bird and vent screen located at top and bottom of panel system, where opening is minimum 25mm (1") wide, with minimum 50% free air flow, manufactured by Engineered Assemblies from perforated aluminum, painted black.
- .8 Flashings: Prefinished steel as specified in Section 07 62 00 – Sheet Metal Flashings and Trim. Colour to match adjacent exposed panel faces.
  - .1 Flashings at edges, top and bottom of panel system as per architectural drawings.
- .9 Vapour Barriers in accordance with Section 07 26 00 – Vapour Retarders.
- .10 Insulation: As indicated in Section 07 21 13 – Board Insulation.

### **2.3 FABRICATION**

- .1 Panel dimensions: base panel dimension by field measurement. Make allowance for field adjustments as recommended by manufacturer.
- .2 Panel lines, breaks and angles: sharp, true and surfaces free from warp or buckle.
- .3 Provide fastener hole dimensions to allow for concentric panel expansion and contraction and as recommended by manufacturer.

### **PART 3 Execution**

#### **3.1 EXAMINATION**

- .1 Before installation examine alignment of substrate and notify Consultant in writing if substrate does not comply with requirements.

#### **3.2 INSTALLATION**

- .1 Subject to project schedule constraints, install panels as close as possible to middle of local ambient air temperature range.
- .2 Install vapour and air seal membrane and insulation in accordance with related specification Sections and as indicated on drawings.
- .3 Install panel anchorage and panels in accordance with:
  - .1 Panel manufacturer's written instructions and recommendations.
  - .2 Accepted shop drawings.
- .4 Fasten to allow for movement due to thermal and humidity induced expansion and contraction and wind loads. Take care not to over-tighten panel fasteners that are intended to allow panel expansion and contraction.
- .5 Maintain following installation tolerances:
  - .1 Maximum variation from plane or location shown on shop drawings: 10 mm in 10 m, non-cumulative.
  - .2 Maximum deviation for vertical member: 3 mm in an 8.5 m.
  - .3 Maximum deviation for a horizontal member: 3 mm in an 8.5 m.
  - .4 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm.
- .6 Remove strippable coating from panels, if applicable, as they are installed.

#### **3.3 CLEAN-UP**

- .1 Leave work clean, free from grease, finger marks and stains.

END OF SECTION

*(Revised in Addendum 5)*

Part 1 General

**1.1 RELATED REQUIREMENTS**

- .1 Section 07 21 13 – Board Insulation
- .2 Section 07 26 00 – Vapour Retarders
- .3 Section 07 27 00 – Air Barriers
- .4 Section 07 62 00 – Sheet Metal Flashing and Trim.

**1.2 REFERENCES STANDARDS**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process
  - .2 ASTM B209-10, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate
  - .3 ASTM B211-12e1, Standard Specification for Aluminum and Aluminum Alloy Rolled or Cold Finished Bar, Rod, and Wire
  - .4 ASTM B221-12, Standard for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
  - .5 ASTM C1166-06(2011), Standard Test Method for Flame Propagation of Dense and Cellular Elastomeric Gaskets and Accessories
  - .6 ASTM C1185-08(2012), Standard Test Methods for Sampling and Testing Non Asbestos FIBER REINFORCED CEMENT Flat Sheet, Roofing and Siding Shingles, and Clapboards
  - .7 ASTM C1186-08(2012), Standard Specification for Flat Fibre Reinforced Cement Sheets
  - .8 ASTM D395-03(2008), Standard Test Methods for Rubber Property Compression Set
  - .9 ASTM D412-06ae2, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers Tension
  - .10 ASTM D624-00(2012), Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
  - .11 ASTM D746-07, Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
  - .12 ASTM D1149-07(2012), Standard Test Methods for Rubber Deterioration Cracking in an Ozone Controlled Environment
  - .13 ASTM D2240-05(2010), Standard Test Method for Rubber Property Durometer Hardness
  - .14 ASTM E96/E96M-12, Standard Test Methods for Water Vapour Transmission of Materials
  - .15 ASTM E2178-11, Standard Test Method for Air Permeance of Building Materials
- .2 Underwriter Laboratories of Canada (ULC):

*(Revised in Addendum 5)*

- .1 CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies
  - .2 CAN/ULC-S114-05, Standard Method of Test for Determination of Non-combustibility in Building Materials
  - .3 CAN/ULC-S134-92, Fire Test for Exterior Wall Assemblies
  - .4 CAN/ULC-S135-04, Standard Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter), Includes Amendment 1
- .3 Canadian Construction Materials Centre (CCMC):
- .1 CCMC 13549-R, Technical Guide 07 193 Sheathing Membrane - Breather Type

### **1.3 ADMINISTRATIVE REQUIREMENTS**

- .1 Coordination: Coordinate the Work of this Section with the installation of gypsum sheathing board and air barrier; Sequence work so that installation of fibre reinforced cement panels and support framing coincides with installation of substrate preparation without causing delay to the Work.

### **1.4 SUBMITTALS**

- .1 Action Submittals: Provide the following submittals before starting any work of this Section:
  - .1 Product Data: Submit manufacturer's data sheets covering the care and recommended maintenance procedures for incorporation into maintenance manuals.
  - .2 Shop Drawings: Submit shop drawings of panel systems, components, façade material, panel layout and accessories to the Consultant for review.
  - .3 Samples:
    - .1 Submit for approval 100mm x 150mm (4" x 6") sample of proposed colour and texture for Consultant's acceptance.
    - .2 Submit full size samples of accessories as requested by Consultant.
  - .4 Manufacturers Warranties: Submit copies of manufacturers warranties.

### **1.5 CLOSEOUT SUBMITTALS**

- .1 Operation and Maintenance Data: Submit manufacturer's written instructions for cleaning solutions, materials and procedures, include name of original installer and contact information.
  - .1 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.

### **1.6 QUALITY ASSURANCE**

- .1 Qualifications: Provide proof of qualifications when requested by Consultant:
  - .1 Manufacturer / Supplier: Obtain materials from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties.
  - .2 Installers: Execute Work of this Section using qualified personnel skilled in installation of work of this Section, having a minimum of five (5) years proven

*(Revised in Addendum 5)*

experience of installations similar in material, design, and extent to that indicated for this Project.

**1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery: At the time of delivery, visually inspect all materials for damage. Note any damaged to materials on the receiving ticket and immediately report to the shipping company and the material manufacturer.
  - .1 Remove damaged materials from the site immediately.
- .2 Storage: Store materials in accordance with manufacturer's written instructions, raised off the ground and cover with a weather proof flame resistant sheeting or tarpaulin.
- .3 Handling: Material shall be handled in accordance with sound material handling practices and in accordance with manufacturer's written instructions.

**1.8 SITE CONDITIONS**

- .1 Site Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings where fibre reinforced cement panels are indicated to fit walls and other construction.
- .2 Establish dimensions and proceed with fabricating fibre reinforced cement panels where field measurements cannot be made without delaying the work; allow for site trimming and fitting.
- .3 Ambient Conditions: Install materials outlined in this Section after completion of work by other Sections is complete, and all penetrations are watertight; to provide adequate dry, clean, level, and plumb surfaces for installation and adhesion.

**1.9 WARRANTY**

- .1 Warrant the work of this section in accordance with manufacturer's warranty for a period of ten (10) years from date of delivery of material and agree to repair or replace faulty materials which becomes evident during the warranty period without cost to the Owner and at the Owner's convenience.
- .2 Warranty includes but is not limited to: Maintain the mechanical qualities, water tightness and frost resistance, providing the panels are correctly installed on a ventilated construction in accordance to the installation procedures outlined in this Section.
- .3 Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the exterior finish on fibre reinforced cement panels within the specified warranty period and agreeing to repair finish or replace panels that show evidence of finish deterioration.
  - .1 Deterioration of finish includes, but is not limited to, colour fade, chalking, and cracking, for a period of ten (10) years from date of Substantial Performance.

**1.10 SCOPE**

- .1 Work furnished and included:
  - .1 Panel Profile.
  - .2 Associated flashings.
  - .3 Supporting brake metal angled and other required supports for panels.

*(Revised in Addendum 5)*



- .4 Semi-Rigid insulation, refer to Section 07 21 13.
- .5 Membrane vapour retarders, refer to Section 07 26 00.
- .6 Membrane air barriers, refer to Section 07 27 00.
- .2 Related work not included:
  - .1 Structural framing required to support the cladding system.

## **Part 2 Products**

### **2.1 MATERIALS DISTRIBUTORS**

- .1 Materials and accessories specified herein are distributed by: Engineered Assemblies.

### **2.2 PERFORMANCE REQUIREMENTS**

- .1 Delegated Design: Design fibre reinforced cement panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- .2 Structural Performance: Provide fibre reinforced cement panel assembly capable of withstanding the effects of the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 330:3
  - .1 Wind Loads: Uniform pressure of 40 psf inward and outward wind pressures.
  - .2 Deflection Limits: fibre reinforced cement panel assemblies shall provide L/180 maximum deflection stiffness required by the panel manufacturer.
  - .3 Condensation: Panels shall accommodate positive drainage for moisture entering or condensation occurring within panel system.
- .3 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and night time-sky heat loss.
  - .1 Temperature Change (Range): Temperature range from 1% January design temperature to 2.5% July dry design temperature for the project location indicated in Table C-2, Division B, Appendix C of the latest edition of the National Building Code.
  - .2 Surface temperature variation of 85 centigrade degrees.
- .4 Design to accommodate, by means of control joints, movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to in fills or racking of joints.
- .5 Air space at top and bottom of building, or each wall termination, for buildings less than 18m (60'), shall be 25mm (1") to facilitate airflow from behind the panels. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. Airflow shall be continuous from bottom to top so there is air movement behind each panel
- .6 Fasteners shall accommodate thermal expansion/contraction without excessive stress to the panel. Each panel shall have central lock points to support gravity loads.

- .7 Design members and suspension system to withstand gravity load, live loads, including negative loads, as calculated in accordance with the building code.
- .8 Structural panel supports shall provide the minimum L/300 deflection stiffness required by the panel manufacturer. Panels themselves shall not deflect more than L/180 maximum at serviceability limit states.

## 2.3 MATERIALS

- .1 Fibre C Panel, Rieder Series, Fibre Reinforced Cement Panels (FRCP):
  - .1 Fully compressed, autoclaved FRCP, color through-out the panel. The surface of the panel is characterized by fine sanding lines in the long direction.
  - .2 Application:
    - .1 Exterior Facades
  - .3 Thickness: 13 mm (1/2")
  - .4 Dimensions:
    - .1 Provide special sizes to match seems shown on drawings.
  - .5 Finish:
    - .1 Through-colored, semi-transparent finish
    - .2 Colored finish with an additional, permanent, clear, waterproof top-coating.
  - .6 Physical Characteristics: ASTM C1185, ASTM C1186, and EN 12467.
  - .7 Bulk Density: 2,420 kg/m<sup>3</sup>
  - .8 Bending tensile strength: >18.0 N/mm<sup>2</sup>
  - .9 Modulus of elasticity for deformation calculation: 10,000 N/mm<sup>2</sup>.
  - .10 Modulus of elasticity for restraint calculation: 30,000 N/mm<sup>2</sup>.
  - .11 Moisture Expansion 0-100%, mean: 0.05%.
  - .12 Strength classification (EN 12467): Class 4.
  - .13 Thermal conductivity: 2.0 W/mK
  - .14 Fire reaction: (CAN/ULC-S135) Suitable for non-combustible construction in Canada.
  - .15 Basis of Design:
    - .1 Fibre C, Rieder Series, Fibre Reinforced Cement Panels as manufactured by Euro Panel and distributed by Engineered Assemblies.
  - .16 Anchors to be exposed.
- .2 Substructure:
  - .1 Vertical Girts:
    - .1 Vertical girts supporting panels are 1.2mm (18 gauge) thick, galvanized zinc-coated steel to ASTM A653 with Grade A coating Z275. Painted black.
      - .1 Shop Primers: Provide primers that are compatible with paint systems specified in Section 09 91 00.
    - .2 Preformed galvanized metal sheet, 1.2mm (18 gauge) thick, minimum base steel nominal thickness, notched or perforated for drainage.

- .3 Girt locations as determined and approved by engineer of record, to align with modular panel fasteners spaced based on manufacturer's panel load data.
- .4 Front fastened systems:
  - .1 Girts behind panels to be vertical to allow vertical ventilation.
  - .2 Preformed black galvanized steel girts to be used at inside and outside corners to ensure corners are straight and closed visually, and used at intermediary panel locations and where panels come together.
  - .3 Girts provided by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.
- .5 Cavity behind panel: Minimum 25mm (1") of unrestricted space.
- .6 Gap between panels: Minimum of 8mm (5/16") to allow for expansion and contraction.
- .7 EPDM Rubber Separation Strip: Designed and supplied by Engineered Assemblies to be installed between the panel and the vertical girt to allow movement between panel and support system, meeting the following:
  - .1 Shore "A" Hardness: ASTM D2240.
  - .2 Compression Set, 22h at 212°F (100°C): ASTM D395.
  - .3 Ozone Resistance, 100 mPa 100h @ 104°F (40°C) 20%
  - .4 Elongation: ASTM D1149.
  - .5 Tensile Strength: ASTM D412.
  - .6 Elongation at Rupture: ASTM D412.
  - .7 Tear Strength: ASTM D624.
  - .8 Brittleness Temperature at -40°F (-40°C): ASTM D746.
  - .9 Flame Propagation, Option II; ASTM C1166.
- .8 Substructure to account for control joints of building to ensure a girt is not connected across the control joint.
- .9 Install panels across one set of horizontal suspension rails to ensure that expansion and contraction of the substrate is controlled within framing members.
- .2 Clip System: 38mm (1-1/2") wide, die cut aluminum extruded clip, adjustable to plumb structure, minimum 1.2mm (18 gauge) thick galvanized zinc-coated steel to ASTM A653. System to provide compliance to ASHRAE 90.1 and thermally broken façade requirements of the building code.
  - .1 Adaptable horizontal framing members.
  - .2 Clip Depth: to accommodate insulation depth.
    - .1 150mm (6")
  - .3 Vertical Clip Spacing:
    - .1 864mm (34")
    - .2 1041mm (41")
    - .3 1220mm (48")
- .3 Basis of Design Product: EA RVRS TClip and Girt, Model T150, by Engineered Assemblies.

*(Revised in Addendum 5)*

- .3 Fasteners:
  - .1 Colour matched stainless steel rivets, as per Engineered Assemblies recommendations. No dissimilar materials allowed, in selection of fasteners.
  - .2 All holes are pre-drilled in the panel at same diameter
  - .3 Fixed holes include a stainless steel grommet on the rivet stem.
  - .4 Floating holes have rivet only.
- .4 Bird and Vent Screen:
  - .1 Continuous bird and vent screen located at top and bottom of panel system, where opening is minimum 25mm (1") wide, with minimum 50% free air flow, manufactured by Engineered Assemblies from perforated aluminum, painted black.
- .5 Flashings: Prefinished steel as specified in Section 07 62 00 – Sheet Metal Flashings and Trim. Colour to match adjacent exposed panel faces.
  - .1 Flashings at edges, top and bottom of panel system as per architectural drawings.
- .6 Vapour Barriers in accordance with Section 07 26 00 – Vapour Retarders.
- .7 Insulation: As indicated in Section 07 21 13 – Board Insulation.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions:
  - .1 Examine substrates to receive work and surrounding adjacent surfaces for conditions affecting installation. Coordinate with related sections to ensure proper dimensions are maintained.
  - .2 Verify site dimensions by accurate field measurements so that work will be accurately designed, fabricated and fitted to the structure.
  - .3 All penetrations through the façade for the work of other trades shall be fitted with a watertight sleeve. Verify flashings are in place, sealed with waterproof membrane and covered with building membranes.
  - .4 Maintain sheathing membrane integrity.
- .2 Notify Contractor in writing of any conditions that are not acceptable.
- .3 Proceed with installation after verification and correction of surface conditions acceptable to manufacturer.

#### **3.2 INSTALLATION**

- .1 Erect panel system and sub-framing in accordance with manufacturer's instructions.
- .2 Erect panels in straight lines, true, level and plumb. Maintain dimensions required by manufacturer for minimum distances from edge for holes and penetrations.
- .3 Fasten support profiles to horizontal sub-frame, anchored to the exterior wall assembly. Support profiles include joint insert to align the panels and resist movement. Install fixed

- or adjustable sub-frame to accommodate panelized or irregular wall construction. Joints of the bearing profiles may not be overlapped by cladding panels.
- .4 Girt locations as determined and stamped by Professional Engineer, to align with modular panel fasteners spaced based on manufacturer's panel load data.
  - .5 Space at top and bottom of each wall minimum 25mm (1"), as per manufacturer's details. Install perforated, preformed black aluminum bird screen within the gap, to allow for ventilation and reduce rodent infiltration.
  - .6 Install panels by "Lift and Lock" assembly, allowing for replacement of damaged panels without use of special tools or removal of adjacent panels.
  - .7 Installation to allow for thermal expansion of the panel. Provide a minimum of 10mm (3/8") space between top and bottom of each panel.
  - .8 Size of rivets as per manufacturer's written instructions. No other types of fasteners are acceptable. Exposed rivets shall not be accepted unless by the Consultant in writing.
  - .9 Install panels with joints centered over framing. Install all joint inserts straight to the panel, as recommended by panel manufacturer.
  - .10 Do not install using damaged, warped or misaligned material.
  - .11 Where panels fit into accessories, allow room for expansion.
  - .12 Finished installation shall be properly secured, free of rattles, distortions, waviness, and protrusions, damaged or chipped components.
  - .13 Cut and flash wall penetrations with metal flashing.
  - .14 Install breathable sheathing membrane in accordance to manufacturer's instructions. No penetrations are to be left in installed membrane.

### **3.3 CLEANING**

- .1 Progress Cleaning: Leave work area clean at the end of each workday, ensuring safe movement of passing pedestrians.
- .2 Final Cleaning: At completion of installation, clean all surfaces so they are free of foreign matter using cleaners recommended by material manufacturer.
- .3 Restore panels and accessory components damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by the Consultant, remove and replace damaged systems with new at no additional cost to the Owner.
- .4 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Certified installer shall be responsible for ensuring waste management efforts are practiced.

**END OF SECTION**

This addendum forms part of the Bid and Contract Documents and modifies them as follows:

**SPECIFICATIONS**

**1. Section 22 07 19 – Plumbing Piping Insulation**

.1 Refer to Item 3.3:

**CLARIFY:** Canvas recovery jacket is required on all pipe sizes

**2. Section 23 05 00 – Common Work Results Mechanical**

.1 Refer to Item 1.37.10

**ADD:** Add Flo-Fab to the list of acceptable manufacturers for pumps, expansion tanks, and air separators

**ADD:** Add Lochinvar and Viessmann to the list of acceptable manufacturers for condensing boilers.

**ADD:** Add Twin City to the list of acceptable manufacturers for Fans.

**3. Section 23 05 48 – Vibration Controls for HVAC**

.1 Update to Item 3.3 Isolation Schedule as follows:

Isolated Equipment Description	Type of Isolation	Static Deflection	Remarks
EXHAUST FANS	OPEN SPRING ISOLATOR	20mm	--
TRANSFER FANS	OPEN SPRING ISOLATOR	20mm	--
INLINE FANS	OPEN SPRING ISOLATOR	20mm	--
UNIT HEATERS	OPEN SPRING ISOLATOR	20mm	--
FAN COIL UNITS	OPEN SPRING ISOLATOR	20mm	--
IN-LINE PUMPS	NEOPRENE PADS	--	--
CHILLER	INTERNAL TO UNIT	--	--
ERV	INTERNAL TO UNIT	--	--

Note: Vibration Isolation equipment to be selected in accordance with Seismic Force Resistance System design by contractor.

**4. Section 23 07 16 – HVAC Equipment Insulation**

.1 Refer to Item 3.3:

**REVISE:** Revise air separator insulation thickness to be 50mm.

**5. Section 23 07 19 – HVAC Piping Insulation**

.1 Refer to Item 3.3:

**CLARIFY:** Canvas recovery jacket is required on all pipe sizes

**REVISE:** Revise Heating Water Piping Insulation Thickness as follows:

<u>Pipe Size (mm)</u>	<u>Thickness (mm)</u>
15-30	40
40 and over	50

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**6. Section 25 90 01 – EMCS Control Sequences**

.1 Refer to Item 3.4.1.7

**REVISE:** Revise item 3.4.1.7 to read:

*“The boilers shall be operated on a lead/lag bases. When the heating system is enabled, the lead boiler circulation pump shall be started and shall operate continuously. Once the lead boiler circulation pump proves on, the lead boiler shall be enabled. When the secondary system flow rate rises above 1.58L/s for more than 5 minutes, the lag boiler circulation pump shall be started. Once the lag boiler circulation pump proves on, the lag boiler shall be enabled and the boiler supply water temperature setpoint shall be reset to equal the secondary supply water setpoint. When the system flow rate falls below 1.58l/s for more than 5 minutes, the lag boiler shall be disabled. After a two-minute delay to dissipate any residual heat in the boiler, the lag boiler circulation pump shall be commanded closed.”*

.1 Refer to Item 3.4.3.1

**REVISE:** Revise item 3.4.3.1 to read:

*“The glycol cooling system has been piped as a variable primary system.”*

**REVISE:** Revise item 3.4.3.9.3 to read:

*“The two-way flow control valve shall be modulated to maintain the chilled glycol flow setpoint. The chilled glycol flow setpoint shall be set at 1.82l/s when one chiller isolation valve is commanded open and at 3.64l/s when two chiller isolation valves are commanded open. Control of the isolation valves is by the chiller controls. The flow control valve shall be installed out in the system piping as indicated in the drawings.”*

**DRAWINGS**

**1. Mechanical Drawing –M2.0, Foundation Plumbing Plan**

.1 Refer to Foundation Plumbing Plan

**DELETE:** Delete floor drain in Room 139 and associated sanitary piping.

**ADD:** Add sink drain in Room 133. Connect to SAN main below Room 133.

**2. Mechanical Drawing –M2.1, Main Flor Plumbing Plan**

.1 Refer to Foundation Plumbing Plan

**REVISE:** Revise sink in Room 132 to be SK-2 type.

**ADD:** Add sink SK-3and two HBs in Room 133.

**REVISE:** Revise sink in Room 140 to be SK-6 type.

**ADD:** Add Keynote 18 in Room 139. Keynote 18 to read “Pipe 20-COND drain from air conditioning unit to sink drain in Room 140”

**REVISE:** Revise sink in Room 105 to be SK-4 type.

**REVISE:** Revise sink in Room 148 to be SK-5 type.

**REVISE:** Revise floor drains in Rooms 150, 152, 153, 155, 156, 158, 159, 161, 162, 164, 165, 167, 168, and 170 to be FD-3 type.

**ADD:** Add 25-COND drain pipe from drains in ERV-1 above Room 134 to Mop sink in Room 172.

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**3. Mechanical Drawing –M3.0, Main Floor Heating and Cooling Plan**

.1 Refer to Main Floor Heating and Cooling

**REVISE:** Revise CH-GLYS and CH-GLYR piping above Corridor 120 to be 65-CH-GLYS and 65-CH-GLYR all the way to Room 127. The Chilled Glycol minimum flow valve indicated on the Schematic is to be installed at the end of Corridor 120 near Room 127.

**ADD:** Add second thermostat in Room 139 and connect to AC-1 unit shown on M4.0.

**ADD:** Add thermostat in Room 124 and connect to FC-9.

**ADD:** Add Keynote 7 to indicate “Refer to Mechanical Room Plan for continuation.”

**CLARIFY:** The heating system differential pressure by-pass valve indicated on the heating schematic drawings is to be installed at the end of Corridor 120 near Room 127.

.2 Refer to Piping to Chiller and Steam Humidifier

**ADD:** Add 20-COND drain from steam dispersion unit back humidifier in mechanical room. Steam and condensate piping is to slope back to the humidifier.

**4. Mechanical Drawing –M4.0, Main Floor Heating and Cooling Plan**

.1 Refer to Main Floor Heating and Cooling

**ADD:** Add Keynote 6 tags at the following locations:

- i) In the FC-15 S/A duct at the west wall of Room 173
- ii) In the FC-13 S/A duct at the west wall of Room 173
- iii) In 300dia S/A duct at the west wall of Room 135
- iv) In 350dia S/A duct at the north wall of Room 135
- v) In 700x350 S/A duct at the north wall of Room 135
- vi) At roof level in E/A duct up through roof to ERV-1 above Room 134.
- vii) At roof level in S/A duct down from ERV-1 on roof above Room 134.

**REVISE:** Revise Room 13 exhaust layout and Keynotes 17 and 23 as per attached sketch M4.0-MSK-01.

**ADD:** Add General Note 11 to indicate “Provide security bars in ducts passing through secure walls as per keynoted located and as per room grille schedule.”

**5. Mechanical Drawing –M4.1, Main Floor Ventilation Sections**

.1 Refer to Section A

**CLARIFY:** FD note for 350x350 S/A duct from FC-2 is to indicate a Fire Damper

**6. Mechanical Drawing –M5.0, Main Floor Fire Protection**

.1 Refer to Main Floor Fire Protection

**REVISE:** Revise General Note 2 to indicate: “Approved vandal proof sprinkler heads to be provided in rooms 150, 152, 153, 156, 158, 159, 161, 162, 164, 165, 167, 168, 170, 171, and 174. Upright sprinkler heads to be provided above concrete ceiling in these areas for sprinkler coverage above ceiling.”



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7. **Mechanical Drawing –M6.0, Mechanical Room Plan**

.1 Refer to Mechanical Room Plan

- ADD:** Add General Note 5 to indicate: “Provide security bars as per Detail 10 on drawing M8.3 at louvers in exterior walls.”
- ADD:** Add FD-2 floor drain near water meter.
- ADD:** Add FD-4 floor drains near humidifier, DWHs, boilers
- REVISE:** Revise 75-CH-GLYS from chiller to enter mechanical room and flow through 3-way valve and then connect to 75-CH-GLYS to FCUs. Buffer tank is to be connected to 75-CH-GLYR piping downstream of AS-2 complete with isolation valves and bypass.
- CLARIFY:** Emergency gas shut-down switch indicated on heating schematic drawing is to adjacent to Mechanical Room exterior door by DHW-1.
- ADD:** Add 75-STEAM and 20-COND piping from northwest corner of mechanical room humidifier in southeast corner.
- REVISE:** Revise Keynote 5 to indicate: “Pipe 75dia steam line into Ultrasorb steam dispersion tube panel at this location. Pipe condensate from steam dispersion unit and duct drain back to humidifier in mechanical room. Provide drain cooler”

8. **Mechanical Drawing –M7.0, Mechanical Roof Plan**

.1 Refer to Mechanical Roof Plan

- ADD:** Add Keynote 5 to indicate: “ERV-1 to be installed on 300mm insulated roof curb.” Add Keynote 5 tag adjacent to ERV-1.
- ADD:** Add Keynote 6 to indicate: “CH-1 to be installed on structural steel. Refer to structural drawings. Coordinate final chiller dimensions with structural steel supplier.”
- ADD:** Add Keynote 7 to indicate: “CU to be installed on concrete paving stones c/w 50mm rigid insulation between roof and concrete paving stone. Anchor CU to concrete paving stone.” Add Keynote 7 tag adjacent to CU-1.

9. **Mechanical Drawing –M8.0, Mechanical Schematics**

.1 Refer to Heating System Schematic

- REVISE:** The “300mm MAX” distance separation for the connection of the primary heating loop piping to the secondary heating loop should indicate “300mm MIN / 400mm MAX”.

.2 Refer to Chilled Water Schematic

- REVISE:** Revise “differential pressure bypass” valve to be called “minimum flow valve”. Revise piping for minimum flow valve to be 50mm. Minimum flow valve to be 40mm.
- REVISE:** The Buffer Tank TK-5 is to be piped to connect to the 75-CH-GLYR piping and not the 75-CH-GLYS piping.

10. **Mechanical Drawing –M8.3, Mechanical Schematics**

.1 Refer to SECURE GILLE DETAIL

- ADD:** Install security bars in duct for supplying security grille where noted on drawings. Refer to Secure Area Duct opening Detail

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.2 Add detail:

**ADD:** Add below slab pipe support detail as per attached.

**11. Mechanical Drawing –M9.0, Mechanical Equipment Schedules**

.1 Refer to AIR-COOLED CHILLER SCHEDULE

**REVISE:** Revise Air-Cooled Chilled Schedule as per attached.

.2 Refer to PUMP SCHEDULE

**REVISE:** Revise Pump Schedule as per attached.

.3 Refer to DOMESTIC WATER HEATER SCHEDULE

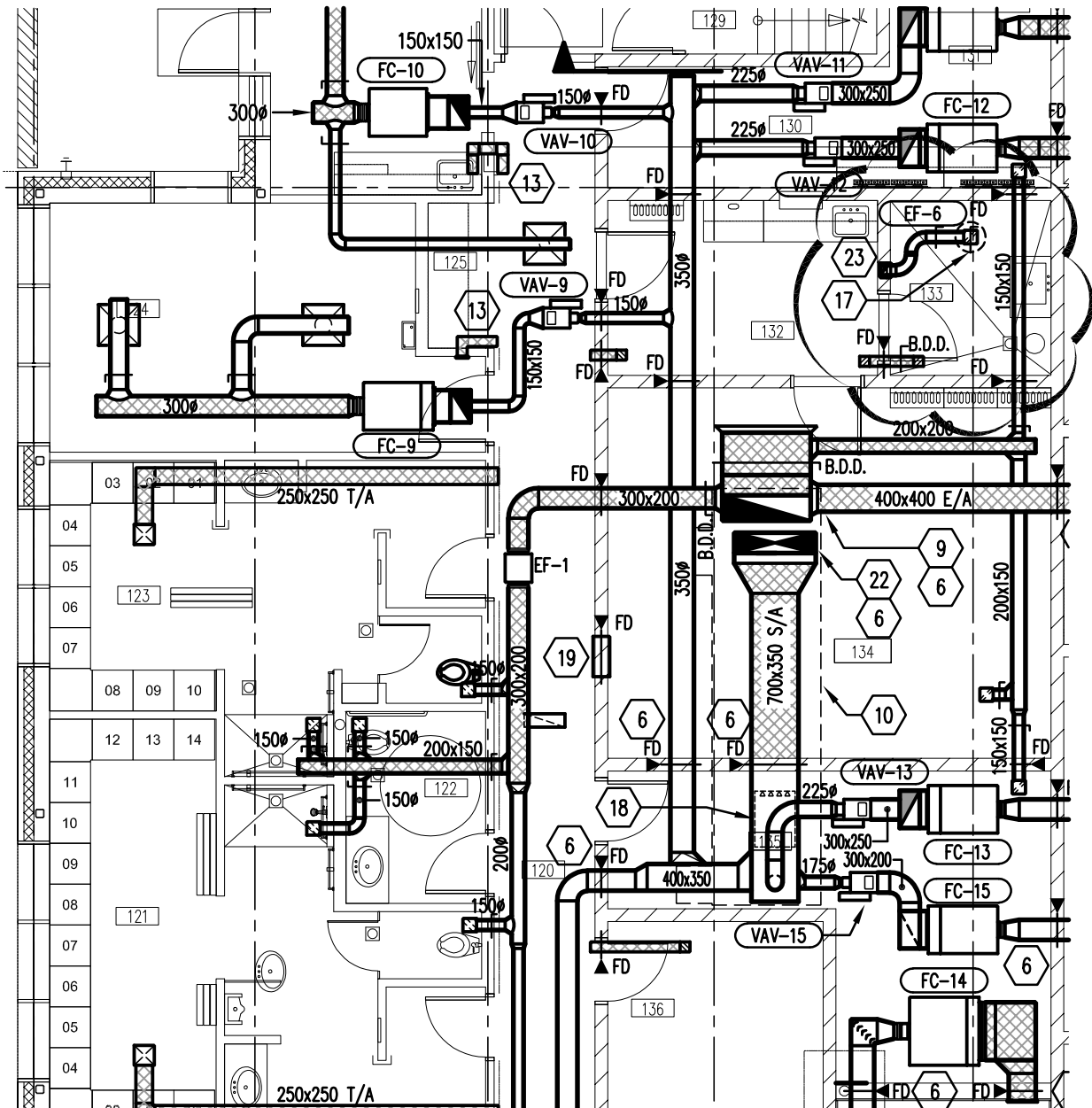
**ADD:** Add note to provide condensate neutralization kit for DWH-1 and DWH-2.

**ATTACHMENTS**

The following are attached hereto and form part of this addendum:

1. M4.0-MSK-01, Structural Slab Underground Pipe Support Detail, Air-Cooled Chiller Schedule, Pump Schedule,

**END OF ADDENDUM M2**



**KEYNOTES:**

17 PROVIDE 200x200 INSULATED DUCT FROM CEILING GRILLE UP TO EXHAUST FAN EF-6 ON ROOF. PROVIDE FIRE DAMPER AT CEILING EXIT, SECURITY BARS AND INSULATED MOTORIZED DAMPER AT ROOF EXIT.

23 100x150mm E/A DOWN IN WALL TO GRILLE 100mm A.F.F.

EDMONTON OFFICE  
Suite #200  
10065 - Jasper Avenue  
Edmonton, AB T5J 3B1

Bus: (780) 424-2393  
Toll Free: 1-800-263-2393  
Fax: (780) 425-1520

info@williamsengineering.com  
www.williamsengineering.com

WILLIAMS  
ENGINEERING  
CANADA



JOB. TITLE:

**WABASCA DETACHMENT  
WABASCA, AB**

DWG. TITLE:

**PARTIAL MAIN FLOOR  
VENTILATION PLAN  
(ADDEDNUM M2)**

DWN. BY:

DES. BY:

PROJ. MGR.:

QK

QK

BT

PEER REVIEW:

DATE: (YY-MM-DD)

SCALE:

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2018.01.31

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CLIENT PROJ. #

WE PROJ. #

OF

REV #

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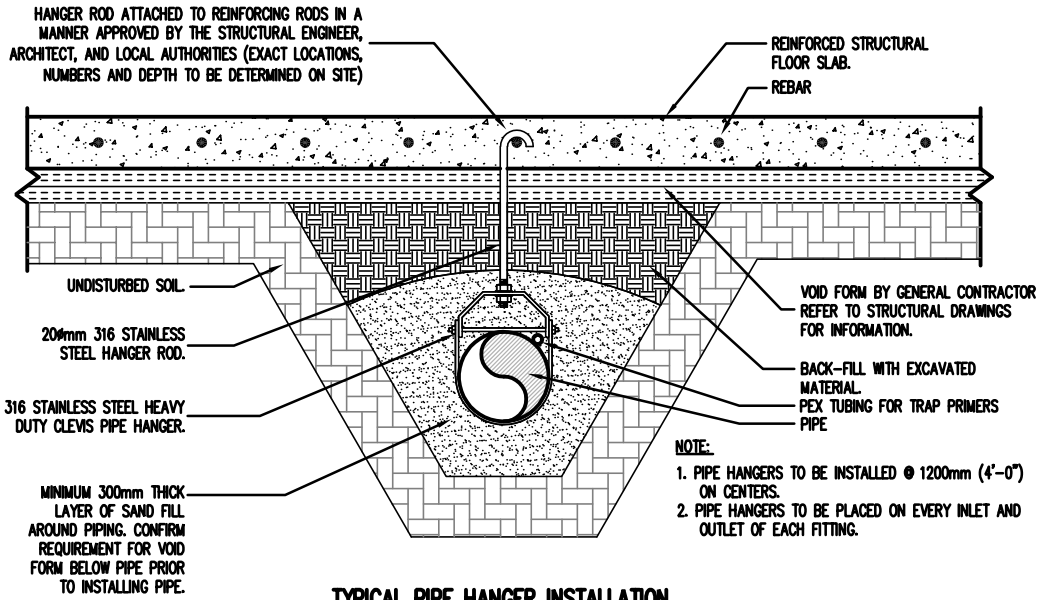
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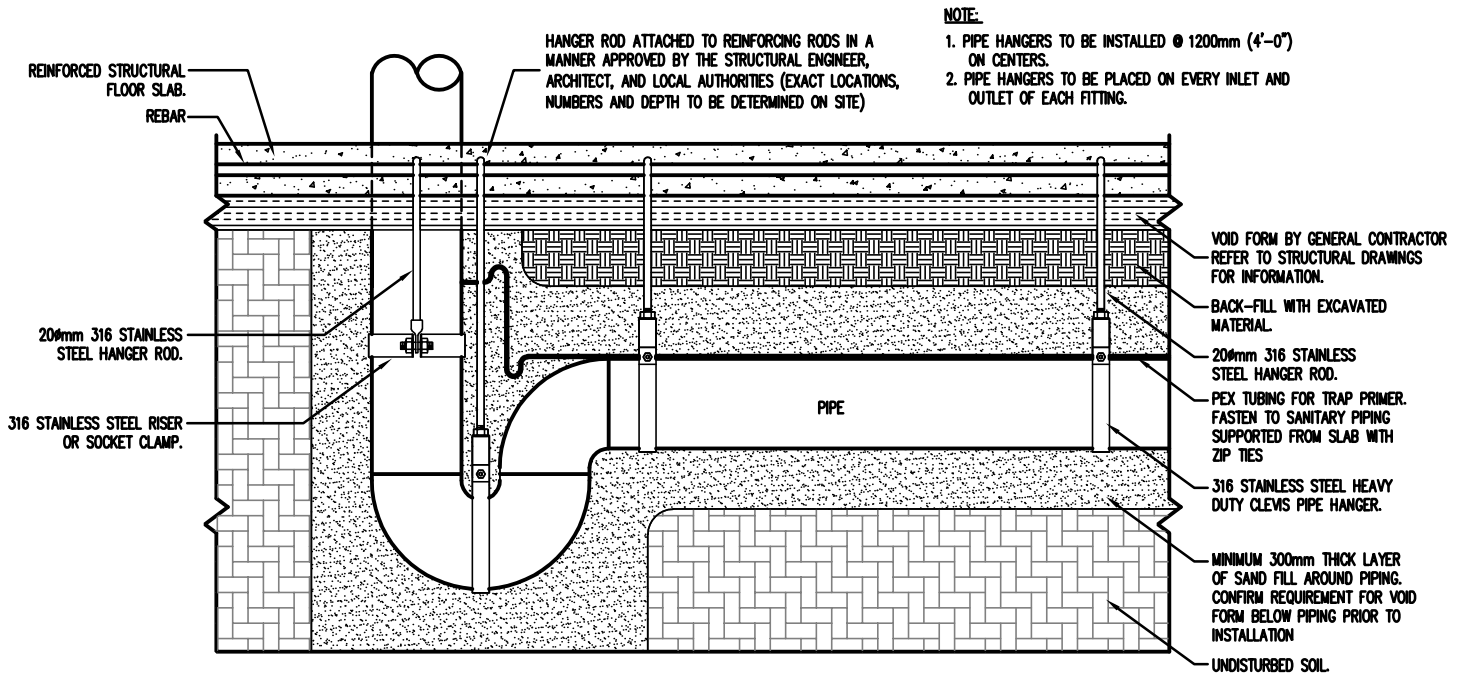
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DWG #

**M4.0-MSK-01**



**TYPICAL PIPE HANGER INSTALLATION**



**P-TRAP HANGER INSTALLATION**

EDMONTON OFFICE  
Suite #200  
10065 - Jasper Avenue  
Edmonton, AB T5J 3B1

Bus: (780) 424-2393  
Toll Free: 1-800-263-2393  
Fax: (780) 425-1520

info@williamsengineering.com  
www.williamsengineering.com

WILLIAMS  
ENGINEERING  
CANADA



JOB. TITLE:

**WABASCA DETACHMENT  
WABASCA, AB**

DWG. TITLE:

**STRUCTURAL SLAB UNDERGROUND  
PIPE SUPPORT DETAIL  
(ADDENDUM M2)**

DWN. BY:

QK

DES. BY:

QK

PROJ. MGR.:

BT

PEER REVIEW:

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DATE: (YY-MM-DD)

2018.01.31

SCALE:

N.T.S.

CLIENT PROJ. #

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WE PROJ. #

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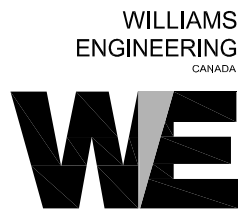
**AIR-COOLED CHILLER / DRY-FLUID COOLER SCHEDULE**

TAG	MAKE	MODEL	QTY	LOCATION	SERVICE	WEIGHT (kg)	DIMENSIONS (mm)			REFRIGERANT	AMBIENT AIR TEMP (°C)		FLUID			PRESSURE DROP (kPa)	CAPACITY PER MODULE (kW)	TOTAL CAPACITY (kW)	COPR @ FULL LOAD	EER @ FULL LOAD	ELECTRICAL (VOLT/PH/HZ)	MCA (Amp)	NOISE (dB)	NOTES
							LENGTH	WIDTH	HEIGHT		DRY BULB	WET BULB	TYPE	EWT (°C)	LWT (°C)									
CH-1	MULTISTACK	ASP015	2	ROOF	CHILLED WATER SYSTEM	2320	2940	2050	2050	R-410A	27	19	50% PROPYLENE GLYCOL	12.8	7.2	5.53	63	52	104	3.92	13.38	208/3/60	167	3-WAY VALVE TO DIVERT FLOW AROUND DRY-COOLER, 2-WAY VALVE TO CONTROL FLOW THROUGH CHILLER MODULES, BYPASS VALVE TO PERMIT FLOW THROUGH DRY-COOLER WHILE NO FLOW THROUGH CHILLER MODULES, BACNET COMMUNICATION CARD, FACTORY PAINTED AS SELECTED BY ARCHITECT DURING SHOP DRAWING STAGE. EXTREME LOW AMBIENT KIT (-29°C ON CONDENSER FANS), SINGLE PIECE PAINTED CARBON STEEL LIFTING FRAME, ACOUSTIC COMPRESSOR WRAPS, LOW NOISE FANS, SINGLE POINT POWER CONNECTION, VARIABLE SPEED FANS ON THE FREE COOLING MODULE, AND 15A CONVENIENCE OUTLET.
DFC-1	MULTISTACK	FCP1	1							-	-1	-1	50% PROPYLENE GLYCOL	12.8	7.2	2.5								

**PUMP SCHEDULE**

TAG	MAKE	MODEL	TYPE	LOCATION	SERVICE	INLET/OUTLET (mm)	FLUID	CAPACITY (L/s)	PRESSURE (kPa)	MOTOR RPM	MOTOR (kW)	ELECTRICAL (VOLT/PH/HZ)	NOTES
P-1	GRUNDFOS	UP 26-96	CIRCULATOR	ROOM 145	HEATING SYSTEM	40	WATER	1.17	15	-	70 WATTS	115/1/60	CAST IRON, FLANGED CONNECTIONS, INTERLOCKED WITH ON BOARD BOILER CONTROLS. CAPABLE FOR FUTURE INTEGRATION INTO BMS.
P-2	GRUNDFOS	UP 26-96	CIRCULATOR	ROOM 145	HEATING SYSTEM	40	WATER	1.17	15	-	70 WATTS	115/1/60	CAST IRON, FLANGED CONNECTIONS, INTERLOCKED WITH ON BOARD BOILER CONTROLS. CAPABLE FOR FUTURE INTEGRATION INTO BMS.
P-3	GRUNDFOS	MAGNA3 40-180	CIRCULATOR	ROOM 145	HEATING SYSTEM	40	WATER	1.58	110	-	600 WATTS	208/1/60	C/W VFD DRIVE & CONTROL, PROVIDE ADD-ON CIM MODULE FOR BMS SYSTEM.
P-4	GRUNDFOS	MAGNA3 40-180	CIRCULATOR	ROOM 145	HEATING SYSTEM	40	WATER	1.58	110	-	600 WATTS	208/1/60	C/W VFD DRIVE & CONTROL, PROVIDE ADD-ON CIM MODULE FOR BMS SYSTEM.
P-5	GRUNDFOS	TPE	VERTICAL INLINE	ROOM 145	CHILLED GLYCOL SYSTEM	40	50% PROP. GLYCOL	5.53	180	-	2.2	208/3/60	C/W VFD DRIVE & CONTROL, PROVIDE ADD-ON CIM MODULE FOR BMS SYSTEM.
P-6	GRUNDFOS	TPE	VERTICAL INLINE	ROOM 145	CHILLED GLYCOL SYSTEM	40	50% PROP. GLYCOL	5.53	180	-	2.2	208/3/60	C/W VFD DRIVE & CONTROL, PROVIDE ADD-ON CIM MODULE FOR BMS SYSTEM.
P-7	GRUNDFOS	MAGNA1	CIRCULATOR	ROOM 145	DOMESTIC WATER SYSTEM	25	DOMESTIC WATER	0.25	30	3250	105 WATTS	120/1/60	APPROVED FOR DOMESTIC WATER
SP-1	LITTLE GIANT	5-ASP-LL	SUMP	ROOM 125	WASTE WATER	- / 25	WASTE WATER	1.16	15	-	380 WATTS	115/1/60Hz	CAST ALUMINUM CONSTRUCTION, WITH DIAPHRAGM SWITCH. RUN ALL WIRING FROM OIL INTERCEPTOR PIT TO WALL MOUNTED WATER RESISTANT POLYCARBONATE RECEPTACLE ENCLOSURE, INSIDE CONDUIT. CONDUIT SIZED TO ACCOMMODATE THE PUMPS 3-PRONG MOLDED POWER PLUG AND PIGGYBACK PLUG. PIGGYBACK AND POWER CORD LENGTHS TO BE MINIMUM 5.5M IN LENGTH EACH. REFER TO DWG M6.0 DETAIL 2 - TWO COMPARTMENT SUMP WITH OIL INTERCEPTOR FOR FURTHER DETAILS.

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JOB. TITLE: **WABASCA/DESMARAI'S GOVERNMENT BUILDING WABASCA, AB**  
  
DWG. TITLE: **MECHANICAL SCHEDULES REVISED CHILLER/PUMP SCHEDULES ADDENDUM M2**

DWN. BY: QK	DES. BY: QK	PROJ. MGR.: BT
PEER REVIEW:	DATE: (YY-MM-DD) 2018.01.31	SCALE: AS SHOWN
CLIENT PROJ. #	WE PROJ. #	34310.00
DWG #	M9.1-MSK-02	of 1
REV #		

---

This addendum forms part of the Bid and Contract Documents and modifies them as follows:

## SPECIFICATIONS

### 1. 26 32 11 Emergency Diesel Generator Set

**REVISE: 2.1.1.2:** The generator set shall be rated at 200kW, 250kVA at 0.8PF based on a site conditions of: Altitude 550m, ambient temperatures up to 40 degrees C. Breaker size is to be based on code and manufacturer requirements for generator and is to be 100% rated.

**REVISE: 2.11.10:** The enclosure is to be sound insulated and shall reduce the sound level of the generator set while operating at full rated load to an average of 85dBA at 7 meters from the generator set in a free field environment.

### 2. 26 32 12 Automatic Transfer Switch with Isolation Bypass

**REVISE: 1.3.4:** Revise to single sided bypass.

## DRAWINGS

### 1. Drawing E1.0

**REVISE:** Detail 2: Revise the note. The duplex receptacle is only on a single side as per the site plan layout. Remove the (ON EACH SIDE, FRONT & BACK).

### 2. Drawing E5.0

**REVISE:** Keynote 2: Automatic transfer switch with single sided bypass, 120/208V, 3phase, 4W (solid neutral), rated at 800Amps.

**REVISE:** GEN-1 rating to 200KW. Feeders to remain as per the single line diagram.

### 3. Drawing E6.2

**REVISE:** Connected to each fan coil FC, provide power to new fan coil condensate pump. Condensate pump is 14W and can be fed off the same power source as fan coil.

## QUESTIONS

1. Can you please confirm the Line Circuit breaker of the unit is to 450Amp as per the Spec? This seems to be low as the transfer switch the breaker would be feeding is 600Amps. We recommend a 100% rated 600 Amp Unit Mounted Thermal Magnetic Breaker.

**RESPONSE:** See revisions above.

2. Does the Generator require a 2<sup>nd</sup> breaker for load testing the unit to 100%? The proposed generators output at 100% load is 1214 Amps.

**RESPONSE:** No. See revisions above.

- 
3. Please confirm the sound level of the enclosure. Specification says 92 dBA at 7 M but this seems to be high. We could provide a sound level 1 Enclosure which would produce 85dBA at 7 M. Additionally we could provide a Sound Level 2 enclosure which would produce 75dBA at 7 M.

**RESPONSE:** See revisions to spec.

**END OF ADDENDUM E3**

---

This addendum forms part of the Bid and Contract Documents and modifies them as follows:

## SPECIFICATIONS

### 1. 26 32 23 Transfer Switches

**REMOVE:** Remove this specification section. Use section 26 32 12.

## DRAWINGS

### 1. Drawing E1.0

**REVISE:** Drawing has been re-issued with this addendum to address coordination with the architectural site plan.

### 2. Drawing E2.0

**REVISE:** Drawing has been re-issued with this addendum to address coordination with the architectural base plans and to reflect some minor additions. Changes include the addition of overhead door operator & switch outside 128; changes to room 133; added dome cameras to room 111 & 112; and selected minor power & data additions.

### 3. Drawing E2.1

**REVISE:** Drawing has been re-issue with this addendum to address coordination with architectural plans.

### 4. Drawing E3.0

**REVISE:** Drawing has been re-issued with this addendum to address coordination with the architectural backgrounds, mainly aligning the wall arrangement with the ceiling.

### 5. Drawing E6.2

**REVISE:** Drawing has been re-issued with this addendum to be coordinated with revised drawings E2.0, E2.1, and E3.0.

## QUESTIONS

1. Does the fact that so many electrical drawings are being re-issued mean that previous bid preparation should be discarded?

**RESPONSE:** No. The drawings are mainly being reissued so that the background plans are coordinated with architectural. Changes to the lighting and distribution packages are minor to nil. Changes to panel schedules are minor to nil.

2. Is “Custom Power Generation” an acceptable bidder for the generator and accessories?

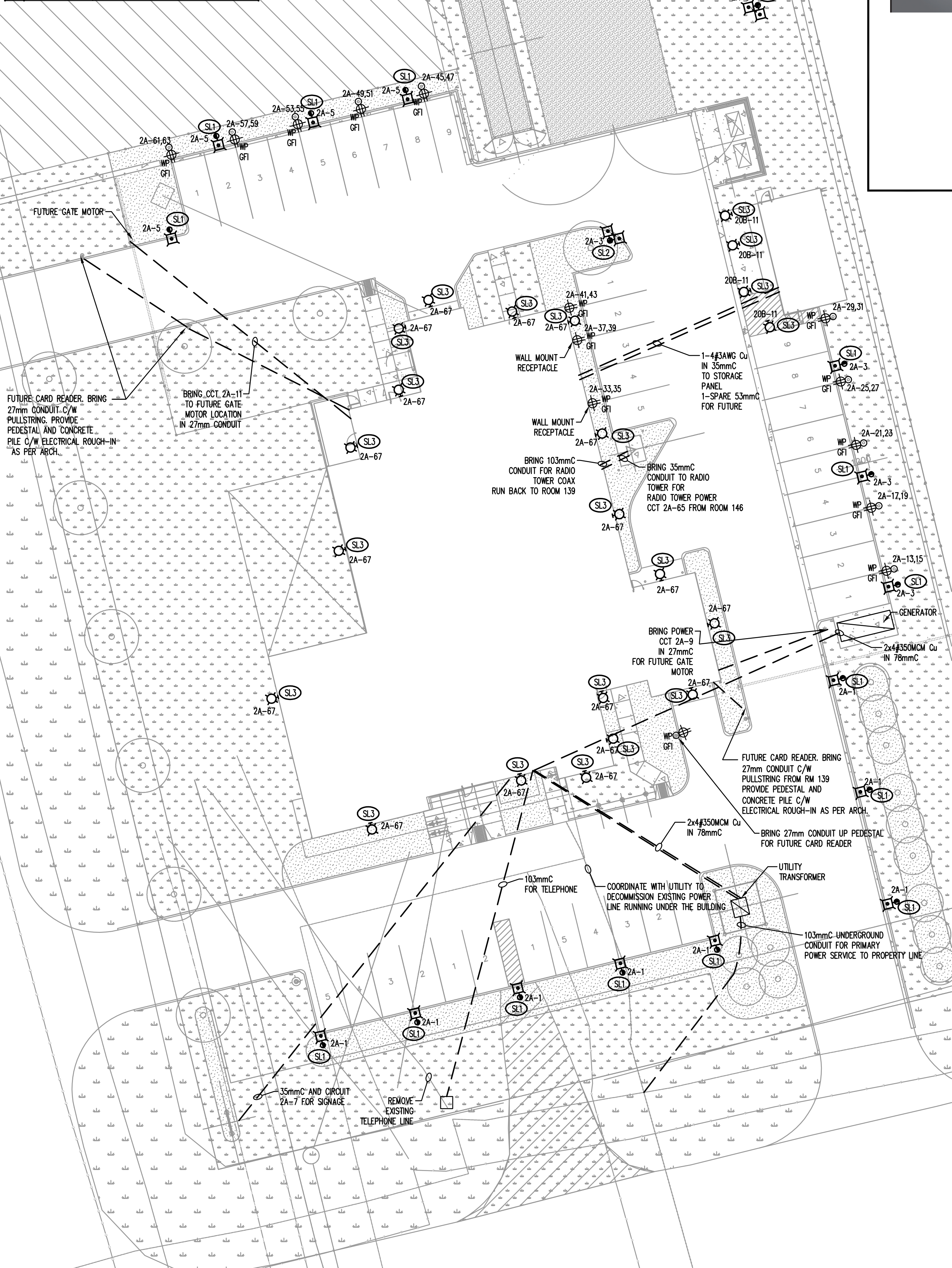
**RESPONSE:** Yes. Note that this and previous addenda modified the relevant bid documents.



**END OF ADDENDUM E4**



ELECTRICAL SYMBOL LEGEND	
	BOLLARD MOUNTED PEDESTAL RECEPTACLE
	WALL MOUNTED PEDESTAL RECEPTACLE
	WALL MOUNTED LUMINAIRE
	POLE MOUNTED LUMINAIRE WITH SINGLE HEAD
	POLE MOUNTED LUMINAIRE WITH DUAL HEADS
	LUMINAIRE TAG



DESCRIPTION: PREVAIL AREA LIGHT  
LAMP TEMPERATURE: 3000K  
DISTRIBUTION TYPE: TYPE 4  
MOUNTING: POLE MOUNT 20 FEET  
HOUSING: 6,139  
LUMENS: 6,139  
WATTS: 57W  
SPECIAL REQUIREMENTS:  
DUAL HEADS

ACCEPTABLE PRODUCTS:  
MANUFACTURER: PART NUMBER:  
#1: COOPER PRV-A15-D-UNV-T4-SA-BZ 7030-HSS  
#2: ACCEPTED SUBSTITUTION

Products are listed to establish reference standards. For acceptance of substitutions refer to General Conditions of specification.

WE LUMINAIRE SCHEDULE TYPE No. SL1

DESCRIPTION: LED WALL PACK  
LAMP TEMPERATURE: 3000K  
DISTRIBUTION TYPE: BL3  
MOUNTING: WALL MOUNT 2.7m AFF  
HOUSING: 2,231  
LUMENS: 2,231  
WATTS: 26W  
SPECIAL REQUIREMENTS:

ACCEPTABLE PRODUCTS:  
MANUFACTURER: PART NUMBER:  
#1: COOPER ENV-F01-LED-E1-BL3-AP-7030  
#2: ACCEPTED SUBSTITUTION

Products are listed to establish reference standards. For acceptance of substitutions refer to General Conditions of specification.

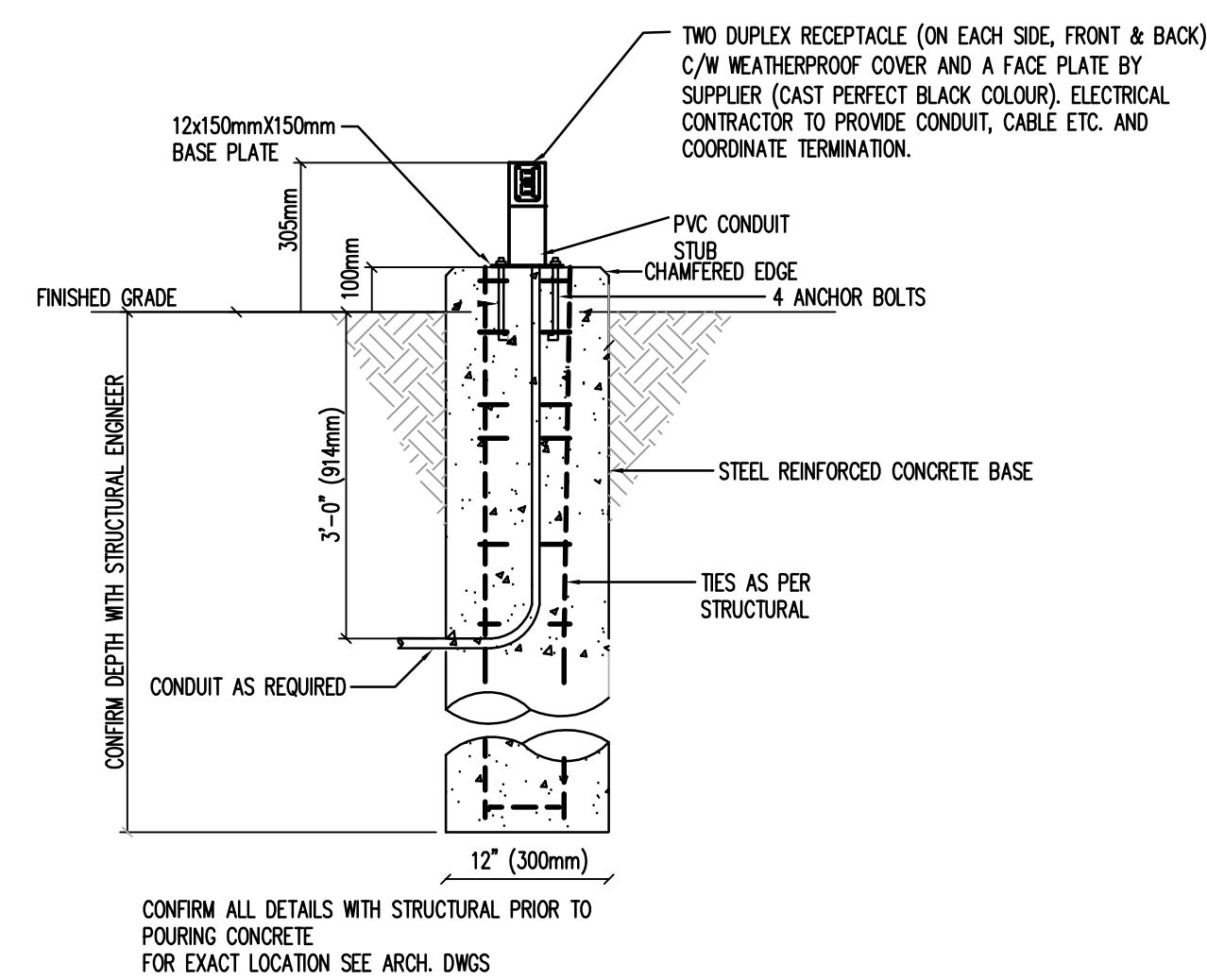
WE LUMINAIRE SCHEDULE TYPE No. SL3

DESCRIPTION: LED WALL PACK  
LAMP TEMPERATURE: 3000K  
DISTRIBUTION TYPE: BL3  
MOUNTING: WALL MOUNT 2.7m AFF  
HOUSING: 2,231  
LUMENS: 2,231  
WATTS: 26W  
SPECIAL REQUIREMENTS:

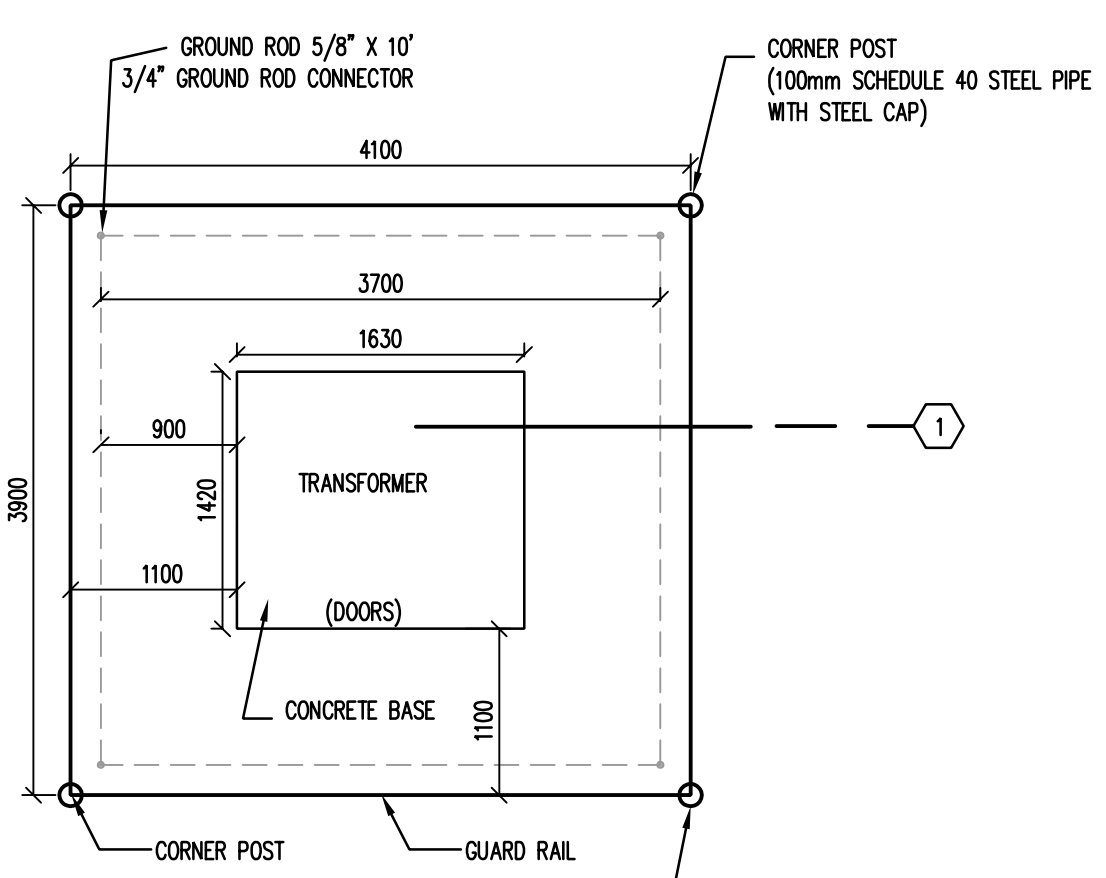
ACCEPTABLE PRODUCTS:  
MANUFACTURER: PART NUMBER:  
#1: COOPER ENV-F01-LED-E1-BL3-AP-7030  
#2: ACCEPTED SUBSTITUTION

Products are listed to establish reference standards. For acceptance of substitutions refer to General Conditions of specification.

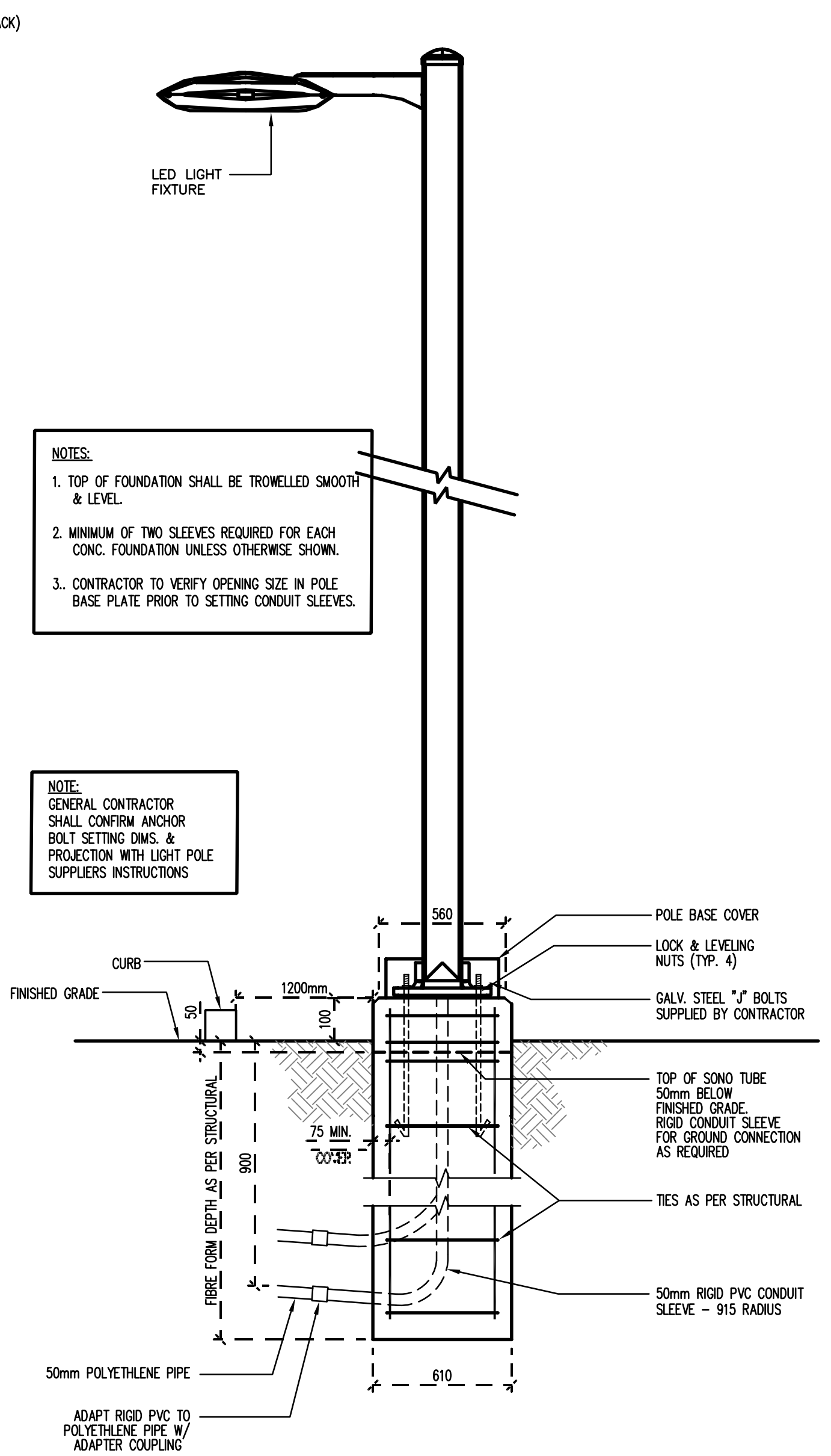
WE LUMINAIRE SCHEDULE TYPE No. SL3



2 CAR PEDESTAL RECEPTACLE DETAIL  
SCALE: NTS



3 TRANSFORMER DETAIL  
SCALE: 1:50



NOTES:  
1. TOP OF FOUNDATION SHALL BE TROWELLED SMOOTH & LEVEL.  
2. MINIMUM OF TWO SLEEVES REQUIRED FOR EACH CONC. FOUNDATION UNLESS OTHERWISE SHOWN.  
3. CONTRACTOR TO VERIFY OPENING SIZE IN POLE BASE PLATE PRIOR TO SETTING CONDUIT SLEEVES.

NOTE:  
GENERAL CONTRACTOR SHALL CONFIRM ANCHOR BOLT SETTING DIMS. & PROJECTION WITH LIGHT POLE SUPPLIERS INSTRUCTIONS

GENERAL NOTES:  
1. ELECTRICAL CONTRACTOR TO ENSURE ALL CONDUITS ARE RUN UNDERGROUND FOR SITE SERVICES.  
2. FOR LOCATION SEE ARCH. DWGS.

4 POLE MOUNTED LUMINAIRE DETAIL  
SCALE: NTS

Notes:  
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REC JOB # 3431010  
WILLIAMS ENGINEERING  
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Issues/Revisions

No.	Description	Date	By
1	ISSUED WITH ADDENDUM	2018.01.31	BR
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Client  
**WABASCA-DESMARIS**

Project  
**WABASCA / DESMARIS GOVERNMENT BUILDING**

Scale	AS NOTED	Designed By	AW/MQK
Project No.	9031	Drawn By	AW/MQK
Date	2001 JANUARY 00	Checked By	OK

Drawing Title  
**ELECTRICAL SITE PLAN**

Drawing No.



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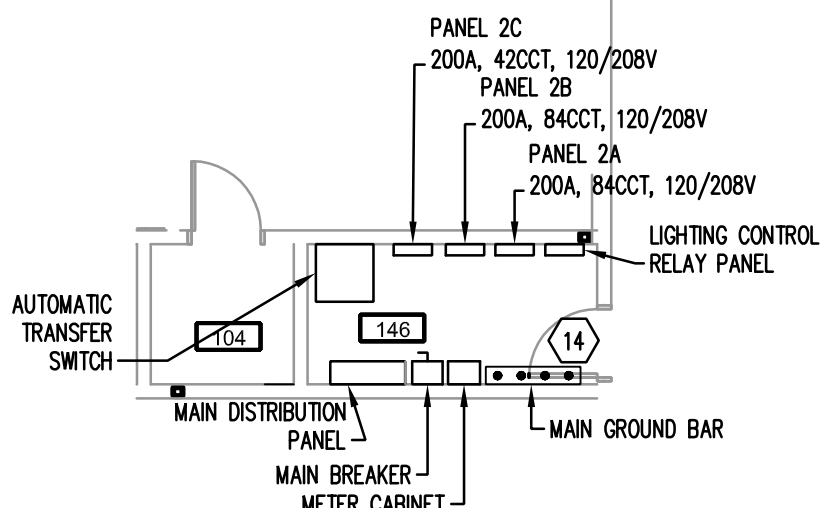
ELECTRICAL SYMBOL LEGEND	
	DUPLEX RECEPTACLE DESCRIPTORS: C = MOUNTED ABOVE COUNTER GF = GROUND FAULT INTERRUPTER WP = WEATHER PROOF U/C = UNDER COUNTER T = 20A TSLT RECEPTACLE
	QUAD RECEPTACLE
	SPECIAL RECEPTACLE, SEE DRAWING NOTES
	JUNCTION BOX
	MOTOR CONNECTION
	MOTOR EQUIPMENT DISCONNECT
	CARD READER
	KEYSWITCH
	PUSHBUTTON
	ELECTRIC STRIKE
	MOTION DETECTOR
	KEYPAD ROUGH-IN
	MICROPHONE OUTLET
	TV OUTLET
	CCVE OUTLET
	VOICE/DATA OUTLET, #/R# INDICATES CAT6A DATA DROPS

**KEYNOTES:**

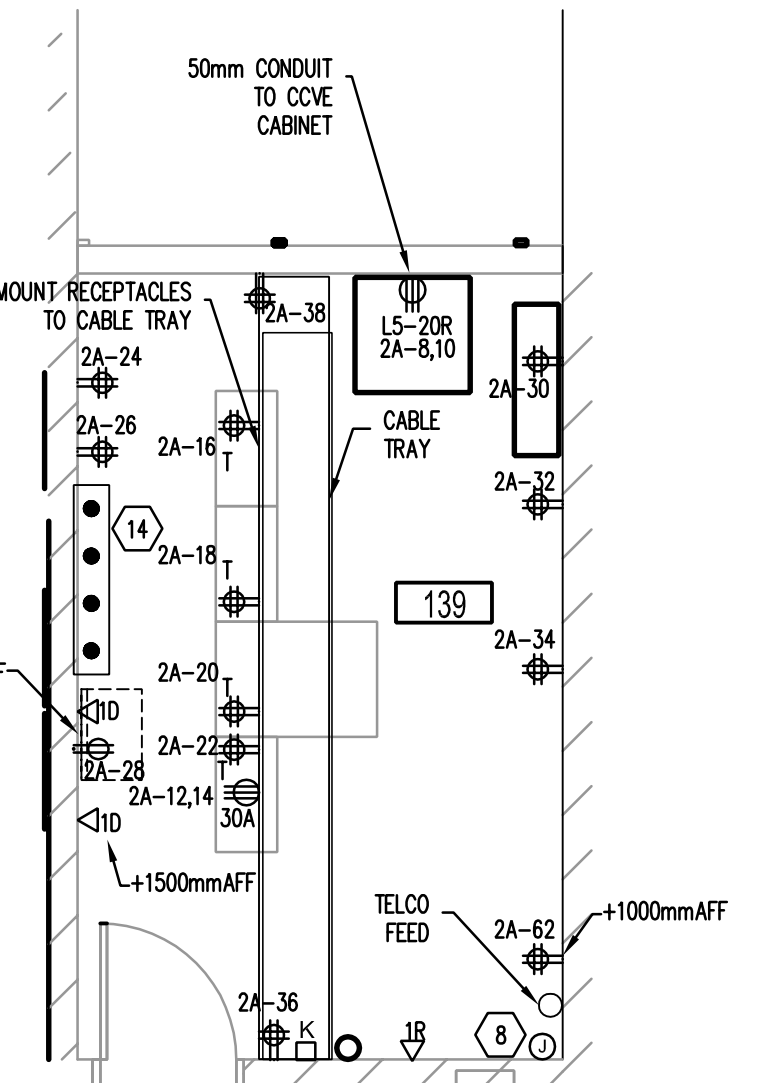
- WALL BOX ABOVE COUNTER TO JUNCTION BOX ABOVE CEILING HOME RUN TO ROOM 139 FOR CCVE MICROPHONE.
- CCVE-CONDUIT C/W PULLSTRING HOME RUN TO ROOM 139. IN ROOMS 140-174, EXCLUDING ROOMS 145 & 146, SHALL HAVE A SECURITY CAULK AT JOINT TO WALL/CEILING.
- MICROPHONE OUTLET-HOME RUN TO ROOM 107.
- CCVE MONITORS HOME RUN TO ROOM 139 (5 MONITORS AND RUNS). REFER TO ARCHITECTURAL ELEVATION 3/A6.2 FOR DETAIL OF MOUNTING.
- NOT USED
- RECEPTACLE IS TO BE RECESSED INTO THE WALL.
- SYSTEMS FURNITURE. PROVIDE CONNECTION INTO FURNITURE.
- RUN A 53mm EMT CONDUIT FOR THE MOBILE COMMAND UNIT AT CAPPED WITH A WEATHERPROOF JUNCTION BOX AT THE EXTERIOR WALL AT 10 FT AFF TO THE ROOM 139. PROVIDE A JUNCTION BOX FOR THE 53mm CONDUIT IN THE ROOM 139.
- PROVIDE ACOUSTIC PUTTY AROUND OUTLETS AS WELL AS PLASTIC VAPOUR BARRIER. ENSURE THAT NO OUTLET SHARES THE SAME STUD SPACE. GROUT BEHIND BOXES IN CONCRETE BLOCK WALLS.
- CCVE AND MICROPHONE TO HOME RUN ROOM 107.
- PROVIDE A 27mm EMT CONDUIT FOR ROOM 107 BACK TO THE ROOM 139 C/W PULLSTRING FOR FUTURE USE.
- PUSHBUTTON TO RELEASE ELECTRIC STRIKE ON WASHROOM DOOR.
- PANIC DURESS ALARM. PROVIDE 27mm CONDUIT C/W PULL STRING FROM PANIC/DURESS ALARM WITH SOUNDING DEVICE. RESET BUTTON LOCATED IN ROOM 139, JUST OUTSIDE DOOR 140.
- RUN #2/DWG CU FROM MAIN GROUND BUS BAR TO THE MAIN TELECOM BUS BAR.
- R INDICATES A DATA OUTLET FOR RADIO REMOTE. DATA CABLE IN CONDUIT WILL HOME RUN TO ROOM 139 RADIO SWITCH. PROVIDE LABEL INDICATING OUTLET IS FOR RADIO.
- CONTRACTOR TO SUPPLY 53mm CONDUITS FROM THE ANTENNA MAST TO ROOM 139, BOTH CONDUITS TO BE TERMINATED HIGH ON A WALL SIDE BY SIDE CONTRACTOR TO SUPPLY AND INSTALL THE ANTENNA MAST. CONTRACTOR TO INSTALL COAX CABLES SUPPLIED BY THE RMP. AND LEAVE COAX CABLES BOTH ENDS UN-TERMINATED. THE ANTENNA WILL BE SUPPLIED AND INSTALLED BY THE OWNER. COAX CABLE TO RUN INTO CRAWLSPACE ABOVE ROOMS 150 & 159.
- SUPPLY AND INSTALL POWER FOR MOTORIZED BLINDS. PROVIDE SWITCHES AT ONE LOCATION FOR BLINDS IN ROOM 105. SWITCH FOR ROOM 103 BLINDS TO BE AT RECEPTION DESK. CONFIRM WITH MANUFACTURER SHOP DRAWINGS POWER SUPPLY ROUGH-IN LOCATION AND POWER SUPPLY REQUIREMENTS.
- PROVIDE AN EMPTY 50mm CONDUIT BETWEEN THE FLOORBOX AND THE WALL FOR FUTURE AV CONNECTIONS.
- PROVIDE C1040 SECURITY PHONE AT +1050mmAFF FOR ROOM 142.
- SUPPLY POWER TO MECHANICAL CONTROL PANEL. EXACT LOCATION AS PER MECHANICAL PLANS.

**GENERAL NOTES:**

- NOTE THAT THE DOOR ACCESS CONTROL, CCVE AND MICROPHONE LOCATIONS WITH HOME RUNS ARE CONDUIT ROUGH-IN ONLY AND ARE TO BE REFERRED TO AS THE SECURITY ROUGH-INS.
- PROVIDE 27mm CONDUIT C/W PULL STRING FOR ALL SECURITY ROUGH-IN EXCEPT OTHERWISE NOTED ON DRAWINGS AND DETAILS. ALL BOXES SHALL HAVE ACOUSTIC INSULATION AND CAULKING TO ATTAIN REQUIRED STC RATING.
- NO EXPOSED CONDUITS ARE PERMITTED. ALL CONDUITS ARE TO BE RUN WITHIN THE WALLS.
- COMBINE POWER AND DATA INTO SINGLE OUTLET BOXES WHERE POSSIBLE. IN ACOUSTIC WALLS THIS IS NECESSARY SO DEVICES AREN'T EXTENSIVELY SPACED OUT BETWEEN EACH OTHER.
- ALL MOTORIZED BLIND COORDINATION AND CONNECTION TO MOTORS AND CONTROLLERS ARE TO BE INCLUDED IN ELECTRICAL CONTRACTORS PRICE. ALLOW FOR COORDINATION WITH GC AND BLIND SUPPLIER.



**ROOM 146 DETAIL**  
E2.0 1:100



**ROOM 139 DETAIL**  
E2.0 1:50

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Client  
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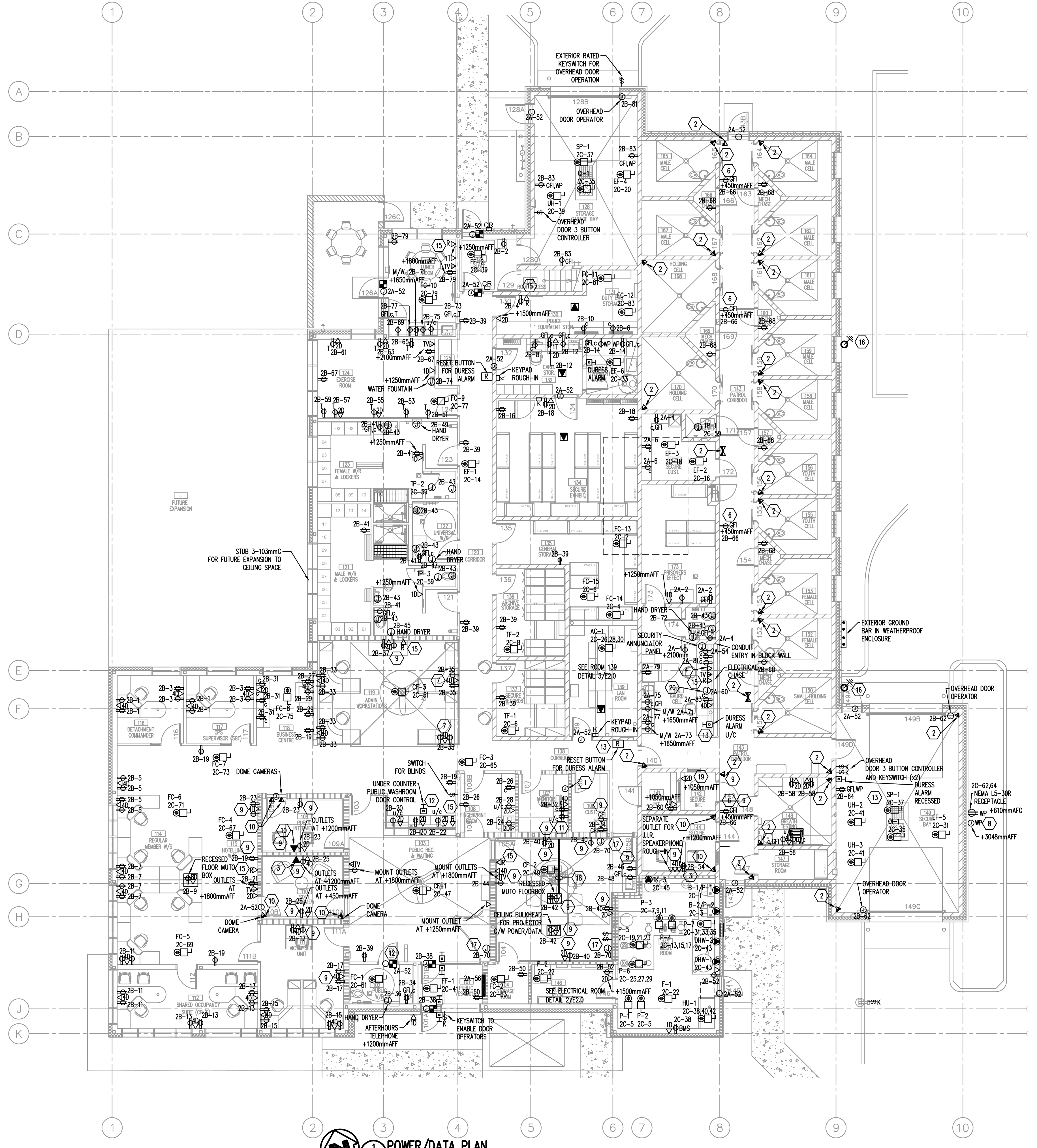
Project  
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GOVERNMENT BUILDING**

Scale	AS NOTED	Designed By	AW/MQK
Project No.	9031	Drawn By	AW/MQK
Date	2001 JANUARY 00	Checked By	OK

Drawing Title  
**MAIN FLOOR  
POWER & DATA PLAN**

Drawing No.

**E2.0**



**POWER/DATA PLAN**  
E2.0 SCALE: 1:100



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	QUAD RECEPTACLE
	SPECIAL RECEPTACLE; SEE DRAWING NOTES
	JUNCTION BOX
	MOTOR CONNECTION
	MOTOR EQUIPMENT DISCONNECT
	CARD READER
	KEYSWITCH
	PUSHBUTTON
	ELECTRIC STRIKE
	MOTION DETECTOR
	KEYPAD ROUGH-IN
	MICROPHONE OUTLET
	TV OUTLET
	CCTV OUTLET
	VOICE/DATA OUTLET, #0/#1 INDICATES CAT6A DATA DROPS

HEAT TRACE SCHEDULE							
TAG	MAKE	MODEL	TYPE	SERVICE	LENGTH	ELECTRICAL (V/PH/HZ)	NOTES
-	PENTAIR	GUARDIAN 8W/FT	SELF-REGULATING CABLE	RAINWATER LEADERS, ERV-1 DRAINS	PER MECH.	208/1/60	PROVIDE CABLE FITTINGS AS RECOMMENDED BY MANUFACTURER. PROVIDE GFI BREAKERS. HEAT TRACE ENTIRE LENGTH OF PIPE PLUS 10 FEET INSIDE BUILDING OR PIT. PROVIDING TERMINATING KIT AND THERMOSTAT.

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1	ISSUED WITH ADDENDUM	2018.01.31	BR
0	ISSUED FOR TENDER	2017.10.06	BR

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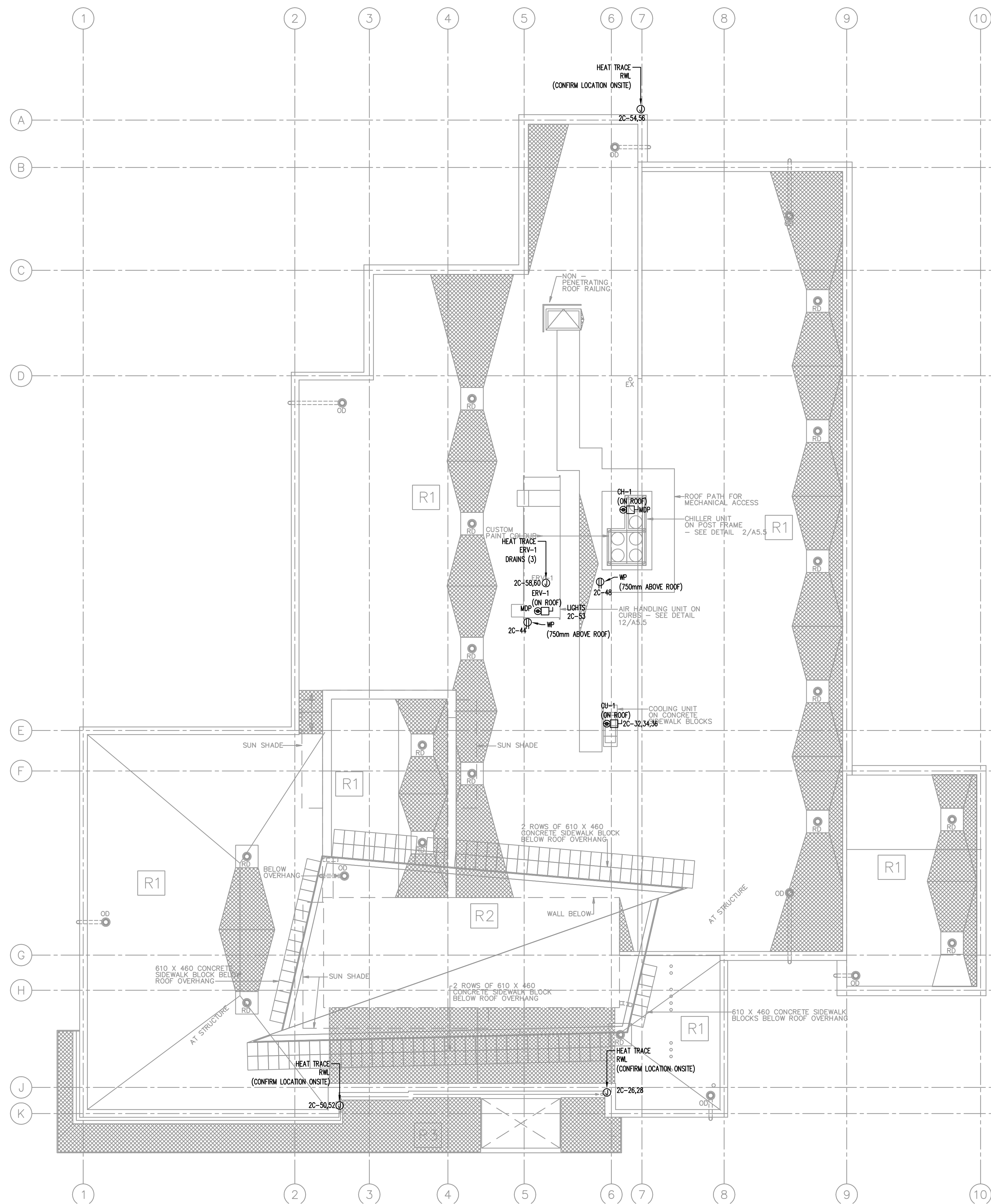
Project  
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GOVERNMENT BUILDING**

Scale	AS NOTED	Designed By	AW/MQK
Project No.	9031	Drawn By	AW/MQK
Date	2001 JANUARY 00	Checked By	OK

Drawing Title  
**ELECTRICAL  
ROOF PLAN**

Drawing No.

**E2.1**



**1 ELECTRICAL ROOF PLAN**  
E2.1 SCALE: 1:100



- Notes:
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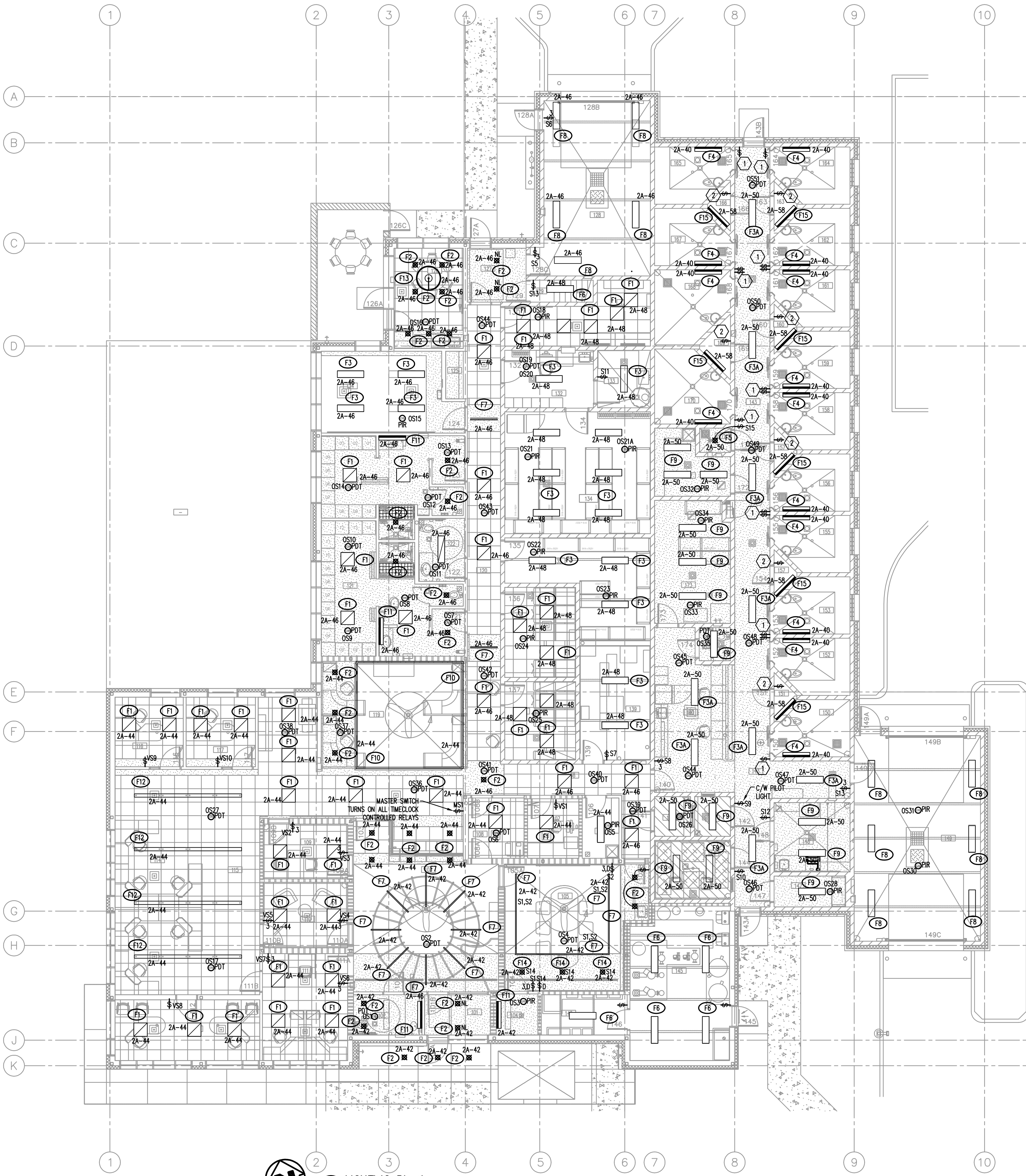
ELECTRICAL SYMBOL LEGEND	
	RECESSED LUMINAIRE
	SURFACE OR PENDANT LUMINAIRE
	LUMINAIRE, FLUORESCENT, UNSWITCHED (NIGHT LIGHT)
	WALL MOUNTED LUMINAIRE
	RECESSED DOWNLIGHT
	WALL MOUNTED LUMINAIRE
	LUMINAIRE TAG
	SWITCH, SINGLE-POLE: D = DIMMER SWITCH J = 3 WAY SWITCH VS = VACANCY SENSOR
	CEILING MOUNTED OCCUPANCY SENSOR PIR = PASSIVE INFRARED PDT = PASSIVE DUAL TECHNOLOGY

**KEYNOTES:**

- 1 3 POSITION SWITCH FOR CELL LIGHTS
- 2 LINE VOLTAGE SWITCH WITH BUILT IN OCCUPANCY SENSOR.

**GENERAL NOTES:**

- FACILITY HAS A 100K RATED GENERATOR FOR COMPLETE BUILDING LOAD FOR 24HOURS. ALL LIGHTING IS CONNECTED TO THIS GENERATOR AND WILL ACT AS EMERGENCY LIGHTING IN THE CASE OF POWER FAILURE.
- SWITCHES SHOWN OUTSIDE OF CELLS ARE TO BE LINE VOLTAGE 3 POSITION SWITCHES FOR CELL LIGHTS. ALL OTHER SWITCHES AND SENSORS ARE TO BE LOW VOLTAGE.
- LIGHTING, CONDUIT, EQUIPMENT, ETC. IS NOT TO BE INSTALLED BELOW FAN COIL UNITS. MAINTENANCE ACCESS TO FAN COIL UNITS IS TO BE MAINTAINED. CONTRACTOR TO COORDINATE WITH MECHANICAL TRADE ON SITE FOR INSTALLED FAN COIL LOCATIONS AND SIZES.



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ENGINEERING

Issues/Revisions

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Seal

PERMIT TO PRACTICE  
WILLIAMS ENGINEERING CANADA INC.  
PERMIT NUMBER  
P 10527  
The Association of Prof. Engineers  
and Geoscientists of Alberta.

Client  
**WABASCA-DESMARAIS**

Project  
**WABASCA / DESMARAIS  
GOVERNMENT BUILDING**

Scale	AS NOTED	Designed By	AWMMQK
Project No.	9031	Drawn By	AWMMQK
Date	2001 JANUARY 00	Checked By	OK

Drawing Title  
**MAIN FLOOR  
LIGHTING PLAN**

Drawing No.

**E3.0**



**MECHANICAL EQUIPMENT SCHEDULE**

EQUIP. TAG	DESCRIPTION	LOCATION	KW (HP)/FLA	VOLT/PH.	CONDUIT/WIRE	BREAKER	CCT#	STARTER	REMARKS
								TYPE	
B-1	BOILER	RM 145	FRAC. HP	120V/1#	21mmC-2#12	15A-1P	2C-1	PACK. UNIT	
B-2	BOILER	RM 145	FRAC. HP	120V/1#	21mmC-2#12	15A-1P	2C-3	PACK. UNIT	
CH-1/DF C-1	CHILLER	ROOF	167MCA	208V/3#	53mmC-3#5/0	200A-3P	MDP	PACK. UNIT	
P-1	CIRCULATOR PUMP	RM 145	93W	120V/1#	21mmC-2#12	15A-1P	2C-1	MAN.	POWERED FROM B-1. ELECTRICIAN TO WIRE.
P-2	CIRCULATOR PUMP	RM 145	93W	120V/1#	21mmC-2#12	15A-1P	2C-3	MAN.	POWERED FROM B-2. ELECTRICIAN TO WIRE.
P-3	CIRCULATOR PUMP	RM 145	1 HP	208V/1#	21mmC-2#12	20A-2P	2C-7,9	VFD	
P-4	CIRCULATOR PUMP	RM 145	1 HP	208V/1#	21mmC-2#12	20A-2P	2C-11,13	VFD	
P-5	VERTICAL INLINE PUMP	RM 145	3 HP	208V/3#	21mmC-3#10	25A-3P	2C-15,17,19	VFD	
P-6	VERTICAL INLINE PUMP	RM 145	3 HP	208V/3#	21mmC-3#10	25A-3P	2C-21,23,25	VFD	
P-7	CIRCULATOR PUMP	RM 145	FRAC. HP	120V/1#	21mmC-2#12	15A-1P	2C-27	MAN.	
SP-1	SUMP PUMP	RM 128/ RM 149	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-37	MAN.	
UH-1	UNIT HEATER	RM 128	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-39	MAN.	
UH-2	UNIT HEATER	RM 149	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-41	MAN.	
UH-3	UNIT HEATER	RM 149	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-41	MAN.	
FF-1	FORCE FLOW	RM 101	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-41	MAN.	
FF-2	FORCE FLOW	RM 127	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-39	MAN.	
DWH-1	DOMESTIC WATER HEATER	RM 145	6.6FLA	120V/1#	21mmC-2#12	15A-1P	2C-43	-	
DWH-2	DOMESTIC WATER HEATER	RM 145	6.6FLA	120V/1#	21mmC-2#12	15A-1P	2C-29	-	
TK-3	FILL TANK	RM 145	1A	120V/1#	21mmC-2#12	15A-1P	2C-45	-	
TP-1	TRAP PRIMER	TBD	FRAC. HP	120V/1#	21mmC-2#12	15A-1P	2C-59	-	
TP-2	TRAP PRIMER	TBD	FRAC. HP	120V/1#	21mmC-2#12	15A-1P	2C-59	-	
TP-3	TRAP PRIMER	TBD	FRAC. HP	120V/1#	21mmC-2#12	15A-1P	2C-59	-	
ERV-1	SUPPLY FAN	ROOF	40MCA	208V/3#	35mmC-3#8	100A-3P	MDP	PACK. UNIT	
ERV-1	LIGHTS	ROOF	375W	120V/1#	21mmC-2#12	15A-1P	2C-53	PACK. UNIT	
FC-101	FAN COIL	RM 102	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-61	EDM MOTOR, DIRECT DRIVE	
FC-102	FAN COIL	RM 104	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-63	EDM MOTOR, DIRECT DRIVE	
FC-103	FAN COIL	RM 138	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-65	EDM MOTOR, DIRECT DRIVE	
FC-104	FAN COIL	RM 115	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-67	EDM MOTOR, DIRECT DRIVE	
FC-105	FAN COIL	RM 114	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-69	EDM MOTOR, DIRECT DRIVE	
FC-106	FAN COIL	RM 114	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-71	EDM MOTOR, DIRECT DRIVE	
FC-107	FAN COIL	RM 114	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-73	EDM MOTOR, DIRECT DRIVE	
FC-108	FAN COIL	RM 118	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-75	EDM MOTOR, DIRECT DRIVE	
FC-109	FAN COIL	RM 124	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-77	EDM MOTOR, DIRECT DRIVE	
FC-110	FAN COIL	RM 126	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-79	EDM MOTOR, DIRECT DRIVE	
FC-111	FAN COIL	RM 131	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-81	EDM MOTOR, DIRECT DRIVE	
FC-112	FAN COIL	RM 131	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-83	EDM MOTOR, DIRECT DRIVE	
FC-113	FAN COIL	RM 135	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-2	EDM MOTOR, DIRECT DRIVE	
FC-114	FAN COIL	RM 135	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-4	EDM MOTOR, DIRECT DRIVE	
FC-115	FAN COIL	RM 135	1/2HP	120V/1#	21mmC-2#12	25A-1P	2C-6	EDM MOTOR, DIRECT DRIVE	
EF-1	WASHROOM EXHAUST FAN	RM 120	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-14	MAN.	
EF-2	EXHAUST FAN	RM 172	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-16	MAN.	
EF-3	SECURE AREA EXHAUST FAN	RM 172	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-18	MAN.	
EF-4	GARAGE EXHAUST FAN	RM 128	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-20	MAN.	
EF-5	EXHAUST FAN	RM 149	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-31	MAN.	
EF-6	EXHAUST FAN	RM 133	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-33	MAN.	INTERLOCKED WITH LIGHTS VIA EMCS
TF-1	TRANSFER AIR FAN	RM 137	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-8	MAN.	
TF-2	TRANSFER AIR FAN	RM 136	1/6 HP	120V/1#	21mmC-2#12	15A-1P	2C-10	MAN.	
F-1	RELIEF AIR FAN	RM 139	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-22	MAN.	
F-2	RELIEF AIR FAN	RM 138	1/6HP	120V/1#	21mmC-2#12	15A-1P	2C-24	MAN.	
F-3	RELIEF AIR FAN	OUTBUILDING	FRAC. HP	120V/1#	21mmC-2#12	15A-1P	20B-15	MAN.	
ACU-1	AIR CONDITIONING UNIT	ROOM 139	2.8 FLA	208V/3#	21mmC-3#12	15A-3P	2C-32,34,36	PACK. UNIT	POWERED FROM CU-1
CU-1	CONDENSING UNIT	ON ROOF	12.8 FLA	208V/3#	53mmC-3#10	25A-3P	2C-32,34,36	PACK. UNIT	

EQUIP. TAG	DESCRIPTION	LOCATION	KW (HP)/FLA	VOLT/PH.	CONDUIT/WIRE	BREAKER	CCT#	STARTER	REMARKS
HU-1	HUMIDIFIER	ROOM 145	3 FLA	120V/1#	21mmC-2#12	15A-1P	2C-5	PACK. UNIT	
OI-1	OL INTERCEPTOR	RM 128/ RM 149	5 FLA	120V/1#	21mmC-2#12	15A-1P	2C-35	PACK. UNIT	
CF-1	CEILING FAN	RM 103	1/4 HP	120V/1#	21mmC-2#12	15A-1P	2C-47	MAN.	LOCAL WALL MOUNTED SWITCH
CF-2	CEILING FAN	RM 105	1/4 HP	120V/1#	21mmC-2#12	15A-1P	2C-49	MAN.	LOCAL WALL MOUNTED SWITCH
CF-3	CEILING FAN	RM 119	1/4 HP	120V/1#	21mmC-2#12	15A-1P	2C-51	MAN.	LOCAL WALL MOUNTED SWITCH

**LOW VOLTAGE RELAY PANEL A**

ROOM#	CCT#	RELAY #	LOCAL SWITCH	OCCUPANCY SENSOR	TIME CLOCK CONTROL	REMARKS
101	2A-42	1	-	-	YES	TIMECLOCK CONTROL, DIM TO 65% FROM 9PM TO 6AM
102	2A-42	2	-	OS1	NO	TIMECLOCK CONTROL, DIM TO 65% FROM 9PM TO 6AM. PDT OCCUPANCY OVERRIDE DURING OFF HOURS.
103	2A-42	3	-	OS2	YES	PDT OCCUPANCY SENSOR CONTROL WITH TIMECLOCK CONTROL
104	2A-42	4	-	OS3	NO	PIR OCCUPANCY SENSOR CONTROL
105	2A-42	5	S1,S2,S3,S4	OS4	NO	DIMMABLE 3-WAY SWITCHES WITH PDT OCCUPANCY CONTROL OVERRIDE
105	2A-42	6	S14	OS4	NO	DIMMABLE SWITCH WITH PDT OCCUPANCY CONTROL OVERRIDE
106	2A-44	7	-	OS5	NO	PIR OCCUPANCY SENSOR CONTROL
107	2A-44	8	VS1	-	NO	VACANCY SENSOR SWITCH
108	2A-44	9	-	OS6	NO	PDT OCCUPANCY SENSOR CONTROL
109	2A-44	10	VS2, VS3	-	NO	VACANCY SENSOR 3-WAY SWITCHES
110	2A-44	11	VS4, VS5	-	NO	VACANCY SENSOR 3-WAY SWITCHES
111	2A-44	12	VS6, VS7	-	NO	VACANCY SENSOR 3-WAY SWITCHES
112	2A-44	13	VS8	-	NO	VACANCY SENSOR SWITCH
114/115	2A-44	14	MS1	OS17, OS27, OS36	YES	TIMECLOCK CONTROL, DIM TO 65% FROM 9PM TO 6AM. PDT OCCUPANCY OVERRIDE DURING OFF HOURS.
116	2A-44	15	VS9	-	NO	VACANCY SENSOR SWITCH
117	2A-44	16	VS10	-	NO	VACANCY SENSOR SWITCH
118, 119	2A-44	17	MS1	OS37, OS38	YES	TIMECLOCK CONTROL, DIM TO 65% FROM 9PM TO 6AM. PDT OCCUPANCY OVERRIDE DURING OFF HOURS.
120/125/138	2A-46	18	MS1	OS39, OS40, OS41, OS42, OS43	YES	TIMECLOCK CONTROL, DIM TO 65% FROM 9PM TO 6AM. PDT OCCUPANCY OVERRIDE DURING OFF HOURS.
121	2A-46	19	-	OS7-OS10	NO	PDT OCCUPANCY SENSOR CONTROL
122	2A-46	20	-	OS11	NO	PDT OCCUPANCY SENSOR CONTROL
123	2A-46	21	-	OS12-OS14	NO	PDT OCCUPANCY SENSOR CONTROL
124	2A-46	22	-	OS15	NO	PIR OCCUPANCY SENSOR CONTROL
126	2A-46	23	-	OS16	NO	PDT OCCUPANCY SENSOR CONTROL
127	2A-46	24	-	-	YES	TIMECLOCK CONTROL, DIM TO 65% FROM 9PM TO 6AM
128	2A-46	25	S5, S6	-	NO	THREE WAY SWITCH CONTROL
129	2A-48	26	S13	-	NO	MANUAL SWITCH
130/131	2A-48	27	-	OS18	NO	PIR OCCUPANCY CONTROL
132	2A-48	28	-	OS19	NO	PDT OCCUPANCY CONTROL

**LOW VOLTAGE RELAY PANEL A**

ROOM#	CCT#	RELAY #	LOCAL SWITCH	OCCUPANCY SENSOR	TIME CLOCK CONTROL	REMARKS
133	2A-48	29	S11	-	NO	MANUAL SWITCH
134	2A-48	30	-	OS21, OS21A	NO	PIR OCCUPANCY CONTROL
135	2A-48	31	-	OS22, OS23	NO	PIR OCCUPANCY CONTROL
136	2A-48	32	-	OS24	NO	PIR OCCUPANCY CONTROL
137	2A-48	33	-	OS25	NO	PIR OCCUPANCY CONTROL
139	2A-48	34	S7	-	NO	MANUAL SWITCH CONTROL
140/143	2A-50	35	S8, S13	OS44, OS45, OS46, OS47, OS48, OS49, OS50, OS51	YES	TIMECLOCK CONTROL, DIM TO 65% FROM 9PM TO 6AM WITH 3-WAY MANUAL SWITCHES OVERRIDE AND AFTER HOURS OCCUPANCY CONTROL
141	2A-50	36	-	OS26	NO	PDT OCCUPANCY SENSOR CONTROL
142	2A-50	37	S9	-	NO	MANUAL SWITCH OUTSIDE ROOM
144	2A-50	38	S10	-	NO	MANUAL SWITCH OUTSIDE ROOM
147	2A-50	39	-	OS28	NO	PIR OCCUPANCY CONTROL
148	2A-50	40	S12	-	NO	MANUAL SWITCH
149	2A-50	41	-	OS30, OS31	NO	PIR OCCUPANCY CONTROL
171	2A-50	42	S15	-	NO	SHOWER MANUAL SWITCH
172	2A-50	43	-	OS32	NO	PIR OCCUPANCY CONTROL
173	2A-50	44	-	OS33, OS34	NO	PIR OCCUPANCY CONTROL
174	2A-50	45	-	OS35	NO	PDT OCCUPANCY CONTROL



- Notes:
- Do not scale drawing
  - It is the responsibility of the appropriate Contractor to check and verify all dimensions on site and report all errors and/or omissions to the Architect or Engineer
  - It is the responsibility of the appropriate Contractor to comply with all Codes and Regulations applicable to the performance of their work.
  - All Drawings and Specifications are instruments of service and are the property of the Architect or Engineer. This Drawing is the Copyright of STEPHENS KOZAK ACI ARCHITECTS AND PLANNERS or the Consultant named on this Drawing as at the date shown and may not be used or reproduced in whole or in part without the express written consent of the Architect or Engineer.
  - All dimensions are in mm unless noted otherwise.

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WILLIAMS ENGINEERING

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**WABASCA-DESMARAIS**

Project  
**WABASCA / DESMARAIS  
 GOVERNMENT BUILDING**

Scale	NTS	Designed By	BR
Project No.	9031	Drawn By	BR
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Drawing Title  
**MECH. EQUIPMENT  
 & LIGHTING CONTROL  
 SCHEDULES**

Drawing No.

E6.2