

**NRC ADVANCED MANUFACTURING PROGRAM (AMP)
WINNIPEG, MB**

ISSUED BY



ALL BIDDERS SHALL READ THE ENTIRE ADDENDUM AND TAKE INTO ACCOUNT AS PART OF THE TENDER DOCUMENTS.

WHERE A REVISION IS CALLED FOR IN A DRAWING OR IN A SECTION OF A SPECIFICATION, IT SHALL BE CONSIDERED REVISED FOR ALL RELATED DRAWINGS AND SECTIONS OF THE SPECIFICATION.

<u>Contents</u>	<u>No. of Pages</u>
Addendum No. 5	89
<u>Attachments:</u>	
Specification Section 03 35 50 Concrete Floor Finishing	3
Specification Section 07 52 00 Modified Bituminous Roofing Membrane R1	7
Specification Section 08 39 53 Blast Resistant Steel Doors and Frames	3
Specification Section 22 15 00.R1 Laboratory Gas Systems	8
23 06 40.13 Silencer Schedule	1
23 06 80.13 Cabinet, Fan Coil, and Unit Heater Schedule	2
DA-099 – PARTIAL A106 – PLAN – LEVEL 1 - WEST	1
DA-100 – 6/A800 – INTERIOR ELEVATIONS	1
DA-101 – PARTIAL A202 - RCP - LEVEL 1 - WEST	1
DA-102 – PARTIAL A203 - RCP - LEVEL 1 - EAST	1
DA-103 – 19/A850 – WASHROOM	1
DA-104 – 25/A850 – WASHROOM	1
DA-105 – Partial A106 – Plan – Level 1 – West	1
DA-106 – 2/A301 – West Elevation	1
DA-107 – 2/A601 – Plan Details – West	1
DA-108 – 3/A601 – Plan Details – West	1
DA-109 – 12/A601 – Plan Detail – West	1
DA-110 – 18/A601 – Plan Details – West	1
DA-111 – A351 – Window Type Schedule	1
DS.014 - Section	1
DS.015 – Partial Foundation Plan	1
DS.016 - Partial Foundation Plan	1
DS.017 – Partial Foundation Plan	1
DS.018 – Partial Foundation Plan	1
DS.019 – Partial Level 1 Floor Framing Plan	1

DS.020 – Partial Level 1 Floor Framing Plan	1
DS.021 – Partial Level 1 Floor Framing Plan	1
DS.022 - Details	1
DS.023 – Partial Roof Framing Plan	1
DS.024 – Partial Roof Framing Plan	1
DS.025 – Partial Level 2 Floor Framing Plan	1
E508 – Electrical Schedules – Motor, MCC, Door Security and CCTV Security	1
M400 - H-V-A-C- PLAN - LEVEL 0 – EAST	1
M401 - H-V-A-C- PLAN - LEVEL 0 – WEST	1
M402 - H-V-A-C- PLAN - LEVEL 1 – EAST	1
M403 - H-V-A-C- PLAN - LEVEL 1 – WEST	1
M405 - H-V-A-C- PLAN - LEVEL 2 – WEST	1
M600 - PART PLANS AND DETAILS	1
Request For Information Log	14
Request For Equals Log	3

1.0 ARCHITECTURAL SPECIFICATIONS

- 1.1 Refer to new Specification Section 03 35 50 Concrete Floor Finishing attached in this Addendum.
- 1.2 Refer to new Specification Section 08 39 53 Blast Resistant Steel Doors and Frames attached in this Addendum.
- 1.3 Delete Specification Section 07 52 00 Modified Bituminous Roofing Membrane in its entirety and replace with new Specification Section 07 52 00 Modified Bituminous Roofing Membrane R1 attached to this Addendum.
- 1.4 Refer to Specification Section 05 50 00 Metal Fabrication R1 attached to Addendum No.2
 - .1 Article 1.3 Mock Ups; add paragraph 1.3.5 with the following;
 - “.5 Provide paint finish to front face of stainless steel tiles, Coverage; 25% area. Colour and Finish to be approved by Departmental Representative.”
- 1.5 Refer to Specification Section 08 50 00 Explosion Venting Wall System attached to Addendum No.2.
 - .1 Article 2.1 Explosion Venting System; add paragraph 2.1.1.8 with the following;
 - “.8 U-Value; 0.16 BTU/(hrFt2).”
- 1.6 Refer to Specification Section 01 11 00 Summary of Work:
 - .1 Delete Article 1.7 in its entirety.
- 1.7 Refer to Specification Section 01 52 00 Construction Facilities:
 - .1 Article 1.13 Construction Signage; revise article in its entirety with the following;
 - “1.13 CONSTRUCTION SIGNAGE
 - .1 Departmental Representative to provide a sign for Contractor to erect in a location designated by Departmental Representative.
 - .2 No other signs or advertisements, other than warning signs, are permitted on site.
 - .3 Direct requests for approval to erect Consultant/Contractor signboard to Departmental Representative. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign. Wording in both official languages.
 - .4 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
 - .5 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.”
- 1.8 Refer to Specification Section 04 22 00 Concrete Unit Masonry:
 - .1 Article 2.2 Limestone Stair Treads; revise article in its entirety with the following;
 - “2.2 STONE TILE
 - .6 Stone Tile (STN): Material; Limestone, Finish; Brushed, Species; Loire Cross Cut.
 - .1 Thicknesses:
 - .1 Stair Treads: 40mm.
 - .2 Millwork: 10mm.
 - .2 Accessories:

- .1 Mortar: Rapid-setting, non-staining, thin-to-medium-bed mortar, in accordance with ANSI 118.15.
 - .2 Uncoupling Membrane: High load-bearing membrane with bone-shaped pattern and high-performance felt.”
 - .2 Article 3.13 Limestone Treads and Landings; revise article in its entirety with the following;
 - “3.13 STONE TREADS, LANDINGS AND MILLWORK
 - .1 Supply and install crack isolation membrane where indicated. Membrane installation to be in accordance with manufacturer’s specifications.
 - .2 Apply mortar or adhesive to membrane using appropriate notched trowel.
 - .3 Apply mortar or adhesive to back of each tile with full coverage, and at an even thickness.
 - .4 Set stone tile in pattern indicated, straight, level and square.”
- 1.9 Refer to Specification Section 06 40 00 Architectural Woodwork:
 - .1 Article 2.3 Material; revise paragraph 2.3.9.3 and 2.3.9.4 with the following;
 - “3 PLAM-1; Composition; Solid color throughout, Finish; High gloss, Colour; D354 Designer White.
 - .4 PLAM-2; Finish; Matte, Colour; D73 Pewter.”
 - .2 Article 2.3 Material; revise paragraph 2.3.10.11 and 2.3.10.12 with the following;
 - “11 Solid Surface Material (SSM-1): Colour; Modern White.
 - .1 Performance:
 - .1 Slip Resistance: ASTM C1028, Corian Modern White.0.50 – 0.64 (matte finish under wet conditions).
 - .2 Bacterial Resistance: ASTM G22, no observed growth on product at 100x power.
 - .3 Stain Resistance; CSA B45.5-11, Pass.
 - .4 Hardness: ASTM D786, >85.
 - .5 Compressive Strength: ASTM C365, 16000 psi.
 - .6 Surface Burning Characteristics: NFPA 101, Class A.
 - .12 Quartz (QUARTZ): Nonporous, scratch resistant and highly resistant to stains, Finish; Polished, Colour; 1141 Pure White.”
 - .3 Article 2.5 Fabrication; add paragraph 2.5.9 with the following;
 - “9 Solid Surface Material and Quartz mitered edges to be done at a 45° angle to ensure maximum strength. The joint to be clean, flush and parallel.”
 - .4 Article 3.2 Installation; add paragraph 3.2.11 with the following;
 - “11 Solid Surface and Quartz Seaming:
 - .1 Seam to manufacturer’s written instructions.
 - .2 Seam setter tool to make seams as narrow and inconspicuous as possible. Seams not to be more than 1.5mm wide.
 - .3 Achieve a minimally visible seam by using pigmented polyester resin know grade adhesive.”

- 1.10 Refer to Specification Section 07 21 13 Board Insulation:
- .1 Article 2.1 Insulation; revise paragraph 2.1.2 with the following;
 - “2 Rigid Insulation (Foundation): CAN/ULC S701-11, Type 4, extruded cellular polystyrene, square edges, R-Value/Inch; 5, thickness as indicated on drawings.
 - .1 Acceptable Product Substitution;
 - .1 Rigid Insulation (Foundation): CAN/ULC S701; Expanded Polystyrene Insulation (EPS) with Laminated clear polypropylene film facer on both sides, R-value/inch; 4, Compressive strength; 30 PSI.”
 - .2 Article 3.2 Rigid Insulation – Foundation Perimeter; revise paragraph 3.2.2 with the following;
 - “2 Fasten above grade cement board through insulation with Tapcon concrete fasteners with 25 mm dial washers, 6 per 600 mm x 2440 mm board. Cement board to go below grade by 400 mm, and above grade as indicated. Exposed cement board to received paint finish.”
- 1.11 Refer to Specification Section 07 28 00 Air and Vapour Barriers:
- .1 Article 2.1 Vapour Barrier; revise paragraph 2.1.3 with the following;
 - “3 Crawlspace Vapour Barrier: Thickness; 10 mil, in accordance with ASTM E1745.
 - .1 Maximum Water Vapour Permeance: 0.0183 perms.
 - .2 Puncture Resistance: >3006 grams.
 - .3 Tensile Strength: 52 Lb. Force/Inch.
 - .4 Rating: Class A.”
 - .1 Article 3.5 Crawl Space Vapour Barrier; revise paragraph 3.5.4 with the following;
 - “4 At sloped areas, secure joints with 300 x 300 x 19 fire retardant plywood, acoustic sealant and galvanized spikes 1200 mm o/c.”
- 1.12 Refer to Specification Section 08 14 16 Flush Wood Doors:
- .1 Article 2.2 Materials and Fabrication; add new paragraph 2.2.7 with the following;
 - “7 Acoustic Wood Doors:
 - .1 Achieve an STC 52 acoustic rating
 - .2 Flush, rift cut white oak veneer with factory applied pre-finishing.
 - .3 Supplied complete with perimeter sound seals, a door bottom, and Threshold.
 - .4 To receive 125mm x 125mm heavyweight butt hinges, and lock to suit application.
 - .5 Reinforced for a surface type closer.
 - .6 Frame; Welded hollow metal frame to meet STC 52.”
- 1.13 Refer to Specification Section 08 71 00 Door Hardware;
- .1 Item 3.6.4; revise Set: 4 to read “Hardware Set Reserved”.
 - .2 Item 3.6.4; revise Set: 8 to read “Hardware Set Reserved”.
 - .3 Item 3.6.22; revise Set: 22 to read:

Set: 22.0

4 Hinge

[TA2714 NRP 4-1/2" x 4"](#)

US26D MK

1 Storeroom Lock

[DG1 28 10G04 LL](#)

US26D SA

1 Electric Strike	1500C-LM	630	HS
1 Automatic Operator	5710	689	NO
1 Kick Plate	K1050.10"	US32D	RO
1 Wall Stop	406	US32D	RO
1 Gasketing	S88BL		PE
1 Door Bottom	412SPKL		PE
1 Card Reader	By Others		OT
1 Request to Exit Sensor	By Others		OT
1 Power Supply	By Others		OT
2 6" x 6" Actuator	505		NO

Notes: Push side actuator normally disabled and electric strike always locked. Swiping valid card will release the electric strike and enable the push side actuator, which will power open the door when pressed. Pressing the pull side actuator will always release the electric strike and power open the door. All required relays by security/electrical division.

1.14 Refer to Specification Section 09 21 16 Gypsum Board Assemblies:

- .1 Article 2.3 Gypsum Board Materials; revise paragraph 2.3.10 with the following;
 - “.10 Gypsum Ceiling (GBC-1): All gypsum board on ceilings to be 16mm thick unless noted otherwise.”
- .2 Add new article 2.5 Backer Plates with the following;
 - “2.5 BACKER PLATES
 - .1 Metal Backer Plates: Steel, galvanized, Minimum 150 mm wide x 0.836 mm minimum x length and width to suit size of items to be attached, Fastened to studs for attachment of surface mounted fittings and accessories.
 - .2 Plywood Backer Plates: Softwood plywood, 19 mm minimum x length and width to suit size of items to be attached, Fastened to studs for attachment of surface mounted fittings and accessories.
 - .3 Elimination of backer plates or direct attachment of accessories or equipment to studs will not be permitted.”
- .3 Add new article 3.10 Blocking Installation with the following;
 - “3.10 BLOCKING INSTALLATION
 - .1 Attach to framing adequate backer plates to support the load of, and to withstand the withdrawal and shear forces imposed by, items installed upon the work of this section.
 - .2 Such items include, but are not restricted to:
 - .1 Washroom accessories.
 - .2 Future application of grab bars.
 - .3 Fitments.
 - .4 Cabinetry.
 - .5 Shelving.
 - .6 Blinds.
 - .7 Window Shades.
 - .8 Finish Hardware.
 - .9 Glazing accessories.
 - .10 Operable partitions.

- .11 Video monitors.
 - .12 Items as indicated.”
- 1.15 Refer to Specification Section 09 30 13 Ceramic Tiling:
 - .1 Article 2.1 Floor and Wall Tile; add paragraph 2.1.21 with the following;
 - “.21 Uncoupling Membrane: Type; Roll, Thickness; 3mm, Roll Width; 990mm.”
 - .2 Article 3.3 Installation – Thinset Method; revise paragraph 3.3.2 with the following;
 - “.2 Supply and install uncoupling membrane onto shot-blasted surface at all locations to receive large format tile.”
 - .3 Add new Article 3.6 with the following;
 - “3.6 Insulation – Uncoupling Membrane
 - .1 Install membrane in accordance with manufacturer’s written instructions.
 - .2 Place membrane perpendicular to the subsequent installation direction of the tile installation.
 - .3 Apply mortar or adhesive to substrate using appropriate notched trowel.
 - .4 Lay uncoupling membrane into the wet mortar or adhesive with fleece side facing down.
 - .5 Using float, flat trowel or 35-75 lb roller, smooth and embed the mat into the bonding mortar or adhesive.
 - .6 Ensure to leave 6mm space between the mat and edge of walls or obstacles to allow for expansion.
 - .7 Do not mechanically fasten any material through the uncoupling membrane, as this will compromise its waterproofing and uncoupling capabilities.”
 - .4 Add new Article 3.7 with the following;
 - “3.7 Installation – Large Format Tile
 - .1 Install large format tile (tile with one edge greater than 380mm) in accordance with manufacturer’s written instructions and ANSI A 108.5.
 - .2 Apply medium-bed mortar meeting ANSI A118.4 and A118.15 into uncoupling membrane at side trowel using the recommended 13mm square notch trowel for setting large format tile.
 - .3 Back butter each piece of tile with thin-set mortar immediately prior to setting tile to ensure that no voids are present against the back of tile.
 - .4 Leave a joint of at least 2mm between tiles.
 - .5 Sound tile with rubber mallet until any air bubbles in the mortar are eliminated and liquid cement comes out of joints.
 - .6 Wait 48-72 hours before allowing normal traffic on floor.
 - .7 Install grout. Width to be three times the variation in the facial dimension of the tile and never less than 1.5mm.”

- 1.16 Refer to Specification Section 09 65 16 Resilient Sheet Flooring:
- .1 Article 2.5 Tactile Warning Surface Tiles; revise article in its entirety with the following;
 - “2.5 TACTILE WARNING SURFACES
 - .1 Tactile Warning Indicators (SS Indicators) – Truncated domes machined from solid 316L Marine Grade stainless steel with integrated dome texture for permanent slip resistance.
 - .1 Performance:
 - .1 ASTM C 1028-96 Static Coefficient of Friction: ≥ 0.8 wet/dry.
 - .2 ASTM D 543-95 Chemical Resistance: No effect.
 - .3 ASTM D 2486-00 Abrasive Wear Gardener Tester: No wear.
 - .4 ASTM C 501-84 Abrasive Wear Taber Tester: No wear.
 - .5 AASHTO HB-17 Wheel Load Tests: No effect.
 - .6 ASTM B 117-03 Salt Spray (300 hrs): No effect.
 - .2 Finish: To be determined by Departmental Representative.
 - .3 Code Requirement: Tactile warning surfacing, where required as a tactile attention indicator by the building code, shall conform to sentence (2.3) and Clauses 4.1.1 and 4.1.2 of ISO 23599, ‘Assistive Products for Blind and Vision-Impaired Persons – Tactile Walking Surface Indicators.
 - .2 Tactile Warning Rubber Tile (Rubber Tactile Indicators): Flexible, UV resistance polymer tiles with integrated truncated domes.
 - .1 Performance:
 - .3 ASTM E2180 Antimicrobial Test: Pass
 - .2 ASTM D412 Tensile Strength: 0.17 MPa.
 - .3 ASTM D412 Tensile Elongation: 700%.
 - .4 ASTM 2240 Hardness (Shore A): >85 .
 - .5 ASTM D955 Shrinkage: 0.9-1.5%.
 - .2 Finish: Black.
 - .3 Accessories:
 - .1 Adhesive: as recommended and supplied by tactile warning surfacing manufacturer for use with tiles being installed and suitable for substrates.
 - .2 Perimeter Sealant: as recommended and supplier by tactile warning surfacing manufacturer for use with tiles being installed.”
- 1.17 Refer to Specification Section 10 22 26.33 Folding Panel Partitions:
- .1 Article 2.1 Folding Panel Partitions; revise paragraph 2.1.1.4.1 with the following;
 - “1 Certified Wood: submit listing of wood products and materials used in accordance with CSA Z809.”
- 1.18 Refer to Specification Section 12 21 13 Window Rollers:
- .1 Article 2.2 Materials; revise paragraph 2.2.5 and 2.2.6 and 2.2.7 in its entirety with the following;
 - “5 (WS1): Window roller shade system:
 - .1 Extruded aluminum fascia, and exterior hem bar.
 - .1 Extruded aluminum tube: 38 mm.
 - .2 Stainless steel ball chain.
 - .3 Operation: manual control.

- .4 Shade: 3% openness.
 - .6 (WS2): Window roller blackout system:
 - .1 Extruded aluminum fascia, and exterior hem bar.
 - .2 Extruded aluminum tube: 50 mm.
 - .3 Operation: Motorized Dual System.
 - .4 Manual blackout bottom channel.
 - .5 Shade: 3% openness and blackout.
 - .7 (WS3): Dual window roller shade and blackout system:
 - .1 Extruded aluminum fascia, and exterior hem bar.
 - .2 Extruded aluminum tube: 38 mm.
 - .3 Aluminum end plate.
 - .4 Stainless steel ball chain: upper shade right chain and lower shade left chain.
 - .5 ABS end plate.
 - .6 Operation: Motorized.
 - .7 Extruded aluminum fascia: 150 mm.
 - .8 Shade: 3% privacy.”
- 1.19 Refer to Specification Section 14 43 21 Overhead Cranes:
- .1 Article 1.3 Closeout Submittals; revise paragraph 1.3.2 with the following;
 - “.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.”
 - .2 Article 2.4 System Components; delete sentence 2.4.1.6 in its entirety.
 - .3 Article 3.1 Examination; revise paragraph 3.1.1 with the following;
 - “.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for overhead crane installation in accordance with manufacturer’s written instruction”
 - .4 Article 3.2 Field Quality Control; delete paragraph 3.2.2 in its entirety.
- 1.20 Refer to Specification Section 14 43 31 Platform Lifts – Hydraulic:
- .1 Article 2.1 Vertical Storing Hydraulic Dock Leveler; revise sentence 2.1.8.5 with the following;
 - “.5 Provide Vehicle Restraint Safety System: Restraint to be raised design with an operating range of 229mm to 635 mm and a restraining capacity of 32000 lb. Finish; Zinc plated.”
 - .2 Article 2.1 Vertical Storing Hydraulic Dock Leveler; add sentence 2.1.8.6 and 2.1.8.7 with the following;
 - “.6 Steel Dock Bumper: Force absorbing rubber material laminated behind steel face plate.
 - .7 Curb Angle: Steel angle iron embedded into the edges of the dock leveler pit.

- .3 Article 2.1 Vertical Storing Hydraulic Dock Leveler; add paragraph 2.1.9 with the following;

“.9 Rigid Dock Shelter:

- .1 Enamel Coated steel frame construction.
- .2 Raked head frame.
- .3 762mm head curtain drop standard.
- .4 610mm wide side curtains standard.
- .5 Glavanized steel trim.
- .6 102mm wide x 610mm high yellow guide stripes.
- .7 Bottom cushions to provide a draft seal between side curtains and building wall at dock height.”

2.0 MECHANICAL SPECIFICATIONS

- 2.1 Refer to Specification Section 21 05 01 Common Work Results for Mechanical

.1 Article 3.8.5; remove this article in its entirety.

- 2.2 Refer to Specification Section 22 11 16 Domestic Water Piping

.1 Article 2.10 Reverse Osmosis Water Distribution System; remove article in its entirety.

- 2.3 Refer to Specification Section 22 31 16 Commercial Domestic Water Treatment

.1 Article 2.1.4 Reverse Osmosis Package; replace article with the following:

- .1 Reverse Osmosis Package shall be supplied and installed by the future lab tenant fit up.

- 2.4 Refer to Specification Section 23 09 63 Laboratory Control Systems

.1 Article 2.1.1; replace “Basis of Design: Phoenix Valves” with the following:

.2 “Basis of Design: Antec Controls”

.2 Add Article 2.1.13 to read as follows:

- .3 “Provide side-by-side (horizontal) arrangement for all gaged venturi valves requiring greater than 2 independent valve bodies to suit the installation requirements. Stacked arrangements for gaged valve bodies are not permitted.”

- 2.5 Refer to Specification Section 23 90 00 Facility Monitoring System

.1 Article 1.1.1; remove sentence “FMS shall be indicated as separate price”.

- 2.6 Delete Specification Section 22 15 00 Laboratory Gas Systems in its entirety, and replace with new Specification Section 22 15 00.R1 Laboratory Gas Systems attached to this Addendum.

- 2.7 Refer to 23 06 70.33 Humidifier Schedule

.1 Model for WPG03HUM03 to read “GSTC-100”.

- 2.8 Refer to 23 06 50.13 Boiler Schedule

.1 Revise tag for boiler in first column from “WPG03BLR03” to “WPG03BLR01”.

- 2.9 Refer to 23 06 80.13 Cabinet, Fan Coil, and Unit Heater Schedule attached to this Addendum.

- 2.10 Refer to 23 06 40.13 Silencer Schedule attached to this Addendum.

3.0 ELECTRICAL SPECIFICATIONS

- 3.1 Refer to Specification Section 26 05 82 Electric Heat Trace Cables:
- .1 Item 2.1.2.2.1 revise to read: Heat Trace cable to be Raychem Icestop GM-1XT rated at 12 watts/ foot, 208 V 1ø.
 - .2 Item 2.1.2.2.2 revise to read: Heat Trace controller to be Raychem Icestop EC-TS c/w 25 foot temperature sensing lead.
 - .3 Item 2.3.1.5: delete this clause.
 - .4 Item 2.3.3: delete this clause.
- 3.2 Refer to Specification Section 27 10 05 Structured Cabling for Communications Systems:
- .1 Item 2.18.4: New item to read; "All fibre Optic Cables to be single mode as per the riser diagram on drawing E303."

4.0 ARCHITECTURAL DRAWINGS

- 4.1 Refer to Drawing A050 EXTERIOR BUILDING ELEMENTS & ABBREVIATIONS:
- .1 Revise GB1 to read as 100mm Extruded Polystyrene Insulation.
- 4.2 Refer to Drawing A106 – PLAN – LEVEL 1 – WEST:
- .1 Drawing A106 is revised to delete door 100B, the associated glazed partition and its associated hardware as well as wall mounted ADO, CR and exit sign.
 - .2 Drawing A106 is revised to add new CR to doors 100F, 111 and 113.
 - .3 Drawing A106 is revised to indicate modified layout of the wall mount BP as indicated on sketch.
 - .4 Refer to new DA-098 revision sketch attached to this Addendum.
- 4.3 Refer to Drawing A108 – PLAN – LEVEL 2 – WEST:
- .1 Drawing A108 is revised to delete note "PRC4" at columns at grid line E/6 & E/8, and add new note "FRC4" at columns at grid line E/6 & E/8.
- 4.4 Refer to Drawing A200 – RCP – LEVEL 0 – WEST:
- .1 Ceiling Legend "WS1 WINDOW SHADE MANUAL CHAN ROLLER SHADES - MANUAL" is revised to read "WS1 WINDOW SHADE - MANUAL CHAIN PRIVACY ROLLER SHADES".
 - .2 Ceiling Legend "WS3 WINDOW SHADE – MOTORIZED" is revised to read "WS2 WINDOW SHADE - MOTORIZED DUAL BLACK OUT AND PRIVACY ROLLER SHADES".
 - .3 Ceiling Legend "WS4 WINDOW SHADE ROLLER BLACKOUT– MOTORIZED" is revised to read "WS3 WINDOW SHADE - MOTORIZED BLACK OUT ROLLER SHADES".
- 4.5 Refer to Drawing A201 – RCP – LEVEL 0 – EAST:
- .1 Ceiling Legend "WS1 WINDOW SHADE MANUAL CHAN ROLLER SHADES - MANUAL" is revised to read "WS1 WINDOW SHADE - MANUAL CHAIN PRIVACY ROLLER SHADES".
 - .2 Ceiling Legend "WS3 WINDOW SHADE – MOTORIZED" is revised to read "WS2 WINDOW SHADE - MOTORIZED DUAL BLACK OUT AND PRIVACY ROLLER SHADES".
 - .3 Ceiling Legend "WS4 WINDOW SHADE ROLLER BLACKOUT– MOTORIZED" is revised to read "WS3 WINDOW SHADE - MOTORIZED BLACK OUT ROLLER SHADES".

- 4.6 Refer to Drawing A202 - RCP - LEVEL 1 – WEST:
- .1 Ceiling Legend "WS1 WINDOW SHADE MANUAL CHAN ROLLER SHADES - MANUAL" is revised to read "WS1 WINDOW SHADE - MANUAL CHAIN PRIVACY ROLLER SHADES".
 - .2 Ceiling Legend "WS3 WINDOW SHADE – MOTORIZED" is revised to read "WS2 WINDOW SHADE - MOTORIZED DUAL BLACK OUT AND PRIVACY ROLLER SHADES".
 - .3 Ceiling Legend "WS4 WINDOW SHADE ROLLER BLACKOUT– MOTORIZED" is revised to read "WS3 WINDOW SHADE - MOTORIZED BLACK OUT ROLLER SHADES".
 - .4 Drawing A202 is revised to delete all WS4 and add new WS2 in rooms 102, 105A and 105B as indicated on the attached sketch.
 - .5 Refer to new DA-101 revision sketch attached to this Addendum.
- 4.7 Refer to Drawing A203 – RCP – LEVEL 1 – EAST:
- .1 Ceiling Legend "WS1 WINDOW SHADE MANUAL CHAN ROLLER SHADES - MANUAL" is revised to read "WS1 WINDOW SHADE - MANUAL CHAIN PRIVACY ROLLER SHADES".
 - .2 Ceiling Legend "WS3 WINDOW SHADE – MOTORIZED" is revised to read "WS2 WINDOW SHADE - MOTORIZED DUAL BLACK OUT AND PRIVACY ROLLER SHADES".
 - .3 Ceiling Legend "WS4 WINDOW SHADE ROLLER BLACKOUT– MOTORIZED" is revised to read "WS3 WINDOW SHADE - MOTORIZED BLACK OUT ROLLER SHADES".
 - .4 Drawing A203 is revised to add new WS1 in room 141 as indicated on the attached sketch.
 - .5 Refer to new DA-102 revision sketch attached to this Addendum.
- 4.8 Refer to Drawing A204 – RCP – LEVEL 2 – WEST:
- .1 Ceiling Legend "WS1 WINDOW SHADE MANUAL CHAN ROLLER SHADES - MANUAL" is revised to read "WS1 WINDOW SHADE - MANUAL CHAIN PRIVACY ROLLER SHADES".
 - .2 Ceiling Legend "WS3 WINDOW SHADE – MOTORIZED" is revised to read "WS2 WINDOW SHADE - MOTORIZED DUAL BLACK OUT AND PRIVACY ROLLER SHADES".
 - .3 Ceiling Legend "WS4 WINDOW SHADE ROLLER BLACKOUT– MOTORIZED" is revised to read "WS3 WINDOW SHADE - MOTORIZED BLACK OUT ROLLER SHADES".
 - .4 Drawing A204 is revised to delete one WS1 along grid line A, between grid line 6 & 7.
- 4.9 Refer to Drawing A205 – RCP – LEVEL 2 – EAST:
- .1 Ceiling Legend "WS1 WINDOW SHADE MANUAL CHAN ROLLER SHADES - MANUAL" is revised to read "WS1 WINDOW SHADE - MANUAL CHAIN PRIVACY ROLLER SHADES".
 - .2 Ceiling Legend "WS3 WINDOW SHADE – MOTORIZED" is revised to read "WS2 WINDOW SHADE - MOTORIZED DUAL BLACK OUT AND PRIVACY ROLLER SHADES".
 - .3 Ceiling Legend "WS4 WINDOW SHADE ROLLER BLACKOUT– MOTORIZED" is revised to read "WS3 WINDOW SHADE - MOTORIZED BLACK OUT ROLLER SHADES".

- 4.10 Refer to Drawing A800 – INTERIOR ELEVATIONS:
.1 Detail 6/A800 is revised to indicate new east elevation of PUBLIC CORRIDOR 100B. Refer to new DA-099 revision sketch attached to this Addendum.
- 4.11 Refer to Drawing A850 – WASHROOM:
.1 WASHROOM ACCESSORIES LOCATIONS schedule is revised to add the following for clarification:
.2 “ROOM NUMBER”: add 115, 116, 135 and 213. “WT”: add WA13.2. “ACCESSORY TYPE”: add Hook. “COUNT”: add 1.
.3 “ROOM NUMBER”: add 111A and 113A. “WT”: add WA13.2. “ACCESSORY TYPE”: add Hook. “COUNT”: add 2.
.4 “ROOM NUMBER”: add 111A and 113A. “WT”: add WA13.5. “ACCESSORY TYPE”: add Recessed Shelf. “COUNT”: add 2.
.5 Refer to new DA-103 & DA-104 revision sketches attached to this Addendum.
- 4.12 Refer to Drawing A1000 DOOR SCHEDULE TYPES DETAILS:
.1 Refer to Door Schedule; Delete Door 100B in its entirety.
.2 Refer to Door Schedule; Revise Door 100F DOOR TYPE to “J”.
.3 Refer to Door Schedule; Revise Door 100F hardware set to “5”.
.4 Refer to Door Schedule; Revise Door 111 and 113 hardware set “22” to add card access.
- 4.13 Refer to Drawing A106 – PLAN – LEVEL 1 – WEST:
.1 Revise extent of exterior wall to accommodate grade beam shift as indicated in the attached detail sheet, DA-105.
- 4.14 Refer to Drawing A301 – EAST AND WEST EXTERIOR ELEVATION:
.1 Refer to detail 2;
.1 Revise extent of cladding as indicated in the attached detail sheet, DA-106.
- 4.15 Refer to Drawing A351 – WINDOW TYPE SCHEDULE:
.1 Revise window type W4 and W6 as indicated in the attached detail sheet, DA-111.
- 4.16 Refer to Drawing A601 – PLAN DETAILS – WEST:
.1 Revise detail 2 as indicated in the attached detail sheet, DA-107.
.2 Revise detail 3 as indicated in the attached detail sheet, DA-108.
.3 Revise detail 12 as indicated in the attached detail sheet, DA-109.
.4 Revise detail 18 as indicated in the attached detail sheet, DA-110.

5.0 MECHANICAL DRAWINGS

- 5.1 Delete Drawing M400 – H.V.A.C. PLAN – LEVEL 0 – EAST in its entirety and replace with new Drawing M400R1 – H.V.A.C. PLAN – LEVEL 0 EAST attached to this Addendum.
- 5.2 Delete Drawing M401 – H.V.A.C. PLAN – LEVEL 0 – WEST in its entirety and replace with new Drawing M401R1 – H.V.A.C. PLAN – LEVEL 0 WEST attached to this Addendum.
- 5.3 Delete Drawing M402 – H.V.A.C. PLAN – LEVEL 1 – EAST in its entirety and replace with new Drawing M402R2 – H.V.A.C. PLAN – LEVEL 1 EAST attached to this Addendum.
- 5.4 Delete Drawing M403 – H.V.A.C. PLAN – LEVEL 1 – WEST in its entirety and replace with new Drawing M403R2 – H.V.A.C. PLAN – LEVEL 1 – WEST attached to this Addendum.

- 5.5 Delete Drawing M405 – H.V.A.C. PLAN – LEVEL 2 – WEST in its entirety and replace with new Drawing M405R1 – H.V.A.C. PLAN – LEVEL 2 – WEST attached to this Addendum.
- 5.6 Delete Drawing M600 – PART PLANS AND DETAILS in its entirety and replace with new Drawing M600R1 – PART PLANS AND DETAILS attached to this Addendum.
- 5.7 Refer to Drawing M300 – PLUMBING PLAN – LEVEL 0 – EAST
- .1 Remove note “25Ø LOW PRESSURE NATURAL GAS CAPPED CONNECTION FOR FUTURE EXPANSION (TYPICAL)” and replace with “50Ø 34.5kPA (5PSI) NATURAL GAS CAPPED CONECTION (TYPICAL).”
 - .2 Remove PRV from each lab supply pipe.
 - .3 Natural gas PRV shall be supplied under the future tenant fit up scope when gas loads are determined.
- 5.8 Refer to Drawing M301 – PLUMBING PLAN – LEVEL 1 – WEST
- .1 Remove note “25Ø LOW PRESSURE NATURAL GAS CAPPED CONNECTION FOR FUTURE EXPANSION (TYPICAL)” and replace with “50Ø 34.5kPA (5PSI) NATURAL GAS CAPPED CONECTION (TYPICAL).”
 - .2 Remove PRV from each lab supply pipe.
 - .3 Natural gas PRV shall be supplied under the future tenant fit up scope when gas loads are determined.

6.0 ELECTRICAL DRAWINGS

- 6.1 Refer to Drawing E103 KeyPlan -Roof – Electrical:
- .1 Exhaust Fans at Grid Lines J to K to be relabeled WPG03AHU06-EF01 thru WPG03AHU06-EF-6.
 - .2 Exhaust Fans at Grid Lines K to L to be relabeled WPG03AHU07-EF01 thru WPG03AHU07-EF-6.
- 6.2 Refer to Drawing E112 Level 1 Plan – West – Lighting:
- .1 Door 100B; delete exit lights on both sides of the door.
- 6.3 Refer to Drawing E122 Level 1 Plan – West – Power and Voice/Data:
- .1 Door 100B; delete connection of ADO. Circuit to become Spare.
- 6.4 Refer to Drawing E125 Level 2 Plan – East – Power and Voice/Data:
- .1 Provide 600V 3Ø connection for Overhead Crane fed from MD-6A. Provide a 60A-3P fused disconnect switch c/w fuses as required by equipment supplier. Locate the outlet at high level in High Bay area. Locate at grid Lines ‘N’ and ‘4’.
- 6.5 Refer to Drawing E132 Level 1 Plan – West – Systems:
- .1 Relocate Card Access system from Door 100B to door 100F.
 - .2 Door 111; provide card access control c/w card reader on corridor side, door controller, door contact, infrared sensor and connection to electric strike.
 - .3 Door 113; provide card access control c/w card reader on corridor side, door controller, door contact, infrared sensor and connection to electric strike.
- 6.6 Refer to Drawing E143 Level 1 Plan – East – Fire Alarm System:
- .1 Delete Note 1 designation for rooms 119, 120, 121, 122, 123, 124, 125, 126, 127, 128 and 128A.

- 6.7 Refer to Drawing E508 Electrical Schedules, - Motor, MCC, Security and CCTV Security:
.1 Replace the drawing with E508 R1 attached in this Addendum.
- 6.8 Refer to Drawing E601 Main Distribution Single Line Diagram:
.1 Relabel Chiller CH-0101 to "WPG3 CCH01".
.2 Main Distribution MD-6A: breaker feeding ATS #2; revise rating to 500A-3P LSI breaker with digital metering. Revise feeder to 2 runs of 4#350 MCM NUAL in conduit.
.3 Sub-distribution CDP-6A: breaker feeding MCC-6A; revise rating to 300A-3P LSI breaker. Revise feeder to 3#500 MCM NUAL in conduit.
- 6.9 Refer to Drawing E602 Emergency Distribution Single Line Diagram:
.1 Sub-distribution ESD-6B; provide a 40A-3P breaker c/w digital metering for transformer TR-EPB and panel EPB located in room 215A west wall. Line feeder to be 3#8 in conduit and secondary feeder to be 4#1/0 NUAL in conduit. Panel to be c/w 15-15A-1P breakers.
.2 The 2 breakers shown at the emergency generator to be factory installed in the generator enclosure. Provide kirk-key interlock on these 2 breakers.
.3 Emergency Distribution EMD-6A: breaker feeding ATS #2; revise rating to 500A-3P LSI breaker with digital metering. Revise feeder to 2 runs of 4#350 MCM NUAL in conduit.
.4 Automatic Transfer Switch ATS #2 revise rating to 600Amp.
.5 Emergency Sub-distribution ESD-6B: breaker feeding CDP EM6A revise rating to 400A-3P LSI c/w digital metering. Revise feeder to 2 runs of 3#250 MCM NAL in conduit.
.6 Emergency Sub-distribution ESD-6B; revise CDP mains to 600 Amperes.

7.0 STRUCTURAL DRAWINGS

- 7.1 Refer to Drawing S101, S102:
.1 Refer to attached detail sheets DS.015, DS.016, DS.017 and DS.018 for foundation revisions.
- 7.2 Refer to Drawing S121:
.1 Refer to attached detail sheet DS.021 for relocation of grade beams on grids 3 and 7 and addition of base plates and pilasters for columns on grid A/A.1.
.2 Refer to attached detail sheet DS.022 for new base plate and pilaster details.
- 7.3 Refer to Drawings S121, S122:
.1 Refer to attached detail sheets DS.019 and DS.020 for clarification of loading at future expansion on Level 1.
- 7.4 Refer to Drawing S131:
.1 Refer to attached detail sheet DS.025 for clarification of loading at future expansion on Level 2.
.2 Refer to Drawing S131; refer to steel beams spanning between grids A.1 and B, from grid 1 to 3; revise beams from C200x17 to W200x31. W610x125 on grid 2 to remain as is.
- 7.5 Refer to Drawings S141, S142:
.1 Refer to attached detail sheets DS.023 and DS.024 for clarification of loading at future expansion and beam size revisions at Roof level.
- 7.6 Refer to Detail 5/S504;
.1 Refer to attached detail sheet DS.014 for addition of girt connection details at exterior CMU wall.

8.0 REQUESTS FOR INFORMATION

8.1 Refer to Requests for Information logs attached in this Addendum.

9.0 REQUESTS FOR EQUALS

9.1 Refer to Requests for Equals logs attached in this Addendum.

END OF ADDENDUM

Part 1 General

1.1 SECTION INCLUDES

- .1 Concrete curing.

1.2 REFERENCES

- .1 ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- .2 ASTM C 1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
- .3 AASHTO M 148 - Liquid Membrane Forming Compounds for Curing Concrete.
- .4 USDA - United States Department of Agriculture.

1.3 SUBMITTALS

- .1 Comply with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's product data and application instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- .2 Store materials in a clean, dry area in accordance with manufacturer's instructions.
- .3 Keep product from freezing.
- .4 Avoid direct contact with this product as it may cause mild-to-moderate irritation of the eyes and/or skin.
- .5 Protect materials during handling and application to prevent damage or contamination.
- .6 Do not mix any compound containing solvent.
- .7 Do not mix or agitate aggressively as foaming can occur.

1.5 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply product when air, surface, or material temperatures are expected to fall below 40o F (4o C) within four hours of expected application.
- .2 Do not apply to frozen concrete.
- .3 Do not use on dense or porous surfaces.

Part 2 Products

2.1 HARDENERS/SEALERS

- .1 Concrete sealer: Water-based acrylic curing and sealing compound shall be a non-yellowing, clear, acrylic curing and sealing compound meeting the following requirements:
 - .1 ASTM C 309, Type 1, Class B
 - .2 AASHTO M 148, Type 1, Class B
 - .3 ASTM C 1315, Class A, Section 6.4.1 – non-yellowing
 - .4 ASTM C 1315, Section 6.6 – exceed 50 MPa (70 psi) adhesion requirements.

Part 3 Execution

3.1 EXAMINATION

- .1 Examine surfaces to receive curing and sealing compound. Notify architect if surfaces are not acceptable.
- .2 Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.2 SURFACE PREPARATION

- .1 Protect adjacent surfaces not designated to receive curing and sealing compound.
- .2 Clean and prepare surfaces to receive curing and sealing compound in accordance with manufacturer's instructions.
- .3 Ensure concrete surface is clean and dry, with all stains, oil, grease, dust, and dirt removed.
- .4 Concrete surface water should be dissipated when used on new concrete.
- .5 Concrete surfaces should not be marred by walking workers.

3.3 APPLICATION

- .1 Apply curing and sealing compound in accordance with manufacturer's instructions.
- .2 Ensure product is mixed for optimum performance. Avoid aggressive mixing as foaming may occur.
- .3 Use an industrial sprayer with a 5916 tip that produces a flow rate of 1/10 of one gallon per minute.
- .4 Alternatively apply using a lint-free roller or lamb's wool roller.
- .5 Avoid puddling in low areas.

3.4 PROTECTION

- .1 Restrict foot traffic for at least four hours; 12 hours is preferable.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM C1177/C1177M-06, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - .2 ASTM C1002 - Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 37-GP-9Ma-83, Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.
 - .2 CGSB 37-GP-56M-80b(A1985), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
- .3 Canadian Roofing Contractors Association (CRCA)
 - .1 CRCA Roofing Specifications Manual-1997.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA A123.21-04, Standard Test Method for the Dynamic Wind Uplift Resistance of Mechanically Attached Membrane-Roofing Systems
 - .2 CSA-A123.4-04, Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems.
 - .3 CSA O121-08, Douglas Fir Plywood.
- .5 Underwriters Laboratories' of Canada (ULC)
 - .1 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide two copies of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Provide shop drawings:
 - .1 Indicate flashing, control joints, tapered insulation details.
 - .2 Provide layout for tapered insulation.

1.3 FIRE PROTECTION

- .1 Fire Extinguishers:

- .1 Maintain one stored pressure rechargeable type with hose and shut-off nozzle,
- .2 ULC labelled for A, B and C class protection.
- .3 Sizes as indicated on roof per torch applicator, within 6 m of torch applicator.
- .2 Maintain fire watch for 2 hour after each day's roofing operations cease.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and Handling Requirements:
 - .1 Provide and maintain dry, off-ground weatherproof storage.
 - .2 Store rolls of felt and membrane in upright position. Store membrane rolls with salvage edge up.
 - .3 Remove only in quantities required for same day use.
 - .4 Place plywood runways over completed Work to enable movement of material and other traffic.
 - .5 Store sealants at +5 degrees C minimum.
 - .6 Store insulation protected from daylight, weather and deleterious materials.

1.5 SITE CONDITIONS

- .1 Ambient Conditions
 - .1 Do not install roofing when temperature remains below -18 degrees C for torch application, to manufacturers' recommendations for mop application.
 - .2 Minimum temperature for solvent-based adhesive is -5 degrees C.
- .2 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.6 WARRANTY

- .1 The membrane manufacturer will issue a written and signed document in the owner's name, certifying that the roofing membranes are free of manufacturing defects for a period of twenty (20) years, starting from the date of completion of membrane installation. This warranty will cover the removal and replacement of defective roof membrane products, including workmanship. The warranty must remain full and complete for the duration of the period specified. The warranty certificate must reflect these requirements.
- .2 The contractor will provide a written and signed document to the owner's name certifying that the work executed will remain in place and free of waterproofing defect for a 5-year period from the date of acceptance.
 - .1 Contractor will provide RCAM a certificate of warranty for this project, valid for a 5-year period.

Part 2 Products

2.1 PERFORMANCE CRITERIA

- .1 Compatibility between components of roofing system is essential. Provide written declaration to Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

2.2 MEMBRANE MATERIAL

- .1 Membrane: Asphalt and polymer modifiers of styrene-butadiene-styrene (SBS) type, reinforced with non-woven polyester:
 - .1 Base sheet: SBS modified asphalt adhered base sheet meeting CGSB 37-GP-56M Type 2, grade 2 Class P, 180g/m² polyester reinforced, SBS modified bitumen coated and sanded top and bottom surface.
 - .2 Base Sheet Stripping: SBS modified asphalt adhered base sheet meeting CGSB 37-GP-56M Type 2, grade 2 Class P, 140g/m² polyester reinforced, SBS modified bitumen coated and sanded top and bottom surface, Thickness; minimum 4.0 mm.
 - .3 Membrane Cap Sheet: Thermofusible bottom surface; granule top surface of grey colour; 250 g/sq.m. non-woven polyester reinforcement.
 - .4 Cap sheet stripping: Thermofusible bottom surface; granule top surface of grey colour; 250 g/sq.m. non woven polyester reinforcement.

2.3 DECK COVERING

- .1 Exterior Gypsum Wall Board: ASTM C 1177; moisture resistant type; water resistant treated core surfaced with glass mat facings; 13 mm thick, maximum available size in place; ends square cut, square edges; Acceptable materials:
- .2 Plywood:
 - .1 To CSA O121 13 mm thick.

2.4 DECK PRIMER

- .1 Asphalt primer: to CGSB 37-GP-9Ma.

2.5 VAPOUR RETARDER

- .1 Vapour barrier: CGSB 37-GP-56M SBS modified bitumen reinforced with glass fibres, thermofusible bottom side sanded upper side.

2.6 ADHESIVE

- .1 Adhesive for securing overlay board and insulation: asphalt extended vulcanized adhesive, two component unit, consisting of two liquids mixed on site to produce pourable adhesive.

2.7 BITUMEN

- .1 Asphalt: to CAN/CSA A123.4.

2.8 EXPANDED POLYSTYRENE INSULATION

- .1 Insulation (sloped insulation): CAN/ULC-S701 Type II, Molded expanded polystyrene board.

2.9 POLYISOCYANURATE INSULATION

- .1 Insulation: CAN/ULC-S704, polyisocyanurate foam with Acrylic facers; Factory Mutual Class 1.

2.10 WALKWAYS

- .1 Walkways to consist of one additional ply of cap sheet membrane. Colour to be different from field membrane as selected by Departmental Representative.

2.11 FASTENERS

- .1 Sheathing Fasteners: ASTM C1002, steel drill type, for mechanical attachment of gypsum sheathing to metal deck.
- .2 Insulation Adhesive: Low rise two part polyurethane adhesive, in accordance with CSA A123.21-14.
- .3 Sealants: As recommended by membrane manufacturer.
- .4 Insulation Joint Tape: Asphalt treated glass fibre reinforced; 150 mm wide; self adhering.
- .5 Strip Reglet Devices: Galvanized steel; surface mounted, binder bars, maximum possible length per location, with attachment flanges.

Part 3 Execution

3.1 QUALITY OF WORK

- .1 Do examination, preparation and roofing Work in accordance with CRCA Roofing Specification Manual.
- .2 Do priming in accordance with manufacturers written recommendations.
- .3 The interface of the walls and roof assemblies will be fitted with durable rigid material plywood providing connection point for continuity of air barrier.
- .4 Assembly, component and material connections will be made in consideration of appropriate design loads, with reversible mechanical attachments.

3.2 EXAMINATION OF ROOF DECKS

- .1 Verification of Conditions:
 - .1 Inspect with Departmental Representative deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.
- .2 Evaluation and Assessment:
 - .1 Prior to beginning of work ensure:

- .1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.
 - .2 Curbs have been built.
 - .3 Roof drains have been installed at proper elevations relative to finished roof surface.
 - .4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.
- .3 Do not install roofing materials during rain or snowfall.

3.3 PROTECTION OF IN-PLACE CONDITIONS

- .1 Cover walls, walks, slopped roofs and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.
- .5 Protect roof from traffic and damage. Comply with precautions deemed necessary by Departmental Representative.
- .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
- .7 Metal connectors and decking will be treated with rust proofing or galvanization.

3.4 PREPARATION OF STEEL DECK (CHANNEL TYPE)

- .1 Install sound absorbing insulation in flutes of acoustical steel roof deck in accordance with Section 05 31 00 - Steel Decking.
- .2 Steel decking will be treated with rust proofing or galvanization.

3.5 DECK SHEATHING

- .1 Mechanically fasten to steel deck Glass Mat Gypsum Board with #14 screws and 3" round steel plates. 16 fasteners/ 1200 mm x 2400 mm board to steel deck's upper rib surfaces.
- .2 Place with long axis of each sheet transverse to steel deck ribs, with end joints staggered and fully supported on ribs.
- .3 Provide 600 mm of 13 mm plywood sheathing to outside edge of deck under parapets.

3.6 PRIMING DECK

- .1 Apply deck primer to deck roofing substrate at the rate recommended by manufacturer.

3.7 VAPOUR RETARDER (STEEL DECK)

- .1 Torch vapour retarder using solvent based adhesive as per manufacturer's instructions.

3.8 (EXPOSED) CONVENTIONAL MEMBRANE ROOFING (CMR) APPLICATION

- .1 Tapered insulation application:
 - .1 Adhere insulation to vapour retarder and top layer of insulation to bottom layer with solvent-based adhesive 300 mm o/c..
 - .2 Install tapered insulation as first insulation layer, in accordance with shop drawings. Stagger joints between layers 150 mm minimum.
- .2 Insulation: fully adhered, adhesive application:
 - .1 Adhere insulation to laminated vapour barrier using solvent-based adhesive 300 mm o/c.
 - .2 Place boards in parallel rows with ends staggered, and in firm contact with one another.
 - .3 Cut end pieces to suit.
 - .4 Apply adhesive in continuous ribbons at 300 mm on centre.
 - .5 Separate the membrane and insulation with a drainage layer or slipsheet.
- .3 Base sheet application:
 - .1 Starting at low point of roof, perpendicular to slope, unroll base sheet, align and reroll from both ends.
 - .2 Unroll and adhere base sheet onto substrate.
 - .3 Lap sheets 75 mm minimum for side and 150 mm minimum for end laps.
 - .4 Application to be free of blisters, wrinkles and fishmouths.
- .4 Cap sheet application:
 - .1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.
 - .2 Unroll and embed cap sheet in uniform coating of asphalt applied at rate of 1.2 kg/m², EVT at point of contact.
 - .3 Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.
 - .4 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.
 - .5 Application to be free of blisters, fishmouths and wrinkles.
 - .6 Do membrane application in accordance with manufacturer's recommendations.
- .5 Flashings:
 - .1 Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.
 - .2 Adhere base sheet onto substrate in 1 metre wide strips.
 - .3 Lap flashing base sheet to membrane base sheet minimum 150 mm and seal by adhering.
 - .4 Lap flashing cap sheet to membrane cap sheet 250 mm minimum and torch weld.
 - .5 Provide 75 mm minimum side lap and seal.

- .6 Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.
- .7 Do work in accordance with Section 07 62 00 - Sheet Metal Flashing and Trim.
- .6 Roof penetrations:
 - .1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with manufacturer's recommendations and details.

3.9 WALKWAYS

- .1 Install walkway membrane in accordance with manufacturer's instructions.
 - .1 Apply primer to cap sheet membrane and torch apply, ensuring selvage edge is removed.

3.10 CLEANING

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this section.
- .4 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
 - .1 Place materials defined as hazardous or toxic in designated containers.
 - .2 Clearly label location of salvaged material's storage areas and provide barriers and security devices.
 - .3 Ensure emptied containers are sealed and stored safely.
 - .4 Divert unused aggregate materials from landfill to local facility for reuse as reviewed by Departmental Representative.
 - .5 Unused paint and coating material must be disposed of at official hazardous material collections site as reviewed by Departmental Representative.
 - .6 Unused adhesive, sealant and asphalt materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
 - .7 Dispose of unused adhesive material at official hazardous material collections site approved by Departmental Representative.
 - .8 Dispose of unused sealant material at official hazardous material collections site approved by Departmental Representative.
 - .9 Dispose of unused asphalt material at official hazardous material collections site approved by Departmental Representative.
 - .10 Divert unused gypsum materials from landfill to recycling facility as reviewed by Departmental Representative.

END OF SECTION

1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A36/A36M-14, Standard Specification for Carbon Structural Steel.
 - .2 ASTM A500/A500M-13, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - .3 ASTM A653/A653M-[06a], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .4 ASTM A1011/A1011M-17, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, high-Strength Low Alloy, High Strength Low Alloy with Improved Formability, and Ultra-High Strength.
- .2 Canadian Steel Door Manufacturers Association (CSDMA)
 - .1 Recommended Dimensional Standards for Commercial Steel Doors and Frames 2000.
 - .2 Recommended Selection and Usage Guide for Commercial Steel Door and Frame Products 2009.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide shop drawings: Indicate door and frame elevations, general construction information, anchor types, hardware preparations and cut-outs for glazing.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for reuse, recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

1.4 QUALIFICATIONS

- .1 The manufacturer of steel doors and frames supplied under this section will be a member of the CSDMA – Canada Steel Door Manufacturing Association.
- .2 Manufacturer: Minimum 5 years documented experience manufacturing blast resistant door and frame assemblies.

Part 2 Products

2.1 PERFORMANCE REQUIREMENTS

- .1 Structural Performance (Static Loading):
 - .1 Provide doors capable of withstanding a pressure of 60 kPa, tested to ASTM F2247, ASTM F2927 or proven suitable by engineering calculations.
 - .2 Rebound:

- .1 Door : 0%
- .2 Door : 100%
- .3 Door : 0%
- .4 Door : 100%
- .5 Door : 100%
- .6 Door : 100%
- .3 Response: Inelastic (minor/cosmetic damage allowed).
- .4 Hardware operability: Operable (functions post-blast).

2.2 MATERIALS

- .1 Sheet steel: Galvanized steel to ASTM A653M coating designation A25 for interior and exterior door assemblies.
- .2 Reinforcement channel: Galvanized steel to ASTM A653M coating designation A25 for interior and exterior door assemblies.
- .3 Structural Tube: ASTM A500 grade B/C.
- .4 Structural Plate: Hot rolled steel to ASTM A1011.

2.3 ACCESSORIES

- .1 Hinges: heavy Duty butt type to be factory supplied.
- .2 Glazing Stops: Formed galvanized steel channel, butt corners, prepared for oval head countersink screws.
- .3 Glass: Type as calculated to meet blast performance requirements. Glazing to be factory supplied and factory installed.
- .4 Door Hardware: Latching hardware to be factory supplied and factory installed.
- .5 Primer: Rust inhibitive zinc chromate.

2.4 FABRICATION

- .1 Manufacture doors and frames in accordance with performance requirements in Article 1.4 and HMMA 802 – Manufacturing of Hollow Metal Doors and Frames.
- .2 Steel Doors, Swing Type:
 - .1 Sheet steel faces, thickness, design, and core suitable to achieve specified blast performance.
 - .2 Blast resistant construction, longitudinal edges welded, filled and sanded with no visible edge seams.
 - .3 Top and Bottom: Flush welded structural tubes.
 - .4 Astragals: Astragals for double doors designed to achieve specified blast performance.
 - .5 Weld hardware reinforcement plates in place.
- .3 Steel Frames, Swing Type:

- .1 Sheet steel and metal thickness appropriate to meet blast and fire ratings, mitred corners.
- .2 Factory assemble and weld frames.
- .3 Provide three single silencers for single doors and mullions of double doors on strike side, and two single silencers on frame head at double doors without mullions.
- .4 Install door silencers.
- .5 Hinges to be factory supplied and latching devices to be factory supplied and factory installed.
- .6 Affix nameplates to door and frame, indicating manufacturer's name and performance rating.

2.5 FINISHES

- .1 Factory Finish: Factory applied zinc chromate primer, touch up only where product has been welded and ground smooth.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install components including doors, frames and hardware in accordance with manufacturer's written instructions.
- .2 Install doors and frames to CSDMA "guide Specification for Installation and Storage of Hollow Metal Doors and Frames".
- .3 Coordinate with masonry or pre-cast concrete wall construction for anchor placement.
- .4 Set frames plumb, square, level and at correct elevation.
- .5 Allow for deflection to ensure that structural loads are not transmitted to frame.
- .6 Adjust operable parts for correct clearances and function.
- .7 Finish paint in accordance with Section 09 91 23.

3.3 ERECTION TOLERANCES

- .1 Installation tolerances of installed frame for squareness, alignment, twist and plumbness are to be no more than $\pm 1.5\text{mm}$ in compliance with CSDMA "Guide Specification for Installation and Storage of Hollow Metal Doors and Frames".

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 21 05 01
- .2 Section 23 05 17
- .3 Section 23 08 01
- .4 Section 23 08 02

1.2 REFERENCE STANDARDS

- .1 American Society of Mechanical Engineers (ASME)
 - .1 ASME Boiler and Pressure Vessel Code Section VIII Pressure Vessels.
 - .1 BPVC-VIII B - 2017, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 1.
 - .2 BPVC-VIII-2 B - 2017, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 2 - Alternative Rules.
 - .3 BPVC-VIII-3 B - 2017, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 3 - Alternative Rules High Press Vessels.
 - .2 ASME B16.5-17, Pipe Flanges and Flanged Fittings.
 - .3 ASME B16.11-16, Forged Fittings, Socket-Welding and Threaded.
 - .4 ANSI/ASME B16.9-12 Factory made Wrought Steel Buttwelding Fittings.
 - .5 ANSI/ASME B16.25-12 Buttwelding Ends.
 - .6 ANSI/ASME B31.1-16 Power Piping.
 - .1 ANSI/ASME B31.3-16 Process Piping.
- .2 Conform to the requirements of TSSA.
- .3 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A181/A181M-14, Standard Specification for Carbon Steel Forgings for General Purpose Piping.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA B51-14, Boiler, Pressure Vessel, and Pressure Piping Code.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00
- .2 Co-ordinate submittal requirements and provide submittals required by Section 01 47 15.
- .3 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet for piping, fittings and equipment.
- .4 Shop Drawings:

- .1 Submit shop drawings to indicate project layout including layout, dimensions and extent of piping system.
 - .1 Vertical and horizontal piping locations and elevations and connections details.
 - .2 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
 - .3 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .4 Instructions: submit manufacturer's installation instructions.
 - .5 Closeout Submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00.

1.4 QUALITY ASSURANCE

- .1 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Waste Management and Disposal:
 - .1 In accordance with Section 01 74 20.

Part 2 Products

2.1 Duplex oil-less AIR COMPRESSOR

- .1 Basis of Design: Sullair DSP-2209AY
- .2 General: Two, single stage, air cooled screw air compressor pumps, each having 4 cylinders, with cast iron frame and cylinder heads, with aluminum alloy cylinders with special bore plating for long life. Pistons are aluminum alloy with large self-lubricating guide rings, and teflon-based compression rings. Valves are the high efficiency reed valves with intake and exhaust mounting on a single removable plate.
- .3 Motor: standard protected, TEFC, 30 hp each.
- .4 Two Vee Belt drives
- .5 Each compressor, motor and drive are mounted on a steel sub-base, which is isolated from the main receiver and controls using spring-mounted vibration isolators.
- .6 Two pressure switches for automatic start/stop control.
- .7 Two normally open unloader solenoid valves to pilot the compressor head free air inlet valve unloaders for load-less start up and constant speed operation.
- .8 Control panel:
 - .1 Two motor circuit controllers with over-current and over-load protection
 - .2 Two motor contactors to apply power to each compressor motor
 - .3 Control transformer with necessary primary and secondary fusing
 - .4 "Hand-Off-Auto" selector switches for each compressor

-
- .5 Programmable controller, pre-programmed to control alternation of compressor pumps, and provide maximum run times for each compressor if single compressor operation is required.
 - .6 Text display/keypad interface unit to display compressor operating status (“RUN”), “Motor Overload” alarm, total operating hours for each pump. The keypad allows a user interface with the PLC.
 - .7 Digital dual output pressure switch,
 - .8 All high voltage (575V) components are mounted and pre-wired in a NEMA-12 enclosure. A second NEMA-12 panel includes all low voltage (24 VDC) components, allowing opening of the panel door for monitoring I/O or programming of the PLC without the need to personnel arc flash protection. The enclosures are mounted and pre-wired to the compressor motors and pressure switches, and require one user power feed of 3/60/575V.
 - .9 Accessories: belt guard and pressure gauges.
 - .10 Air intakes: complete with bird screen, replaceable cartridge type intake filter and silencer.
 - .11 Capacity: Free Air Delivery 117 @ 100 PSIG (X2 for total of 93 SCFM) Maximum Pressure 155 PSIG
 - .12 Compressor:
 - .1 Stages: 1
 - .2 Bore (Each Pump) 95 mm x 4
 - .3 Stroke (Each Pump) 70 mm
 - .4 RPM: 950
 - .5 Piston Displacement 66.6 CFM (X2)
 - .13 Vibration isolation: 95% minimum efficiency.
 - .14 Control Features
 - .1 Default pressures are 100 to 120 for lead pump operation and 95 to 115 for lag pump operation.
 - .2 Both pumps will operate if pressure falls to 95 PSIG.
 - .3 One pump only will operate if pressure can be maintained between 100 and 120 PSIG.
 - .4 If only one pump is required to maintain system pressure, pumps will alternate startups with the selector switches in the “Auto” positions.
 - .5 If one pump only operates for 30 minutes continuously, a maximum run timer will automatically shut the pump off and start the other pump. This allows each pump to accumulate a similar number of hours, and ensures one pump does not carry the load continuously.
 - .6 When two pumps are required to operate, the first pumps to start will always be the first pump to shut off (this is true alternation of pumps).
 - .7 Dual Control, which includes free air inlet valve unloaders on the compressor heads, a control air unloader solenoid valve for each compressor, and 3 position selector switches for “Continuous-Off-Auto” selection. The controls allow for continuous operation when “Continuous” mode is selected, or auto start/stop operation in the “Auto” positions. Selector switches must be in the “Auto” positions to allow automatic alternation of the compressors.

2.2 AIR RECEIVER

- .1 All components are mounted on a 1060 gallon (U.S.), vertical air receiver, manufactured to the ASME code, in compliance with the Pressure Vessels Branch, suitable for registration in all Canadian provinces. The receiver includes a fabricated framework which supports the entire weight of the mounted equipment. The receiver vessel does not bear the weight of any of the mounted equipment. The receiver is equipped with a safety valve, pressure gauge, air outlet service valve, and a condensate drain valve.
- .2 Inlet and outlet connections: refer to drawings.
- .3 Accessories: adjustable pressure regulator, safety valve, 125mm diameter gauge with pressure range of 0 to 1500kPa, drain cock and automatic condensate trap.
- .4 Provincial inspector's certificate and label.
- .5 Finish: shop primed, ready for field painting.

2.3 AIR DRYER – Heatless Desiccant Air Dryer

- .1 Basis of Design: Sullair DHL125-V01
- .2 DRYER CAPACITY:
 - .1 125 SCFM each tower @ 100 PSIG with a minus 40°C pressure dew point at rated conditions.
- .3 RATED CONDITIONS:
 - .1 38° C. INLET TEMPERATURE
 - .2 38° C. AMBIENT
 - .3 100 PSIG INLET PRESSURE
 - .4 SATURATED INLET AIR (NO LIQUIDS)
- .4 CONNECTION SIZE 1" F. NPT
- .5 CYCLE OPERATION:
 - .1 10 MINUTE TIME CYCLE
 - .2 5 MINUTES ALTERNATE DRYING ON EACH TOWER
 - .3 4¼ ALTERNATE MINUTES PURGING ON EACH TOWER
 - .4 ¾ MINUTE REPRESSURIZATION PERIOD AFTER PURGE PERIOD ON EACH TOWER TO PREVENT DESICCANT FLUIDIZING AT TOWER INLET SWITCHING.
- .6 Two desiccant chambers complete with fill of activated alumina desiccant. Each chamber has a dedicated desiccant fill and drain port to allow for the draining and filling of desiccant without removing any integral piping on the dryer.
- .7 Pipe nipple mounted strainers, with stainless steel wire mesh screening, at the inlet and outlet of each desiccant chamber to prevent desiccant migration.
- .8 3-Way inlet switching Ball Valve for directional flow control of air entering the dryer.
- .9 Two diaphragm-operated purge exhaust valves with teflon disc. The valve has no sliding parts and is unaffected by the abrasive nature of desiccant dust. This valve allows the purging tower to fully repressurize prior to being switched on line.
- .10 Two stainless steel, 3-way control solenoid valves are used to pilot the inlet switching and purge stop valves. These are poppet style valves, which are affixed to the outside of the control panel for ease of maintenance should it be required.

- .11 A control air filter with a 5 micron absolute rating is mounted at the dryer outlet, and filtration of control air prior to the control solenoid valves.
- .12 One 1" outlet shuttle valve c/w aluminium body and one moving elastomer for reliable and positive shifting.
- .13 Purge orifice assembly with precision stainless steel orifice plate for precise purge air flow. Orifice plate may be easily changed to suit reduced inlet capacities and pressures other than the standard 100 PSIG design condition.
- .14 Two tower pressure gauges, with 2½" dial faces, liquid filled, with a 0 to 200 PSIG range.
- .15 A purge exhaust muffler mounted on the purge stop valve provides quiet blowdown and purging operation.
- .16 EEMAC-12 control panel includes one microprocessor to control all switching functions based on a 10 minute time cycle, and a numbered terminal strip with labelled electrical input terminals for 1/60/115V power supply. The processor also includes a set of output terminals to operate a prefilter drain solenoid valve (not supplied) if one is to be used. These contacts will open a drain solenoid valve for approximately 2 seconds every 8 minutes.
- .17 All components are pre-piped (or tubed), and pre-wired, all on steel channel sections designed for wall-mounting. The unit is QPS special inspection certified.
- .18 Repressurization valve, shuttle valve and needle valve for regulated control (used to assist orifice in repressurizing when lower purge flows are required, due to lower inlet capacity)
- .19 Purge While Pumping Only controls requires that the dryer control panel be wired to a normally open set of dry contacts on the customer's compressor motor starter, to indicate when the compressor is running. While running the dryer will operate normally on a 4 minute time cycle, and the dryer includes a repressurization valve to ensure that the towers fully repressurize within the required time frame on the shortened time cycle. When the compressor shuts off, the purging tower will stop purging and repressurize. On the next compressor start-up, the last tower purging will be on line drying, and the other tower will depressurize and purge. The system ensures that the dryer is not purging while the compressor is shut off, therefore, the compressor will not be required to start if there is no system demand, but only purge air required from the dryer. The dryer purge orifice will be sized to purge a volume based on the dryer's full capacity when this system is used.

2.4 FILTERS

- .1 Oil coalescing pre-filter for installation in airline before the dryer. Absolute filtration of all solid particles larger than .01 microns, and all aerosol removal down to .01 ppm is achieved. The filter capacity is 100 SCFM @ 100 PSIG with a pressure drop of 1-1/2 PSID with a dry element. Filter housing is rated for 232 PSIG operation and has 1" F. NPT connections.
- .2 Electric drain solenoid valve for mounting on the prefilter complete with an adjustable timer to open and close on pre-set time periods. The drain valve includes a 1/60/120V cord set for plugging into a standard wall receptacle,
- .3 Particulate removal after filter for installation after the dryer, with a 3 micron absolute rating to prevent desiccant dust carry-over. Filter capacity is 120 SCFM @ 100 PSIG,

with a pressure drop of .5 PSID with a new element. Filter housing is rated for 232PSIG operation, and has 1" F. NPT connections.

- .4 Mounting & pre-piping of the above filters on the dryer.
- .5 3 Valve Bypass option including 3 pcs of 1" ball valves and 1" piping

2.5 PIPING (compressed air, vacuum, nitrogen, oxygen)

- .1 Pipes shall be seamless Type K A.S.T.M. B-88) hard temper copper tubing or standard weight (Schedule 40) brass pipe, cleaned for oxygen service. Soft temper copper tubing shall be used underground.
- .2 Fittings shall be wrought copper, brass or bronze for solder or brazed connections for copper tubing and screw type brass, or bronze, or copper brazing type fittings for brass pipe. Any system in excess of 15 psig and larger than 19 mm (3/4 inch) shall meet the requirements of TSSA. Soldered joints are not acceptable and shall be brazed.
- .3 Exhaust pipes from vacuum pumps up through to roof may be Schedule 40 steel pipe with welded fittings and flexible connections to compressor. Vent through roof shall have weather proof rain cap.

2.6 BALL VALVES

- .1 In-line valve assemblies shall be located as shown and as required by code, and shall be full flow, double seal, ball type with bronze body, Buna-N seals and O ring packing, chrome plated brass ball and designed for working pressures up to 2070 kPa (300 psig). Only one quarter turn of the handle shall be required to operate the valve from the open to closed position. Valves shall be provided with Type K copper tube extensions for making connection to the pipeline. All valves shall be serviceable in the line and supplied clean and prepared for service. Colour coded gas identification labels shall be provided for each valve.

2.7 Valve locker

- .1 Basis of Design: Class 1 Inc.
- .2 Valve lockers:
 - .1 Removable reusable pull out window
 - .2 CRN registered valve assemblies
 - .3 Conforms to CSAZ305.1
 - .4 Space for 6 valves in the box.
 - .5 1/2" valve sizes.
 - .6 Provide valves for Oxygen, Nitrogen, compressed air and vacuum.
 - .7 Powder coated box and frame.

2.8 COUPLERS/CONNECTORS

- .1 Industrial interchange series, full-bore.
- .2 Maximum inlet pressure: 1700kPa.
- .3 Valve seat: moulded nylon.
- .4 Body: zinc plated steel.
- .5 Threads: NPT.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 COMPRESSOR STATION

- .1 Laboratory vacuum unit shall be delivered to site assembled, pre-tested and requiring connection of electrical, water and air piping.
- .2 The systems shall be installed in accordance with the CSA standard.
- .3 Identify all pipes, valves and appurtenances during construction, in accordance with CSA standard.
- .4 Permanent identification of services shall be in accordance with the CSA standards.
- .5 Cleaning shall be in accordance with the CSA standards.
- .6 Testing shall be in accordance with the CSA standards.
- .7 Install main air pressure regulator at air compressor station.
- .8 Pipe compressor air intake to closest available outdoor air intake.
- .9 Install compressed air trap and pressure equalizing pipe at each moisture collecting point. Drain pipe to nearest floor drain. Distance between drain points to be 30 m (98 ft.) maximum.

3.3 LABORATORY COMPRESSED AIR DRYER

- .1 Install on 3-valve bypass.
- .2 Install piping to duplex refrigerant air dryers so that one dryer can remain operational while the other is in service.
- .3 Insulate inlet and outlet connection of air drier.
- .4 Install piping to drain from refrigerated air dryer to closest available floor drain.

3.4 COMPRESSED AIR LINE FILTER

- .1 Install on discharge line from air dryer.

3.5 MAIN AIR PRESSURE REGULATORS

- .1 Install at air compressor station.
- .2 Install additional regulators on connections to equipment.

3.6 COMPRESSED AIR PIPING CONNECTIONS AND INSTALLATION

- .1 Install flexible connection at piping connection to compressors.
- .2 Install shut-off valves at outlets, major branch lines and in locations as indicated.
- .3 Install quick-coupler chucks and pressure gauges on drop pipes.
- .4 Install unions to permit removal or replacement of equipment.
- .5 Install tees in lieu of elbows at changes in direction of piping. Install plug in open ends of tees.
- .6 Grade piping at 1% slope minimum.

- .7 Install compressed air trap and pressure equalizing pipe at moisture collecting points. Drain pipe to nearest floor drain.
- .8 Make branch connections from top of main.
- .9 Install compressed air trap at bottom of risers and at low points in mains, piped to nearest drain. Distance between drain points to be 30m maximum.
- .10 Provide drain from refrigerated air dryer.
- .11 Weld steel piping in accordance with Section 23 05 17 and;
 - .1 To ASME code and requirements of authority having jurisdiction.
 - .2 Weld concealed and inaccessible piping regardless of size.

3.7 FIELD QUALITY CONTROL

- .1 Site Tests/Inspection:
 - .1 Testing: pressure test in accordance with requirements of Section 21 05 01, for 4 hours minimum, to 1100kPa, with outlets closed and with compressor or vacuum isolated from system. Pressure drop not to exceed 10kPa.
- .2 Manufacturer's Field Services:
 - .1 Have manufacturer of products supplied under this Section review work involved in handling, installation/application, protection and cleaning of its products, and submit written reports, in acceptable format, to verify compliance of work with Contract.
 - .2 Provide manufacturer's field services, consisting of product use recommendations and periodic site visits for inspection of product installation, in accordance with manufacturer's instructions.
 - .3 Schedule site visits to review work at stages listed:
 - .1 Twice during progress of work at 50% and 100% complete.
 - .2 Upon completion of Work, after cleaning is carried out.

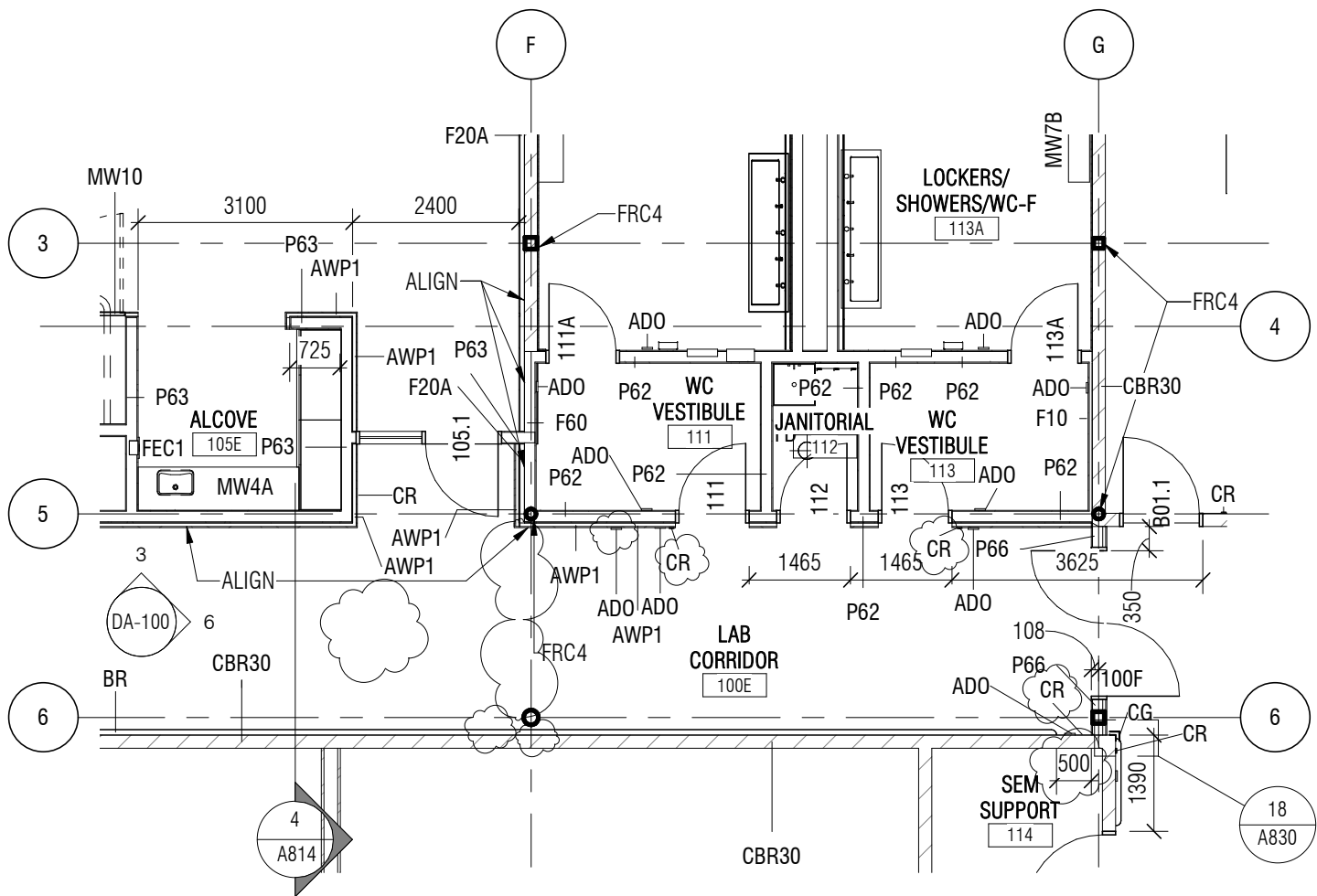
3.8 CLEANING

- .1 Refer to Section 23 08 01 and Section 23 08 02.
- .2 Cleaning: blow out piping to clean interior thoroughly of oil and foreign matter.
- .3 Check entire installation is approved by authority having jurisdiction.
- .4 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

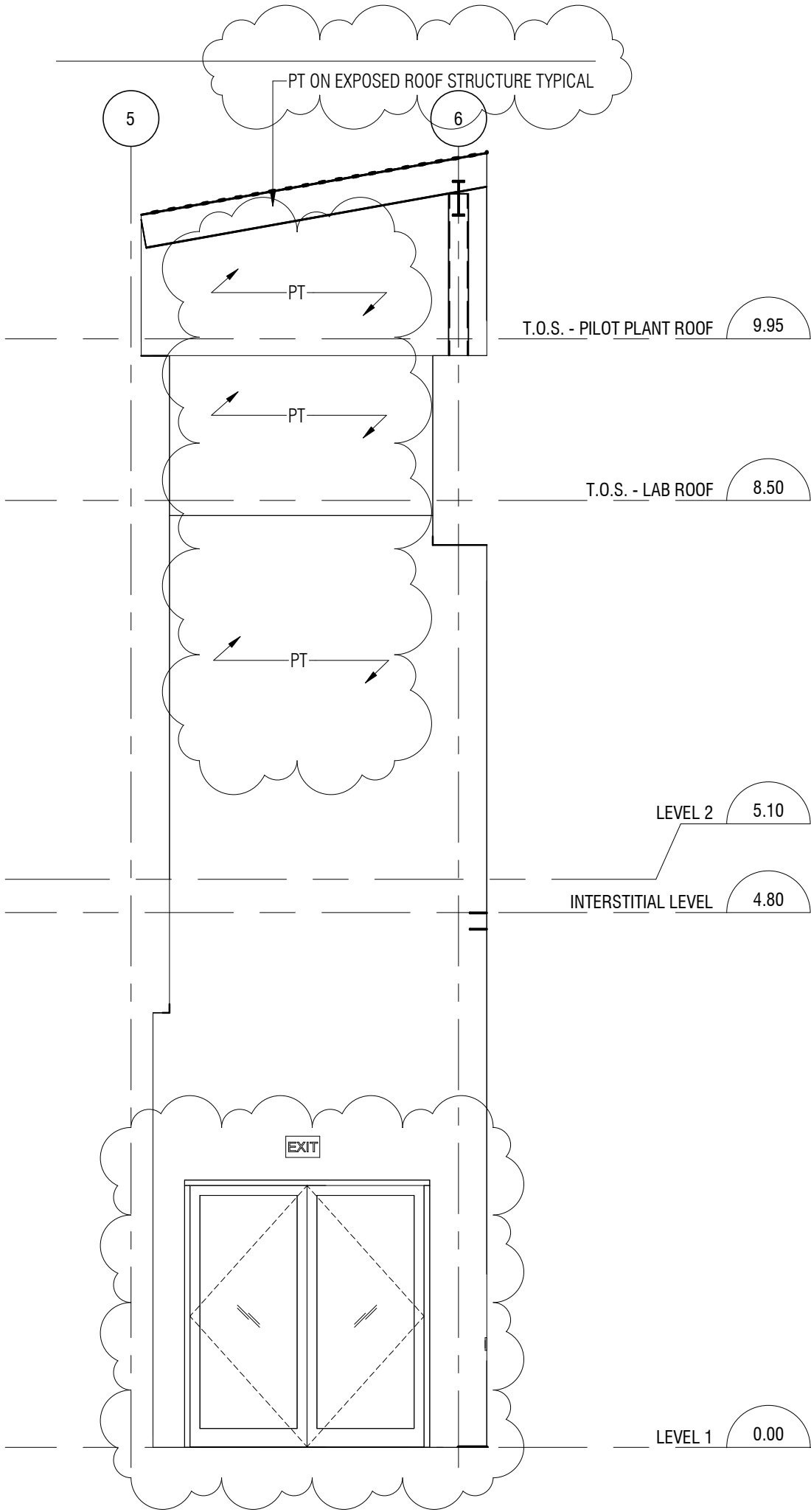
EQUIPMENT NO.			SL-WPG03AHU01		SL-WPG03AHU02		SL-WPG03AHU06&06							
Airflow Rate	cfm	L/s	24,600	11,611	30,000	14,160	31,500	14,868				--		--
Type														
Diameter	In	mm		--		--		--				--		--
Width	In	mm	52	1,321	52	1,321	48	1,219				--		--
Height	In	mm	52	1,321	76	1,930	80	2,032				--		--
Length	In	mm	120	3,048	120	3,048	108	2,743				--		--
			OUTER DIMENSIONS		OUTER DIMENSIONS		OUTER DIMENSIONS							
INSERT LOSS														
2nd Band			16		16		10							
3rd Band			34		34		23							
4th Band			52		52		40							
Class														
Air Pressure Drop	In H2O	Pa	0.29	72	0.20	50	0.14	35				--		--
Remarks			Lab Supply Air		Lab Supply Air		Lab Exhaust Air							
			Straight Rectangular		Straight Rectangular		Elbow							
							Stainless Steel							
											Fr			
EQUIPMENT NO.														
Fan Served														
Airflow Rate	cfm	L/s		--		--		--		--		--		--
Type														
Diameter	In	mm		--		--		--		--		--		--
Width	In	mm		--		--		--		--		--		--
Height	In	mm		--		--		--		--		--		--
Length	In	mm		--		--		--		--		--		--
INSERT LOSS														
2nd Band														
3rd Band														
4th Band														
Class														
Air Pressure Drop	In H2O	Pa		--		--		--		--		--		--
Remarks														


EQUIPMENT NO.			FFH-01-01		FFH-01-02		SEE BELOW		SEE BELOW		SEE BELOW		SEE BELOW		SEE BELOW		SEE BELOW	
Basis of Design					NA		NA		NA									
Make			Jaga								Trane		Trane		Trane		Trane	
Model			BZBW								LDW0400A		LDW0400A		LDW0400A		LDW0500B	
Size			5212200															
Maximum Air Flow Rate			cfm	L/s	350.0	165	400.0	189	840.0	396	1220.0	576	300.0	142	500.0	236	700.0	330
Air Pressure Drop			In H2O	Pa		--		--		--		--		--		--		--
HEATING CAPACITY			MBH	kW	16.5	4.8	21.0	6.2	20.0	5.9	29.4	8.6	6.5	1.9	10.0	2.9	20.0	5.9
Entering Water Temperature			°F	°C	130.0	54.4	130.0	54.4	130.0	54.4	130.0	54.4	130.0	54.4	130.0	54.4	130.0	54.4
Water Flow Rate			USgpm	L/min	1.1	4.2	2.1	7.9	2.5	9.5	3.5	13.2	0.5	1.9	0.8	2.8	1.5	5.7
Water Pressure Drop			ft H2O	kPa	2.1	6	1.7	5	1.2	4	0.5	1		--		--		--
COOLING CAPACITY			MBH	kW	NA		NA		NA		NA		2.4	0.7	9.2	2.7	7.9	2.3
Entering Air Temperature (db)			°F	°C														
Entering Air Temperature (wb)			°F	°C														
Leaving Air Temperature (db)			°F	°C									66.6	19.2	55.6	13.1	61.8	16.6
Leaving Air Temperature (wb)			°F	°C													62.8	17.1
Entering Water Temperature			°F	°C									44.0	6.7	44.0	6.7	44.0	6.7
Water Flow Rate			USgpm	L/min									0.5	1.9	1.3	4.7	1.3	4.9
Water Pressure Drop			ft H2O	kPa													1.5	5.5
Motor			hp	kW	0.4								0.3		0.3	0.19	0.3	0.19
Voltage			115V/1PH/60Hz		115V/1PH/60Hz		115V/1PH/60Hz		115V/1PH/60Hz		115V/1PH/60Hz		115V/1PH/60Hz		115V/1PH/60Hz		115V/1PH/60Hz	
Remarks			c/w		c/w		EQUIPMENT		EQUIPMENT		EQUIPMENT		EQUIPMENT		EQUIPMENT		EQUIPMENT	
			thermostat		built in		TAGS:		TAGS:		TAGS:		TAGS:		TAGS:		TAGS:	
					thermostat		WPG03UNH01		WPG03UNH10		WPG03FCU01		WPG03FCU05		WPG03FCU06		WPG03FCU16	
							WPG03UNH02		WPG03UNH16		WPG03FCU12		WPG03FCU17		WPG03FCU07		WPG03FCU21	
							WPG03UNH03		WPG03UNH17		WPG03FCU22		WPG03FCU18		WPG03FCU08			
							WPG03UNH04		WPG03UNH24		WPG03FCU24		WPG03FCU19		WPG03FCU23			
							WPG03UNH05		WPG03UNH25		WPG03FCU25		WPG03FCU31		WPG03FCU27			
							WPG03UNH06		WPG03UNH26		WPG03FCU26		WPG03FCU40		WPG03FCU30			
							WPG03UNH07		WPG03UNH27		WPG03FCU28				WPG03FCU32			
							WPG03UNH08				WPG03FCU33				WPG03FCU39			
							WPG03UNH09				WPG03FCU34							
							WPG03UNH11				WPG03FCU35							
							WPG03UNH12				WPG03FCU36							
							WPG03UNH13				WPG03FCU37							
							WPG03UNH14											
							WPG03UNH15											
							WPG03UNH18											
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							WPG03UNH22											
							WPG03UNH23											

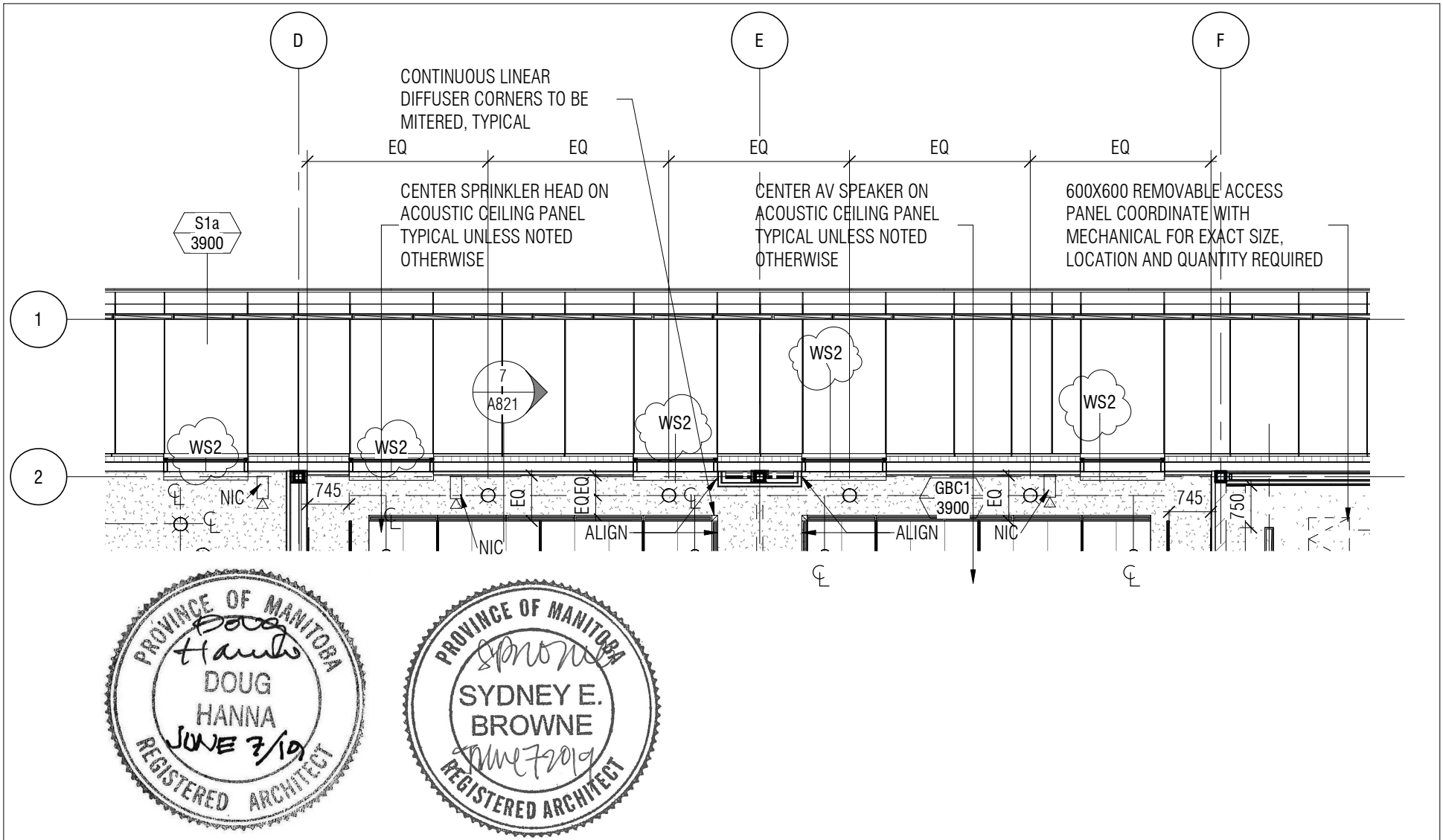
EQUIPMENT NO.			SEE BELOW		WPG03FCU41		WPG03FCU42		WPG03FCU43							
Basis of Design																
Make			Trane		BERNER		BERNER		BERNER							
Model			LDW0500B		IDC16-1144W		IDC16-1144W		IDC16-1144W							
Size																
Maximum Air Flow Rate	cfm	L/s	1200.0	566	13062.0	6,165	13062.0	6,165	13062.0	6,165		--		--		--
Air Pressure Drop	In H2O	Pa		--		--		--		--		--		--		--
HEATING CAPACITY	MBH	kW	37.0	10.8	564.5	165.4	564.5	165.4	564.5	165.4		--		--		--
Entering Water Temperature	°F	°C	130.0	54.4	130.0	54.4	130.0	54.4	130.0	54.4		--		--		--
Water Flow Rate	USgpm	L/min	2.8	10.4	50.0	189.3	50.0	189.3	50.0	189.3		--		--		--
Water Pressure Drop	ft H2O	kPa		--	11.1	33	11.1	33	11.1	33		--		--		--
COOLING CAPACITY	MBH	kW	10.1	3.0												
Entering Air Temperature (db)	°F	°C														
Entering Air Temperature (wb)	°F	°C														
Leaving Air Temperature (db)	°F	°C	64.7	18.2												
Leaving Air Temperature (wb)	°F	°C														
Entering Water Temperature	°F	°C	44.0	6.7												
Water Flow Rate	USgpm	L/min	1.5	5.7												
Water Pressure Drop	ft H2O	kPa														
Motor	hp	kW	0.3	0.19	7.5	5.59	7.5	5.59	7.5	5.59						
Voltage			115V/1PH/60Hz		575/3/60		575/3/60		575/3/60							
Remarks			EQUIPMENT													
			TAGS:		Nozzle Length		Nozzle Length		Nozzle Length							
			WPG03FCU02		3650mm		3650mm		3650mm							
			WPG03FCU03													
			WPG03FCU04													
			WPG03FCU10A													
			WPG03FCU10B													
			WPG03FCU11													
			WPG03FCU13													
			WPG03FCU14													
			WPG03FCU15													
			WPG03FCU20													
			WPG03FCU29													
			WPG03FCU38													
			WPG03FCU44A													
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			WPG03FCU46													
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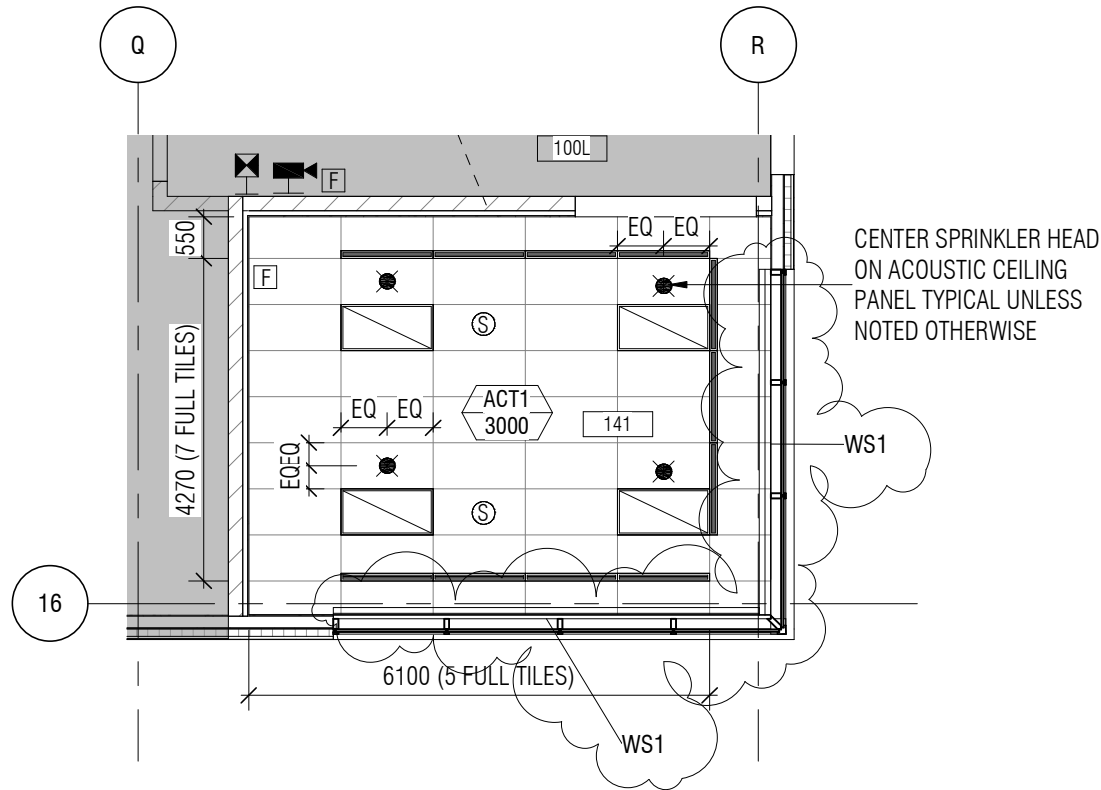
<p>project</p> <p>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</p>	<p>project</p> <p>Designed By MK/CL/CL/AP Conçu par</p> <p>Date 2019/06/07 (yyyy/mm/dd)</p> <p>Drawn By CL Dessiné par</p> <p>Date 2019/06/07 (yyyy/mm/dd)</p> <p>Reviewed By DH/JF Examiné par</p> <p>Date 2019/06/07 (yyyy/mm/dd)</p> <p>Approved By DH/JF Approuvé par</p> <p>Date 2019/06/07 (yyyy/mm/dd)</p> <p>Tender Soumission</p> <p>KEVIN GALLAYS</p> <p>Project Manager Administrateur de projets</p>	<p>Public Works and Government Services Canada</p> <p>Travaux publics et services gouvernementaux Canada</p> <p>REAL PROPERTY SERVICES Western Region</p> <p>SERVICES IMMOBILIERS Région de l'Ouest</p> <p>Project no. No. du projet</p> <p>R.076948.001</p> <p>Drawing no. No. du dessin</p> <p>DA-099</p>
<p>drawing</p> <p>PARTIAL A106 - PLAN - LEVEL 1 - WEST</p>		



project	NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba	projet	Designed By	MK/CL/CL/AP	Conçu par		Public Works and Government Services Canada	Travaux publics et services gouvernementaux Canada
			Date	2019/05/27	(yyyy/mm/dd)			
			Drawn By	CL	Dessiné par			
			Date	2019/05/27	(yyyy/mm/dd)			
			Reviewed By	DH/JF	Examiné par			
drawing	6/A800 - INTERIOR ELEVATIONS	dessin	Date	2019/05/27	(yyyy/mm/dd)	Project no.	No. du projet	
			Approved By	DH/JF	Approuvé par			
			Date	2019/05/27	(yyyy/mm/dd)			
			Tender		Soumission			
			Project Manager	KEVIN GALLAYS	Administrateur de projets			
							REAL PROPERTY SERVICES Western Region	SERVICES IMMOBILIERS Région de l'Ouest
						R.076948.001		
						Drawing no.	No. du dessin	
						DA-100		




<p>project</p> <p>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</p>	<p>project</p> <p>Designed By MK/CL/CL/AP Date 2019/06/07 (yyyy/mm/dd) Drawn By CL Date 2019/06/07 (yyyy/mm/dd) Reviewed By DH/JF Date 2019/06/07 (yyyy/mm/dd) Approved By DH/JF Date 2019/06/07 (yyyy/mm/dd) Tender KEVIN GALLAYS Project Manager</p>	<p>Conçu par (yyyy/mm/dd) Dessiné par (yyyy/mm/dd) Examiné par Approuvé par (yyyy/mm/dd) Soumission</p> <p>Public Works and Government Services Canada</p> <p>REAL PROPERTY SERVICES Western Region</p> <p>Travaux publics et services gouvernementaux Canada</p> <p>SERVICES IMMOBILIERS Région de l'Ouest</p>
<p>drawing</p> <p>PARTIAL A202 - RCP - LEVEL 1 - WEST</p>	<p>dessin</p> <p>Project Manager</p>	<p>Project no. No. du projet</p> <p>R.076948.001</p> <p>Drawing no. No. du dessin</p> <p>DA-101</p>



project
**NRC ADVANCED
 MANUFACTURING PROGRAM
 (AMP) - WINNIPEG**
 Red Fife Road, Winnipeg, Manitoba

drawing
**PARTIAL A203 - RCP -
 LEVEL 1 - EAST**

Designed By	MK/CL/CL/AP	Conçu par
Date	2019/06/07	(yyyy/mm/dd)
Drawn By	CL	Dessiné par
Date	2019/06/07	(yyyy/mm/dd)
Reviewed By	DH/JF	Examiné par
Date	2019/06/07	(yyyy/mm/dd)
Approved By	DH/JF	Approuvé par
Date	2019/06/07	(yyyy/mm/dd)
Tender	KEVIN GALLAYS	Soumission
Project Manager		Administrateur de projets

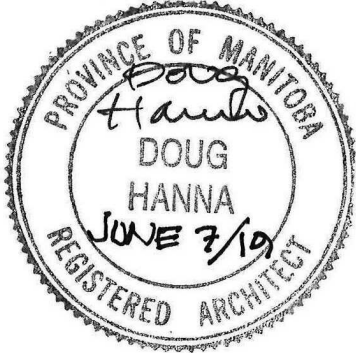
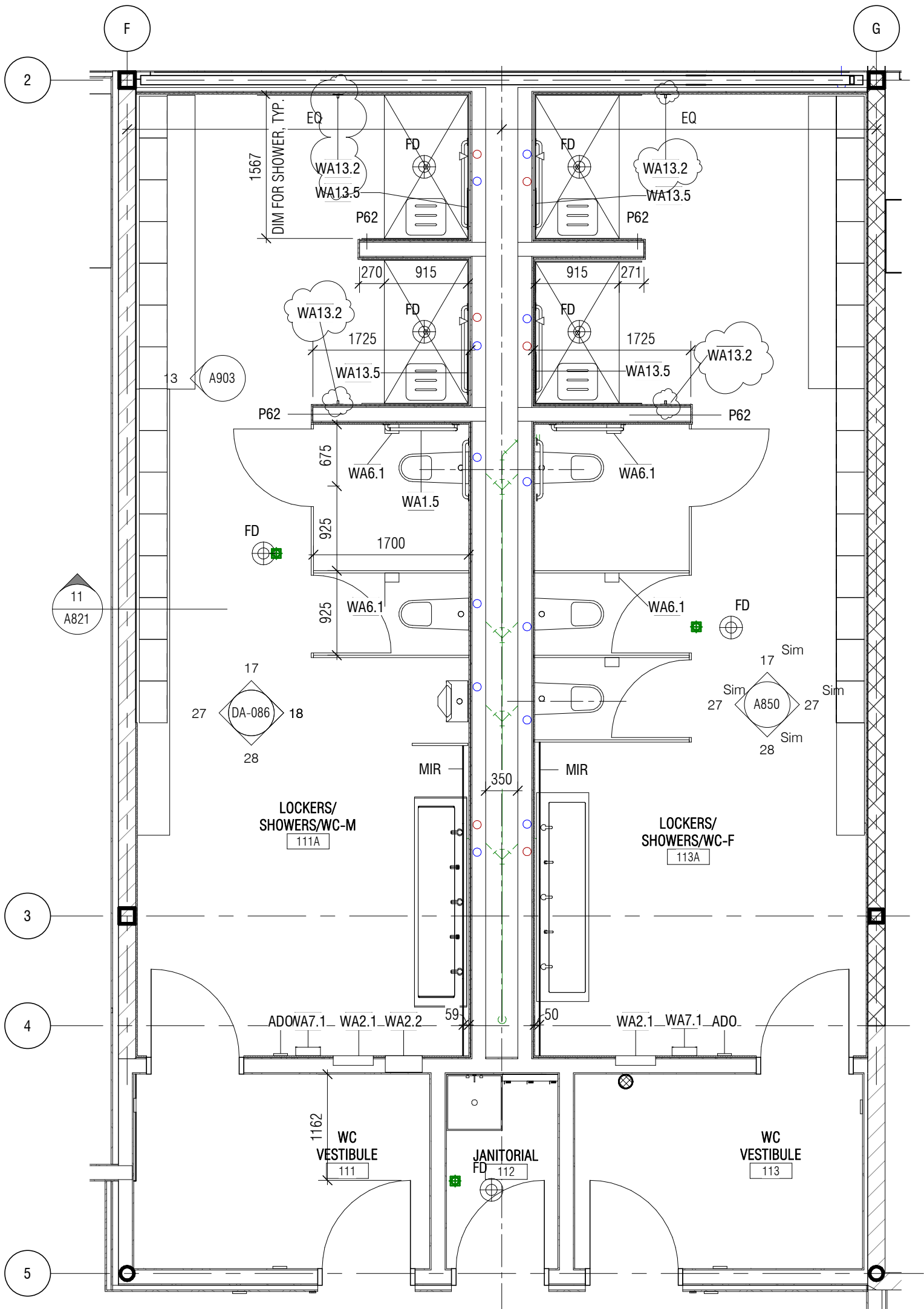
	Public Works and Government Services Canada	Travaux publics et services gouvernementaux Canada
	REAL PROPERTY SERVICES Western Region	SERVICES IMMOBILIERS Région de l'Ouest


Project no.	No. du projet
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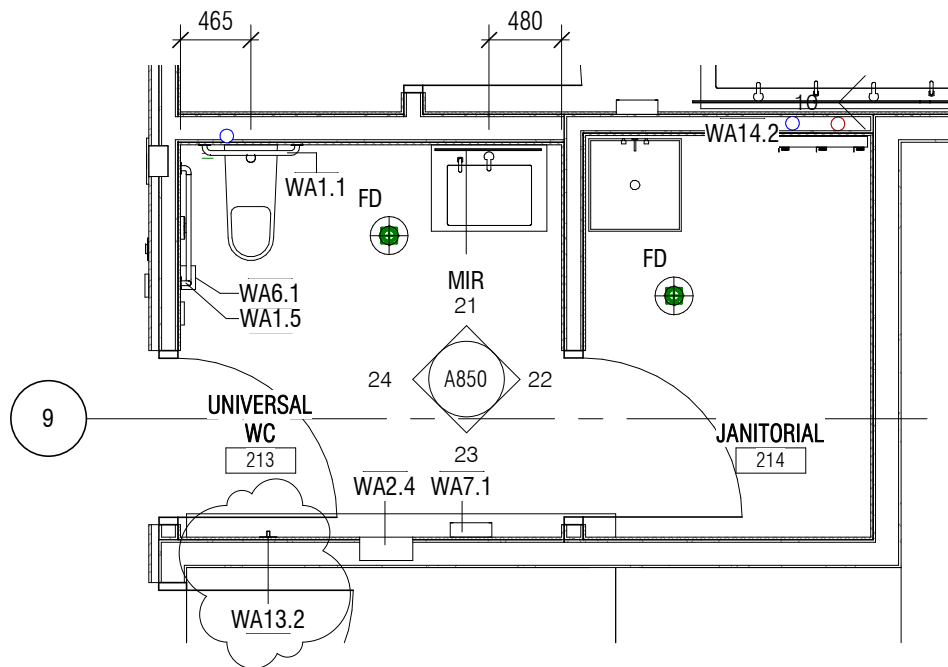
R.076948.001

Drawing no.	No. du dessin
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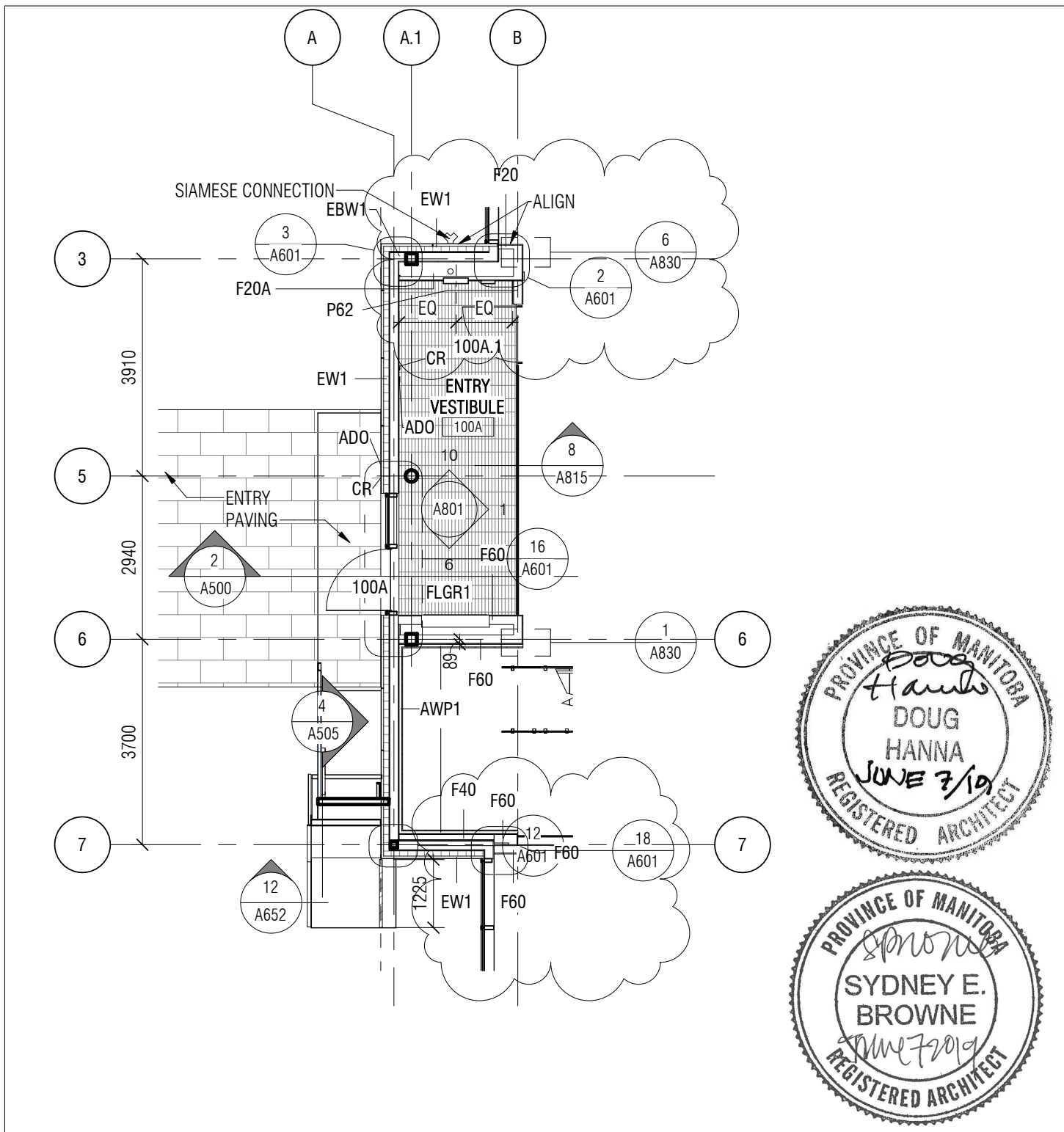
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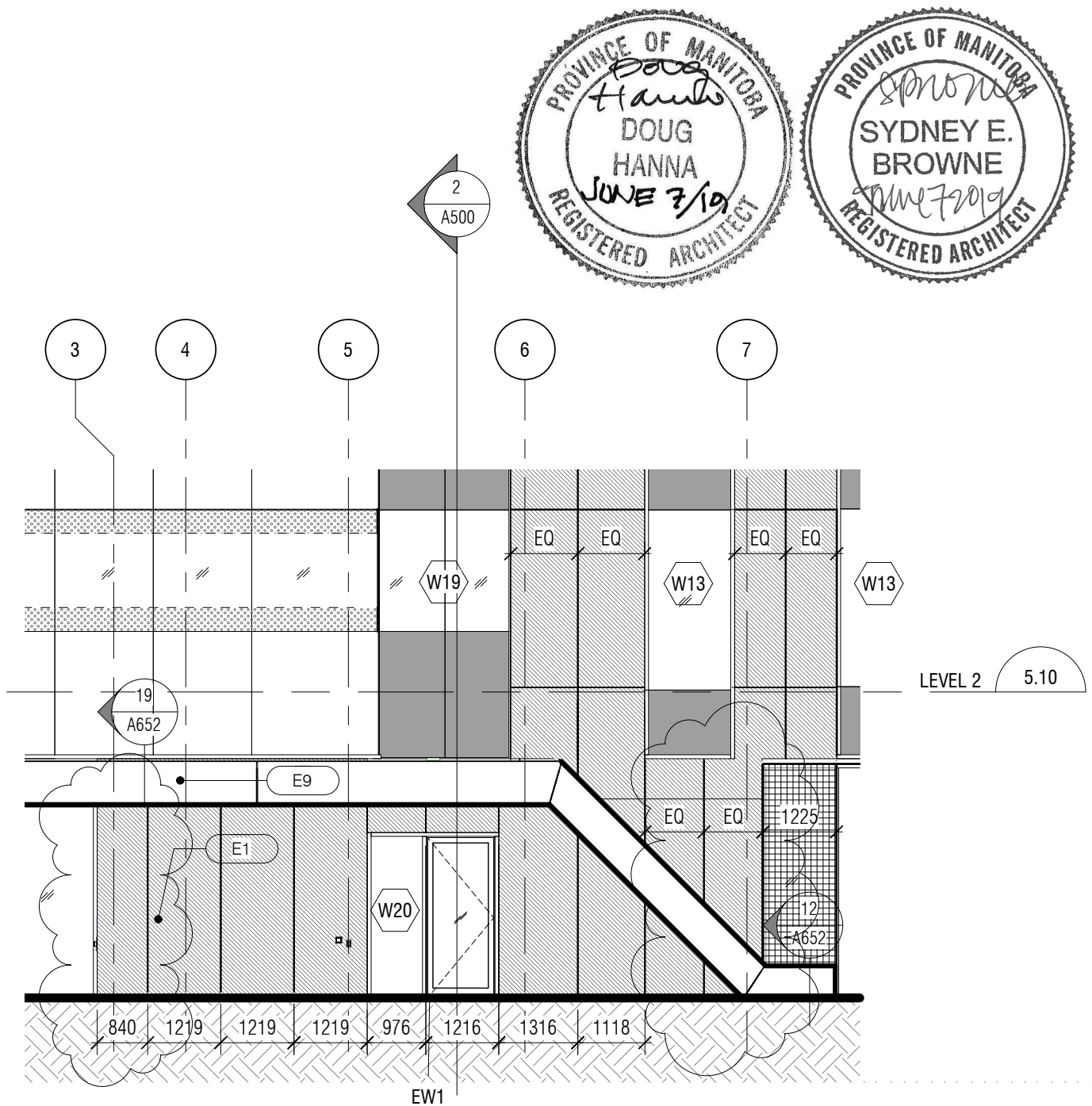
project NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba		Designed By MK/CL/CL/AP Date 2019/06/07 Drawn By CL Date 2019/06/07 Reviewed By DH/JF	Conçu par (yyyy/mm/dd) Dessiné par (yyyy/mm/dd) Examiné par	 Public Works and Government Services Canada REAL PROPERTY SERVICES Western Region	Travaux publics et services gouvernementaux Canada SERVICES IMMOBILIERS Région de l'Ouest
drawing 19/A850 - WASHROOM	dessin	Date 2019/06/07 Approved By DH/JF Date 2019/06/07 Tender KEVIN GALLAYS Project Manager	(yyyy/mm/dd) Approuvé par (yyyy/mm/dd) Soumission Administrateur de projets		Project no. R.076948.001 Drawing no. DA-103
				No. du projet	No. du dessin



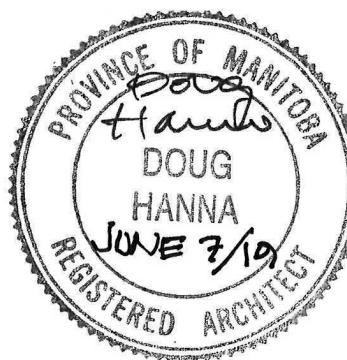
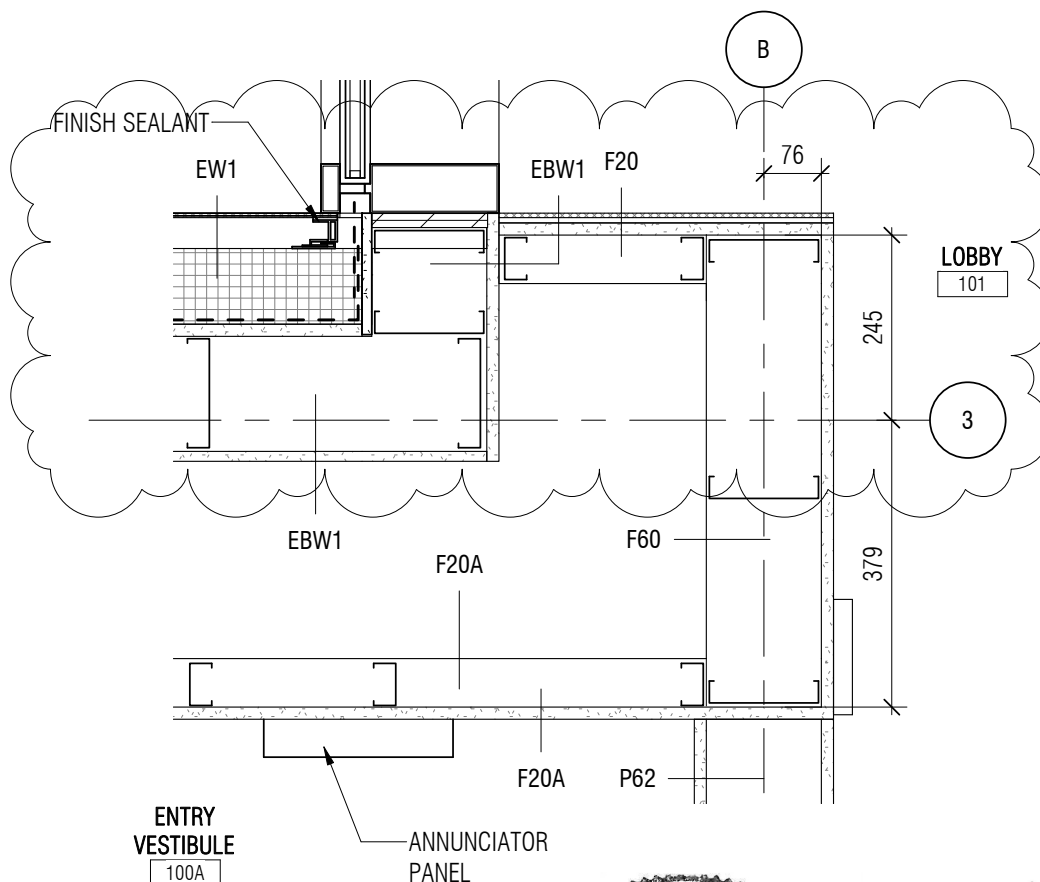
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<p>drawing</p> <p>25/A850 - WASHROOM</p>	<p>dessin</p> <p>Project Manager Administrateur de projets</p>	<p>Project no. No. du projet R.076948.001 Drawing no. No. du dessin DA-104</p>



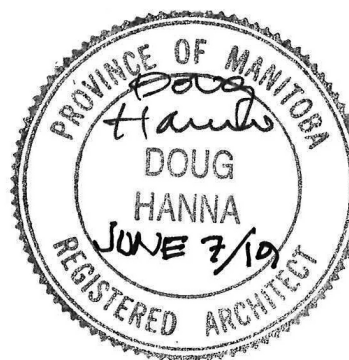
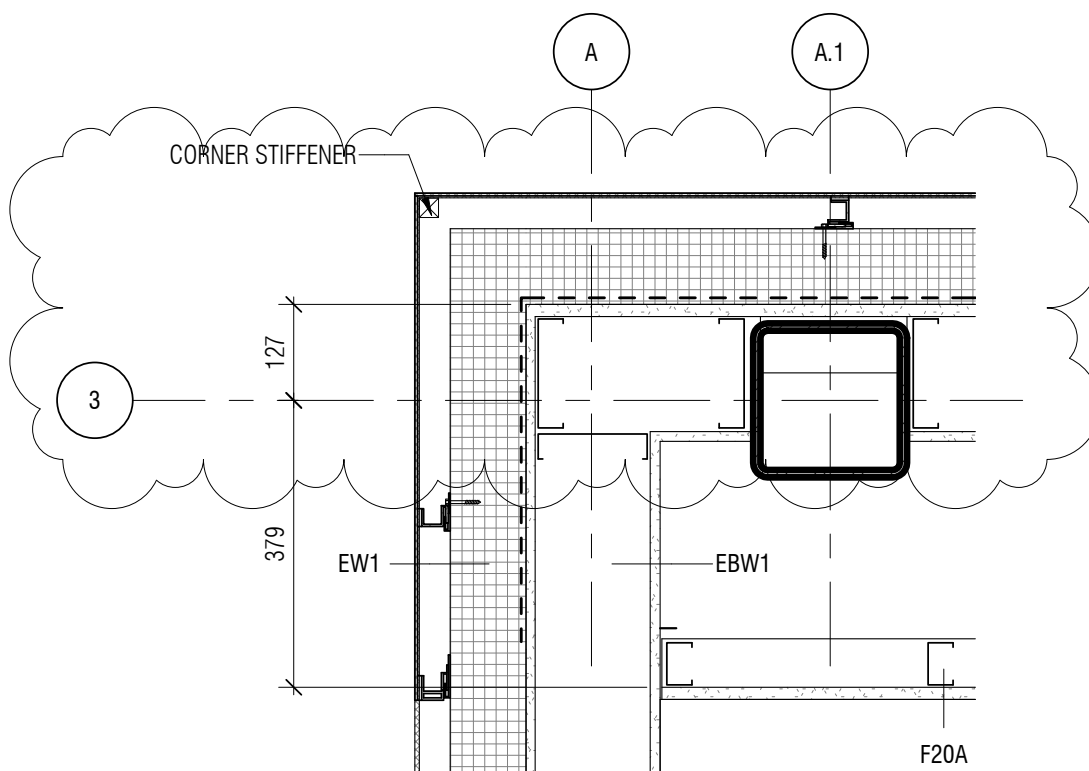
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			Date	2019/06/07	(yyyy/mm/dd)			
			Drawn By	AP	Dessiné par			
			Date	2019/06/07	(yyyy/mm/dd)			
			Reviewed By	DH/JF	Examiné par			
drawing	dessin	PARTIAL A106 - PLAN - LEVEL 1 - WEST	Date	2019/06/07	(yyyy/mm/dd)	Project no.	No. du projet	
			Approved By	DH/JF	Approuvé par			
			Date	2019/06/07	(yyyy/mm/dd)			
			Tender		Soumission			
			Project Manager	KEVIN GALLAYS	Administrateur de projets			



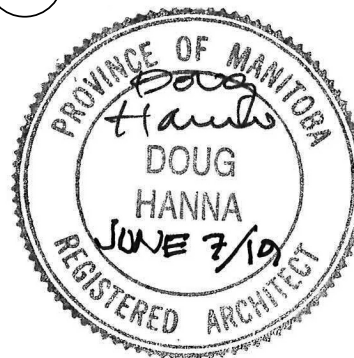
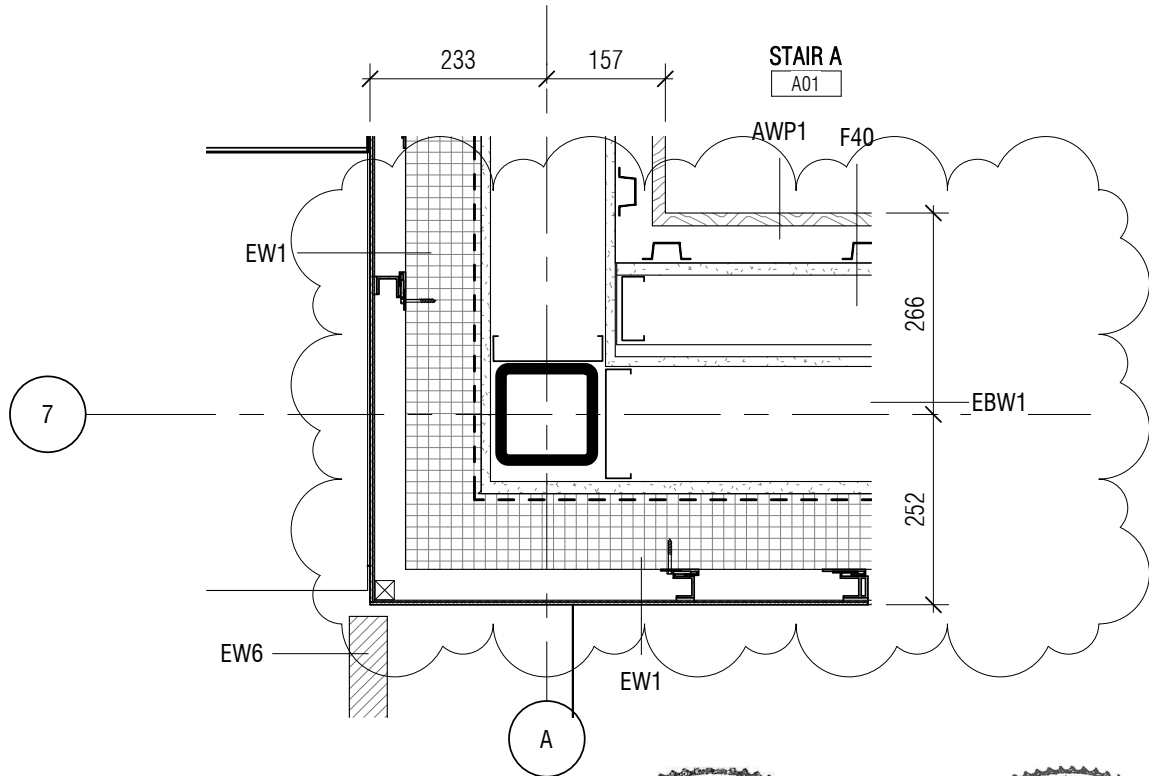
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<p>drawing</p> <p>2/A301 - WEST ELEVATION</p>	<p>dessin</p>	<p>Project no. No. du projet</p> <p>R.076948.001</p> <p>Drawing no. No. du dessin</p> <p>DA-106</p>



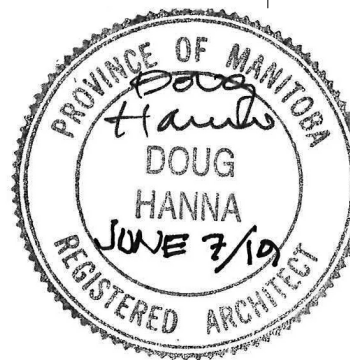
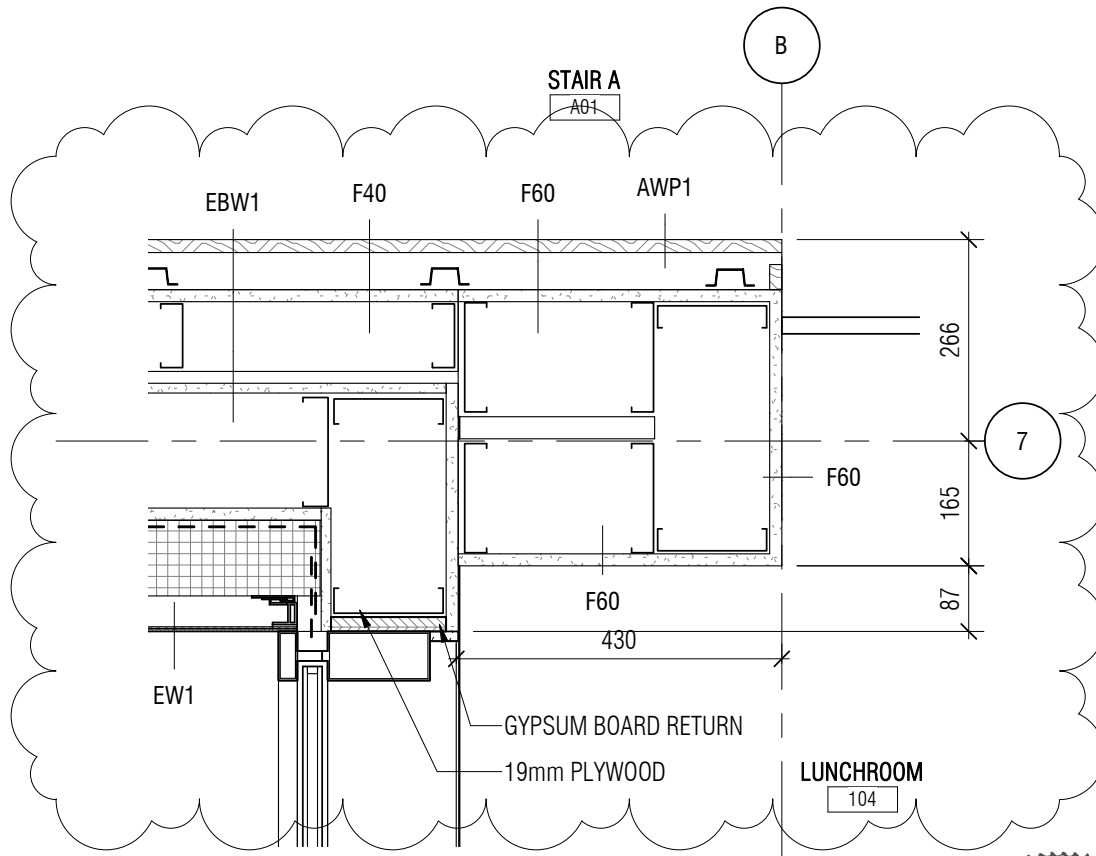
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<p>drawing</p> <p>2/A601 - PLAN DETAILS - WEST</p>	<p>dessin</p>	<p>Project no. No. du projet R.076948.001</p> <p>Drawing no. No. du dessin DA-107</p>



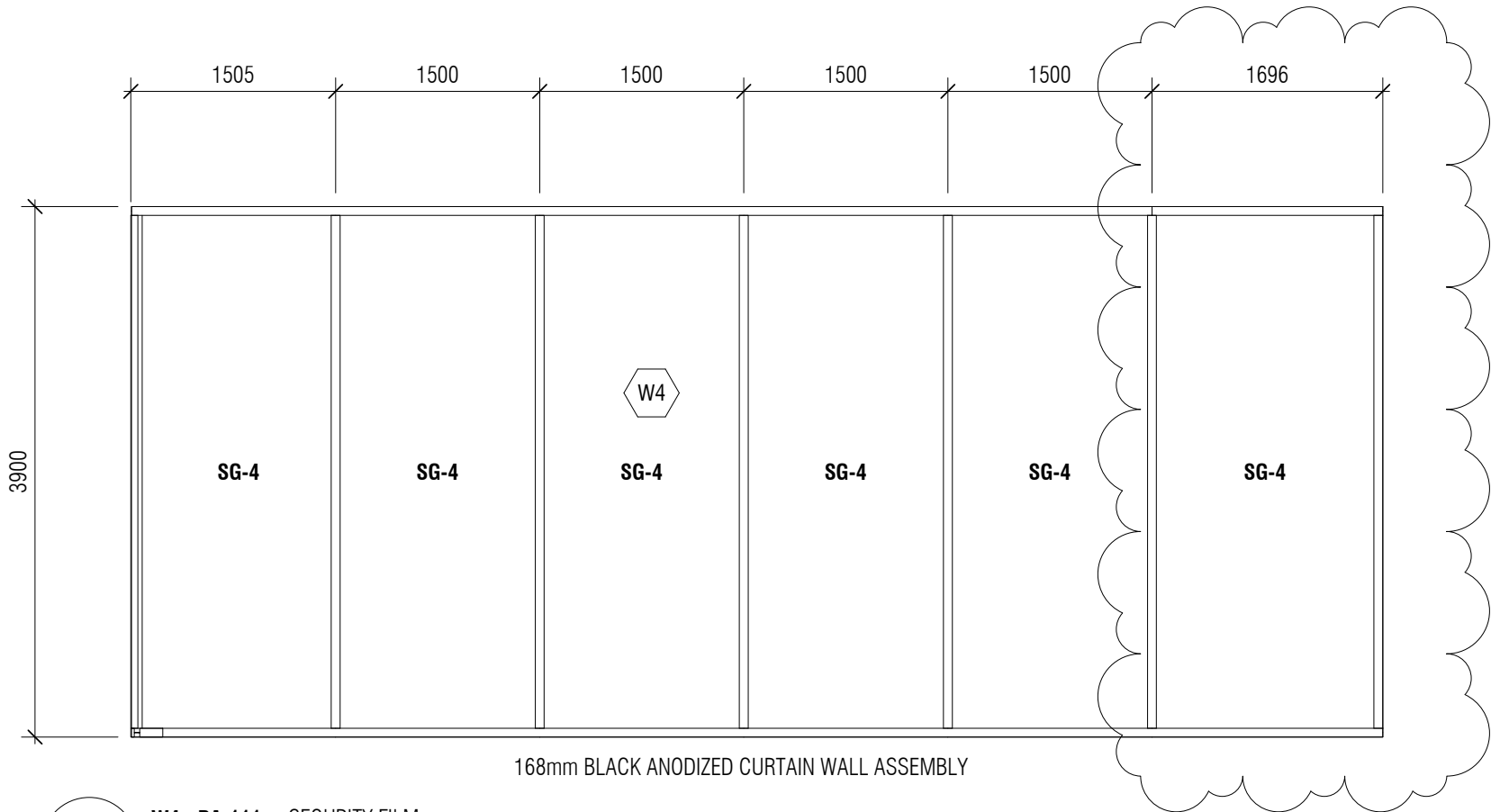
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<p>drawing</p> <p>3/A601 - PLAN DETAILS - WEST</p>	<p>dessin</p> <p>Project Manager</p>	<p>Project no. No. du projet R.076948.001 Drawing no. No. du dessin DA-108</p>



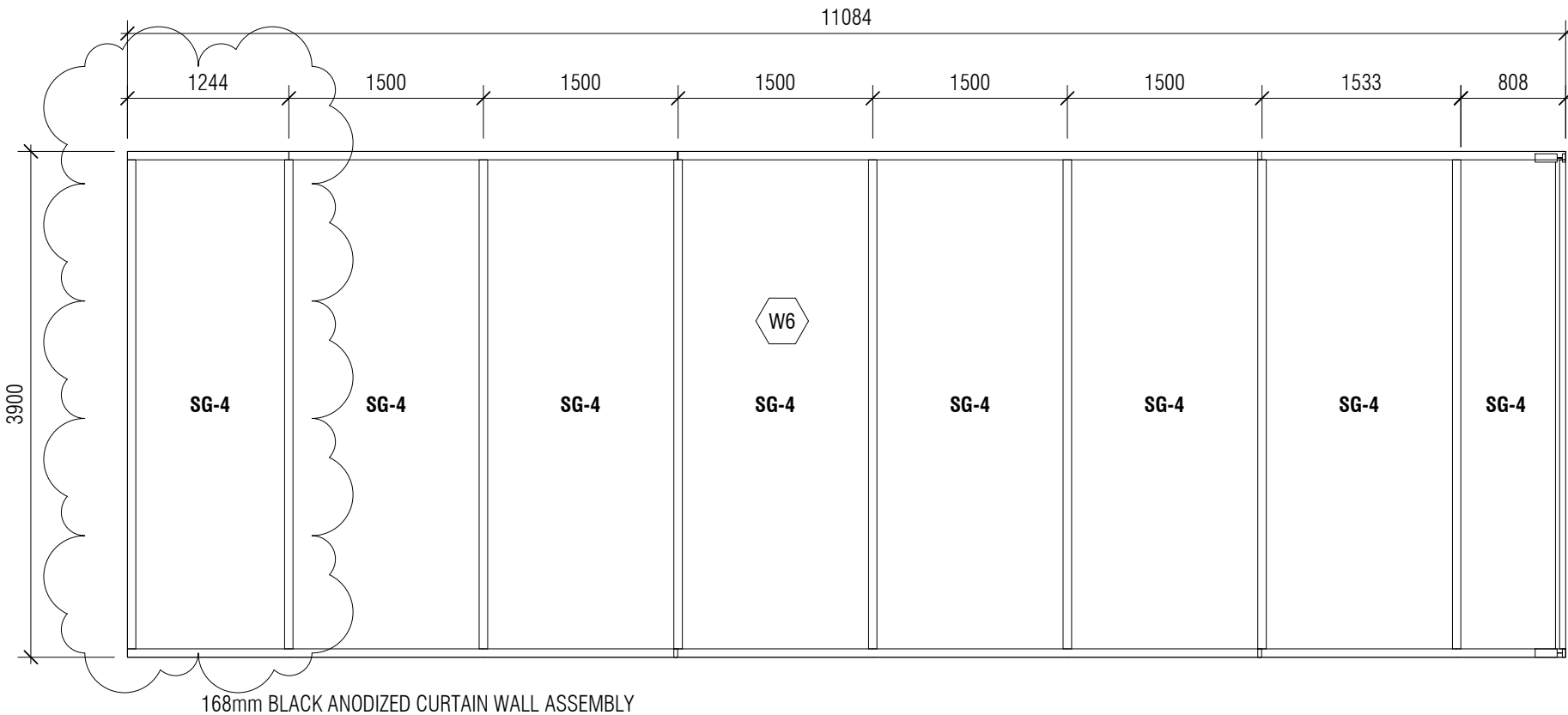
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<p>drawing</p> <p>12/A601 - PLAN DETAIL - WEST</p>	<p>dessin</p> <p>Project Manager Administrateur de projets</p>	<p>Project no. No. du projet R.076948.001 Drawing no. No. du dessin DA-109</p>



<p>project</p> <p>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</p>	<p>projet</p> <p>Designed By MK/CL/CL/AP Date 2019/06/07 (yyyy/mm/dd) Drawn By AP Date 2019/06/07 (yyyy/mm/dd) Reviewed By DH/JF Date 2019/06/07 (yyyy/mm/dd) Approved By DH/JF Date 2019/06/07 (yyyy/mm/dd) Tender Project Manager KEVIN GALLAYS</p>	<p>Conçu par Dessiné par Examiné par Approuvé par Soumission Administrateur de projets</p> <p>Public Works and Government Services Canada</p> <p>Travaux publics et services gouvernementaux Canada</p> <p>REAL PROPERTY SERVICES Western Region</p> <p>SERVICES IMMOBILIERS Région de l'Ouest</p>
<p>drawing</p> <p>18/A601 - PLAN DETAILS - WEST</p>	<p>dessin</p>	<p>Project no. No. du projet R.076948.001 Drawing no. No. du dessin DA-110</p>




1 **W4 - DA-111** SECURITY FILM
DA-111 1 : 50



2 **W6 - DA-111** SECURITY FILM
DA-111 1 : 50



project <div>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</div>	project	Designed By	MK/CL/CL/AP	Conçu par	<div> Public Works and Government Services Canada</div> <div>REAL PROPERTY SERVICES Western Region</div>	<div>Travaux publics et services gouvernementaux Canada</div> <div>SERVICES IMMOBILIERS Région de l'Ouest</div>
		Date	2019/06/07	(yyyy/mm/dd)		
		Drawn By	AP	Dessiné par		
		Date	2019/06/07	(yyyy/mm/dd)		
		Reviewed By	DH/JF	Examiné par		
drawing <div>A351 - WINDOW TYPE SCHEDULE</div>	dessin	Date	2019/06/07	(yyyy/mm/dd)	Project no. <div>R.076948.001</div>	No. du projet
		Approved By	DH/JF	Approuvé par		
		Date	2019/06/07	(yyyy/mm/dd)		
		Tender		Soumission		
		Project Manager	KEVIN GALLAYS	Administrateur de projets		



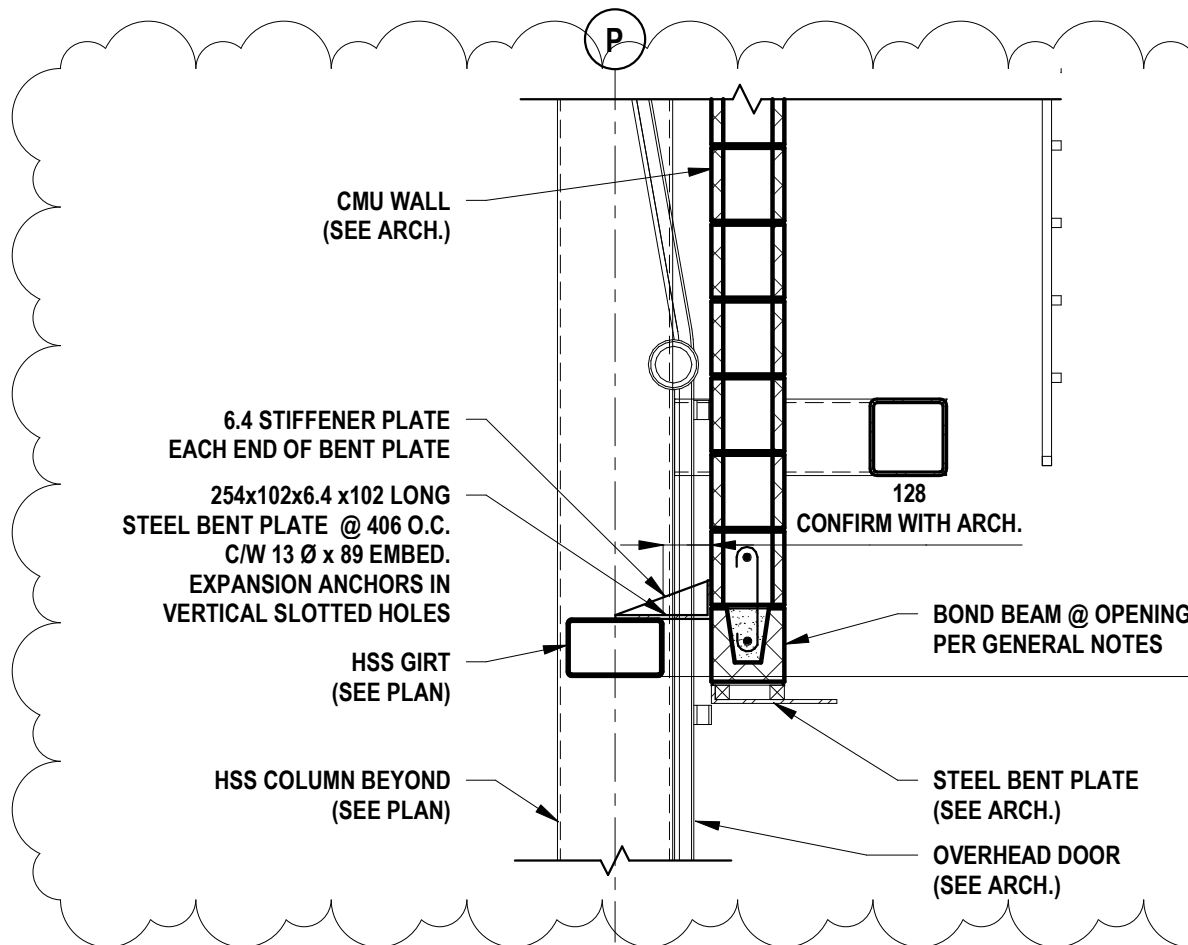
Certificate of Authorization

Lavergne Draward & Associates Inc.

No. 1912 Date: June 6, 2019

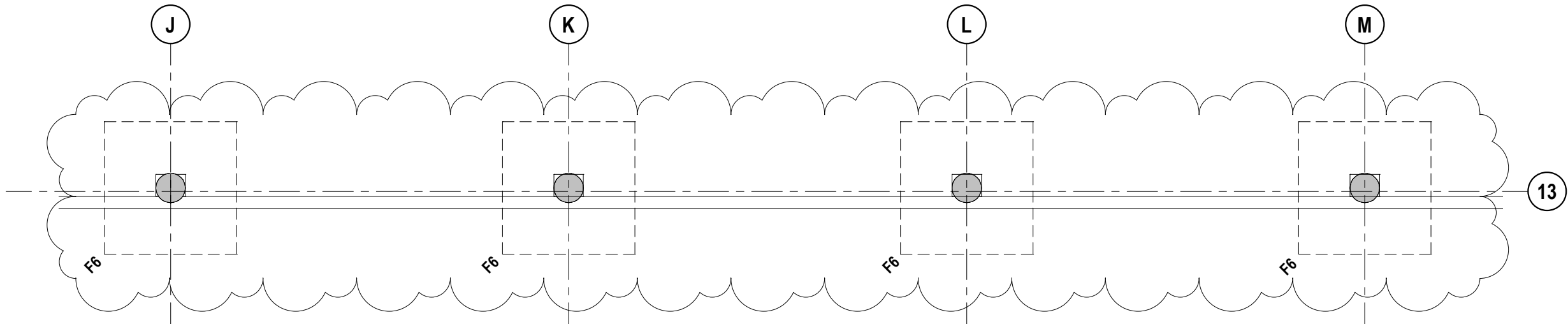


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4292

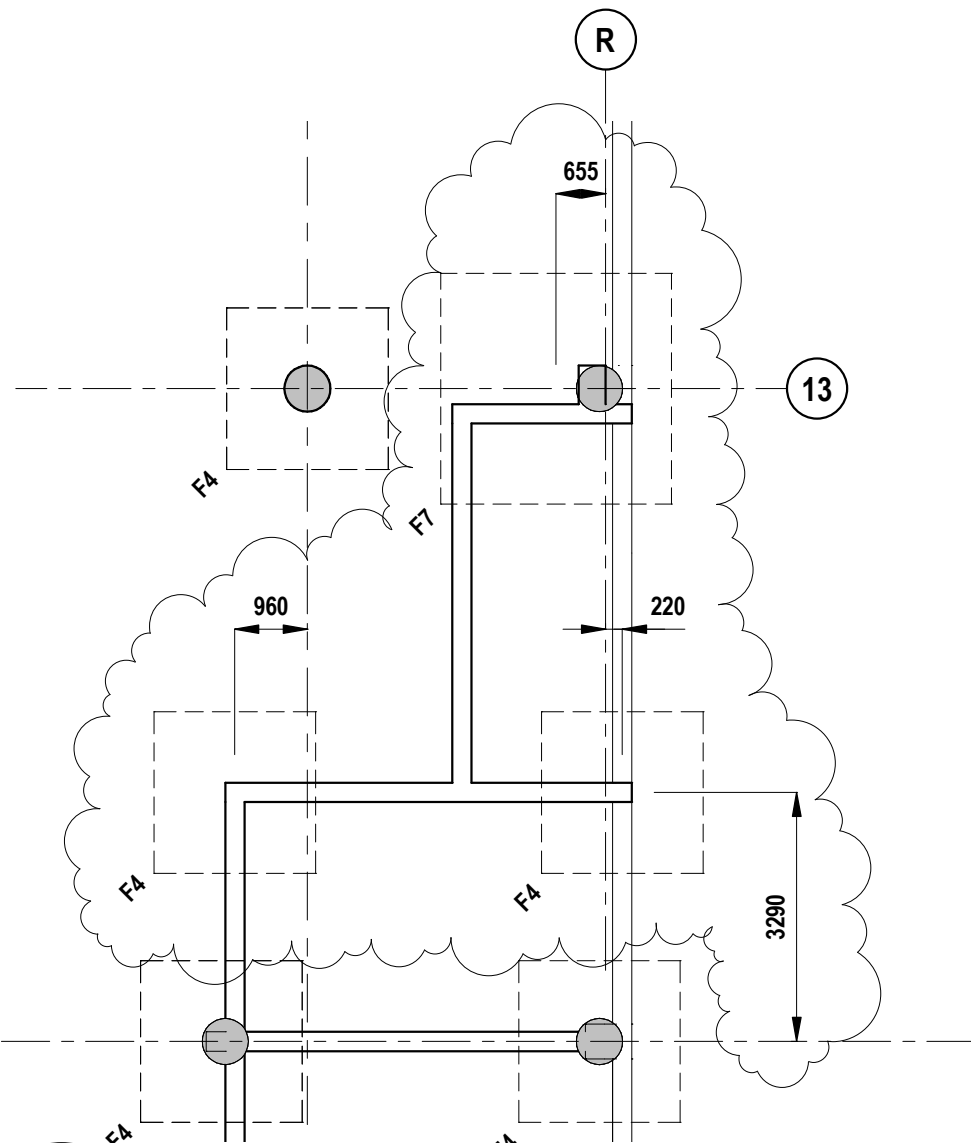


1 SECTION (4/S504)
S132 DS.014 SCALE: 1 : 20

<p>project</p> <p>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</p> <p>project</p>	<p>Designed By DK Conçu par</p> <p>Date 2019/06/05 (yyyy/mm/dd)</p> <p>Drawn By JN Dessiné par</p> <p>Date 2019/06/05 (yyyy/mm/dd)</p> <p>Reviewed By DK Examiné par</p> <p>Date 2019/06/05 (yyyy/mm/dd)</p> <p>Approved By DK Approuvé par</p> <p>Date 2019/06/05 (yyyy/mm/dd)</p> <p>Tender KEVIN GALLAYS Soumission</p> <p>Project Manager Administrateur de projets</p>	<p> Public Works and Government Services Canada Travaux publics et services gouvernementaux Canada</p> <p>REAL PROPERTY SERVICES Western Region SERVICES IMMOBILIERS Région de l'Ouest</p> <p>Project no. No. du projet</p> <p>R.076948.001</p> <p>Drawing no. No. du dessin</p> <p>DS.014</p>
<p>drawing</p> <p>SECTION</p> <p>dessin</p>		



1 PARTIAL FOUNDATION PLAN - EAST
- DS.015 SCALE: 1 : 100



2 PARTIAL FOUNDATION PLAN - EAST
- DS.015 SCALE: 1 : 100

APEGN
Certificate of Authorization
Lavergne Draward & Associates Inc.
No. 1912 Date: June 6, 2019



Canada

Public Works and Government Services Canada
Travaux publics et services gouvernementaux Canada
REAL PROPERTY SERVICES Western Region
SERVICES IMMOBILIERS Région de l'Ouest

Contractor to verify all dimensions & conditions on site and immediately notify the departmental representative of all discrepancies.

1	ISSUED FOR ADDENDUM #5	2019/06/05
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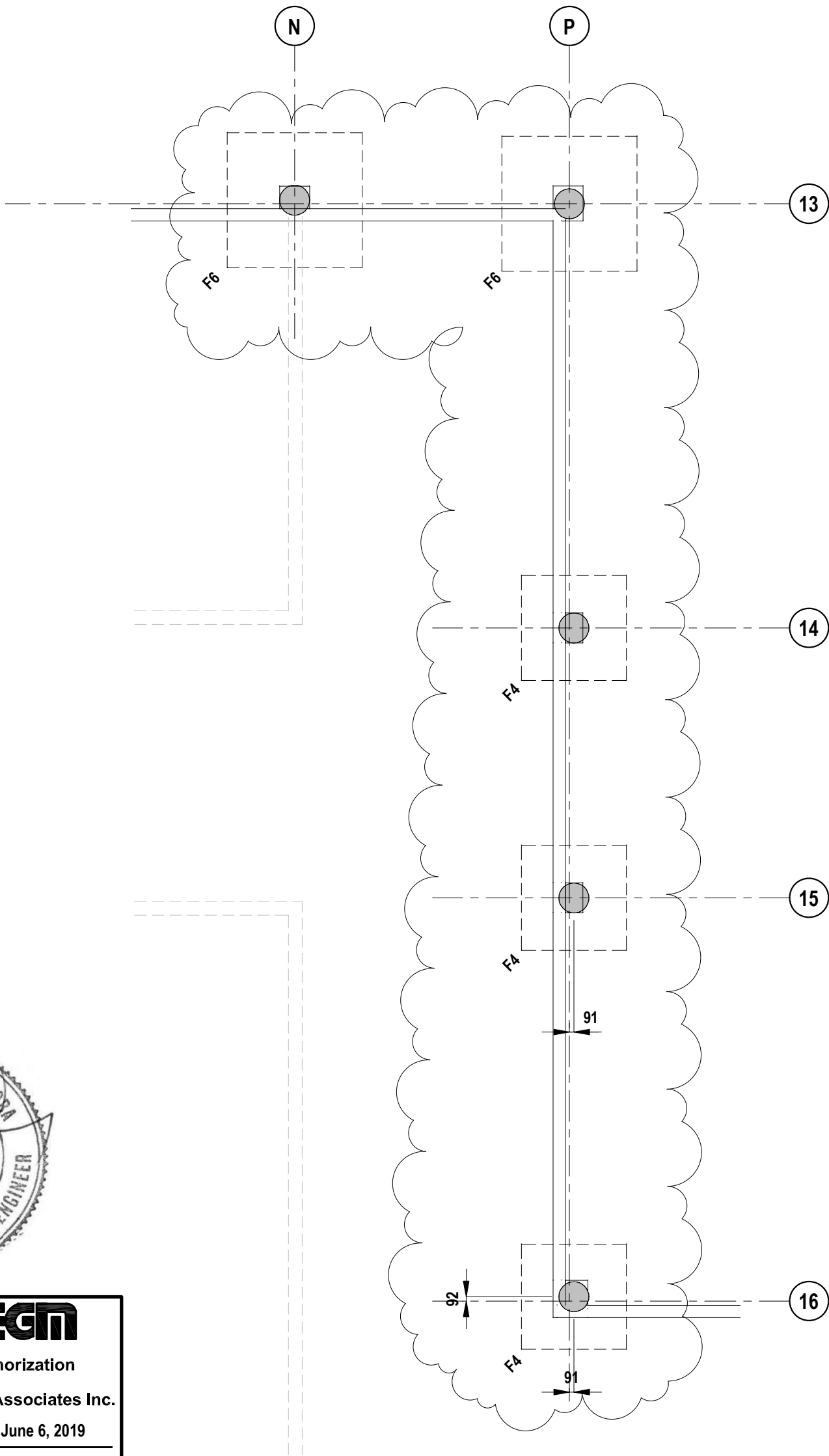
revisions	description	date
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A detail no. no. du detail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project
NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG
Red Fife Road, Winnipeg, Manitoba

drawing
PARTIAL FOUNDATION PLAN

Designed By	DK	Conçu par
Date	2019/06/05	(yyyy/mm/dd)
Drawn By	JN	Dessiné par
Date	2019/06/05	(yyyy/mm/dd)
Reviewed By	DK	Examiné par
Date	2019/06/05	(yyyy/mm/dd)
Approved By	DK	Approuvé par
Date	2019/06/05	(yyyy/mm/dd)
Tender	KEVIN GALLAYS	Soumission
Project Manager		Administrateur de projets
Project no.	R.076948.001	No. du projet
Drawing no.	DS.015	No. du dessin






Certificate of Authorization
Lavergne Draward & Associates Inc.
No. 1912 Date: June 6, 2019

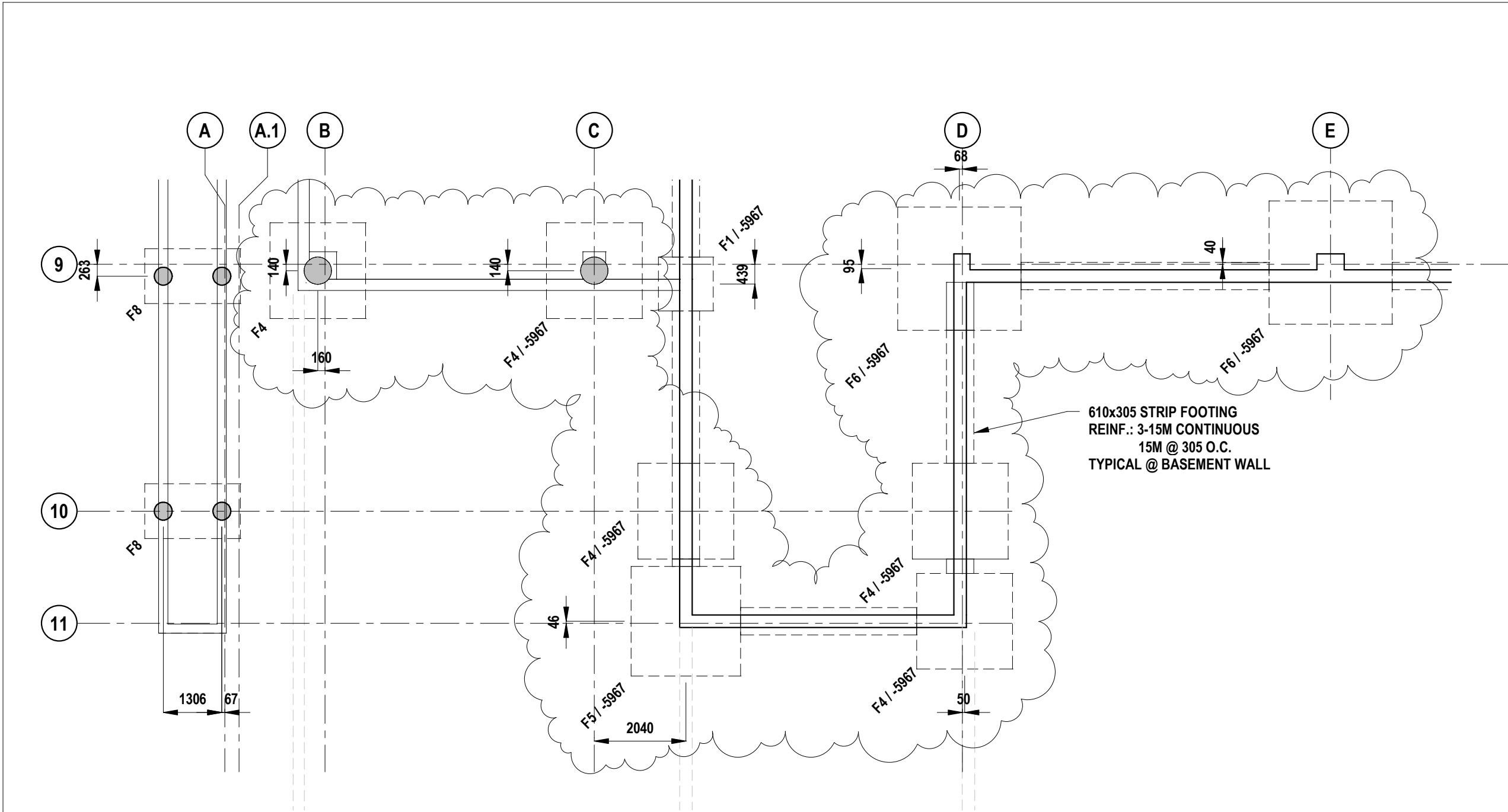
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-

PARTIAL FOUNDATION PLAN - EAST

DS.016 SCALE: 1 : 100

project <div>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</div>	projet	Designed By	DK	Conçu par	<div> Public Works and Government Services Canada</div> <div>REAL PROPERTY SERVICES Western Region</div>	<div>Travaux publics et services gouvernementaux Canada</div> <div>SERVICES IMMOBILIERS Région de l'Ouest</div>
		Date	2019/06/05	(yyyy/mm/dd)		
		Drawn By	JN	Dessiné par		
		Date	2019/06/05	(yyyy/mm/dd)		
		Reviewed By	DK	Examiné par		
drawing <div>PARTIAL FOUNDATION PLAN</div>	dessin	Date	2019/06/05	(yyyy/mm/dd)	Project no.	No. du projet
		Approved By	DK	Approuvé par	R.076948.001	
		Date	2019/06/05	(yyyy/mm/dd)		
		Tender		Soumission		
		Project Manager	KEVIN GALLAYS	Administrateur de projets	Drawing no.	No. du dessin
			DS.016			



1 PARTIAL FOUNDATION PLAN - WEST
- DS.017 SCALE: 1 : 100

APEGM
Certificate of Authorization
Lavergne Draward & Associates Inc.
No. 1912 Date: June 6, 2019



Public Works and Government Services Canada
Travaux publics et services gouvernementaux Canada

REAL PROPERTY SERVICES Western Region
SERVICES IMMOBILIERS Région de l'Ouest

Contractor to verify all dimensions & conditions on site and immediately notify the departmental representative of all discrepancies.

revisions	description	date
1	ISSUED FOR ADDENDUM #5	2019/06/05

A
C

A detail no.
no. du detail
B location drawing no.
sur dessin no.
C drawing no.
dessin no.

A
B
C

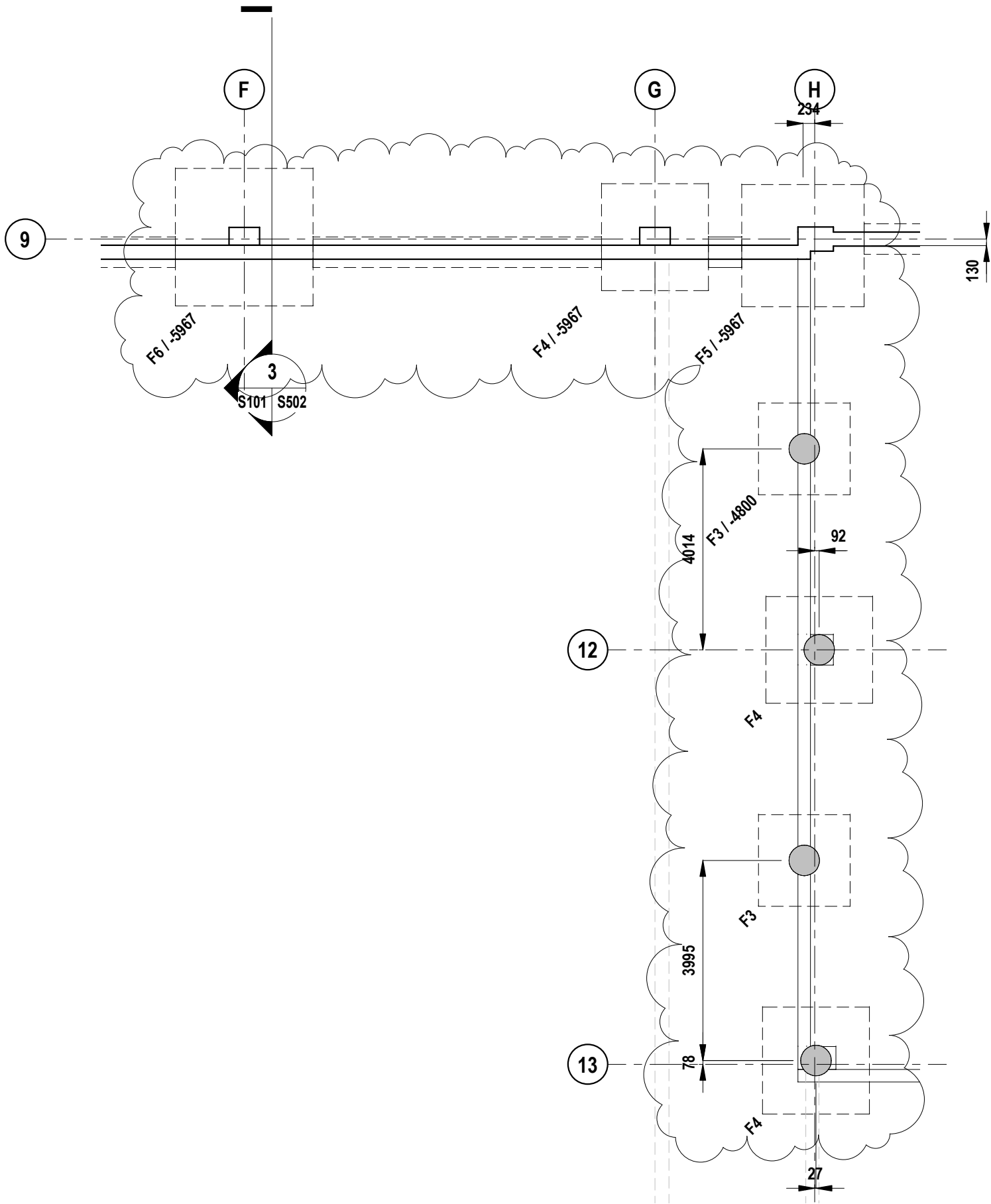
project

NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG
Red Fife Road, Winnipeg, Manitoba

drawing

PARTIAL FOUNDATION PLAN

Designed By	DK	Conçu par
Date	2019/06/05	(yyyy/mm/dd)
Drawn By	JN	Dessiné par
Date	2019/06/05	(yyyy/mm/dd)
Reviewed By	DK	Examiné par
Date	2019/06/05	(yyyy/mm/dd)
Approved By	DK	Approuvé par
Date	2019/06/05	(yyyy/mm/dd)
Tender	KEVIN GALLAYS	Soumission
Project Manager		Administrateur de projets
Project no.		No. du projet
	R.076948.001	
Drawing no.		No. du dessin
	DS.017	




1 PARTIAL FOUNDATION PLAN
- DS.018 SCALE: 1 : 100



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Lavergne Draward & Associates Inc.
No. 1912 Date: June 6, 2019



project <div>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</div>	projet	Designed By	DK	Conçu par	<div> Public Works and Government Services Canada</div> <div>REAL PROPERTY SERVICES Western Region</div>	<div>Travaux publics et services gouvernementaux Canada</div> <div>SERVICES IMMOBILIERS Région de l'Ouest</div>
		Date	2019/06/05	(yyyy/mm/dd)		
		Drawn By	JN	Dessiné par		
		Date	2019/06/05	(yyyy/mm/dd)		
		Reviewed By	DK	Examiné par		
drawing <div>PARTIAL FOUNDATION PLAN</div>	dessin	Date	2019/06/05	(yyyy/mm/dd)	Project no.	No. du projet
		Approved By	DK	Approuvé par	R.076948.001	
		Date	2019/06/05	(yyyy/mm/dd)		
		Tender		Soumission		
			KEVIN GALLAYS			
	Project Manager		Administrateur de projets		DS.018	

Contractor to verify all dimensions & conditions on site and immediately notify the departmental representative of all discrepancies.

1	ISSUED FOR ADDENDUM #5	2019/06/05
revisions	description	date

A detail no.
no. du detail

B location drawing no.
sur dessin no.

C drawing no.
dessin no.

project

**NRC ADVANCED
MANUFACTURING
PROGRAM (AMP) -
WINNIPEG**

Red Fife Road, Winnipeg, Manitoba

12

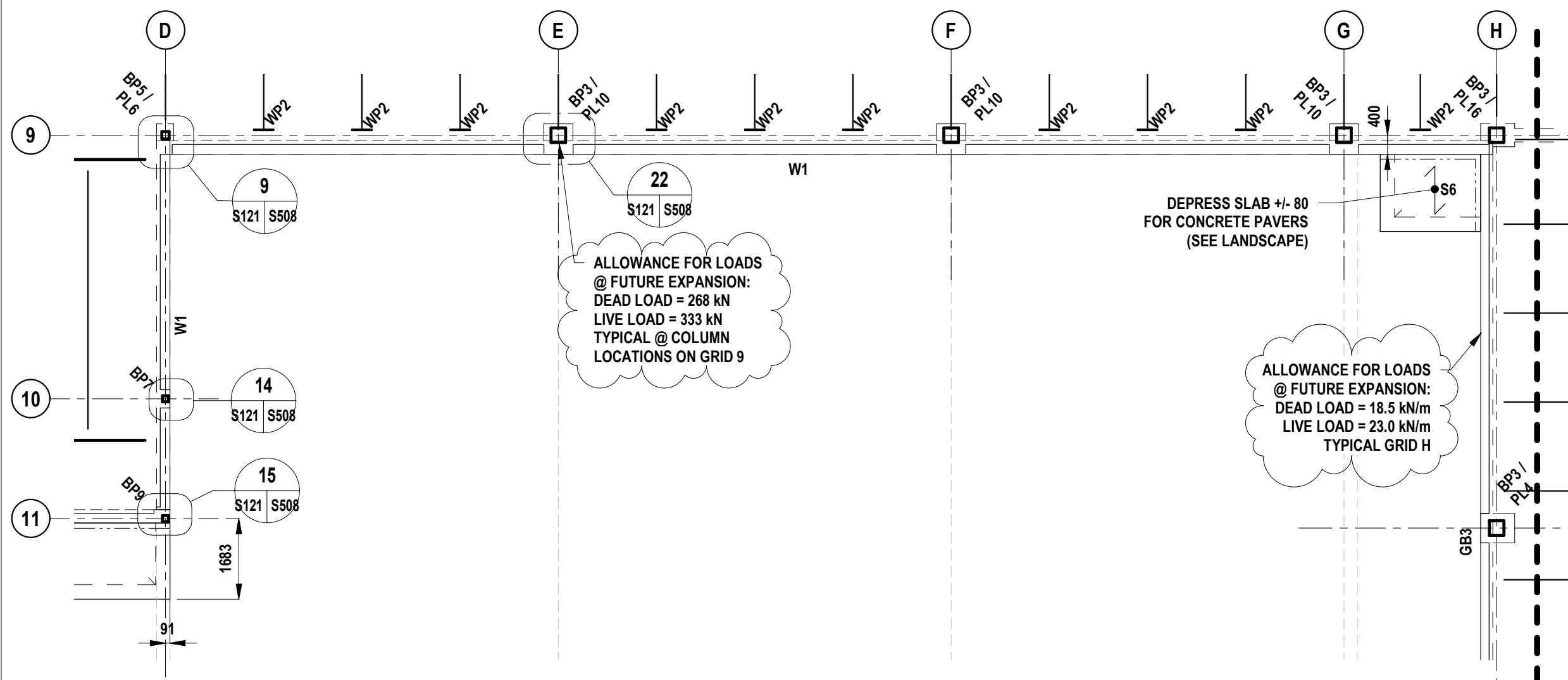
drawing

dessin

PARTIAL LEVEL 1 FLOOR
FRAMING PLAN

Designed By	Designer	Conçu par
Date	2019/06/05	(yyyy/mm/dd)
Drawn By	Author	Dessiné par
Date	2019/06/05	(yyyy/mm/dd)
Reviewed By	Checker	Examiné par
Date	2019/06/05	(yyyy/mm/dd)
Approved By	Approver	Approuvé par
Date	2019/06/05	(yyyy/mm/dd)
Tender	KEVIN GALLAYS	Soumission
Project Manager	Administrateur de projet	
Project no.	No. du projet	

R.076948.001	
Drawing no.	No. du dessin
DS.019	



PARTIAL LEVEL 1 FLOOR FRAMING PLAN - WEST

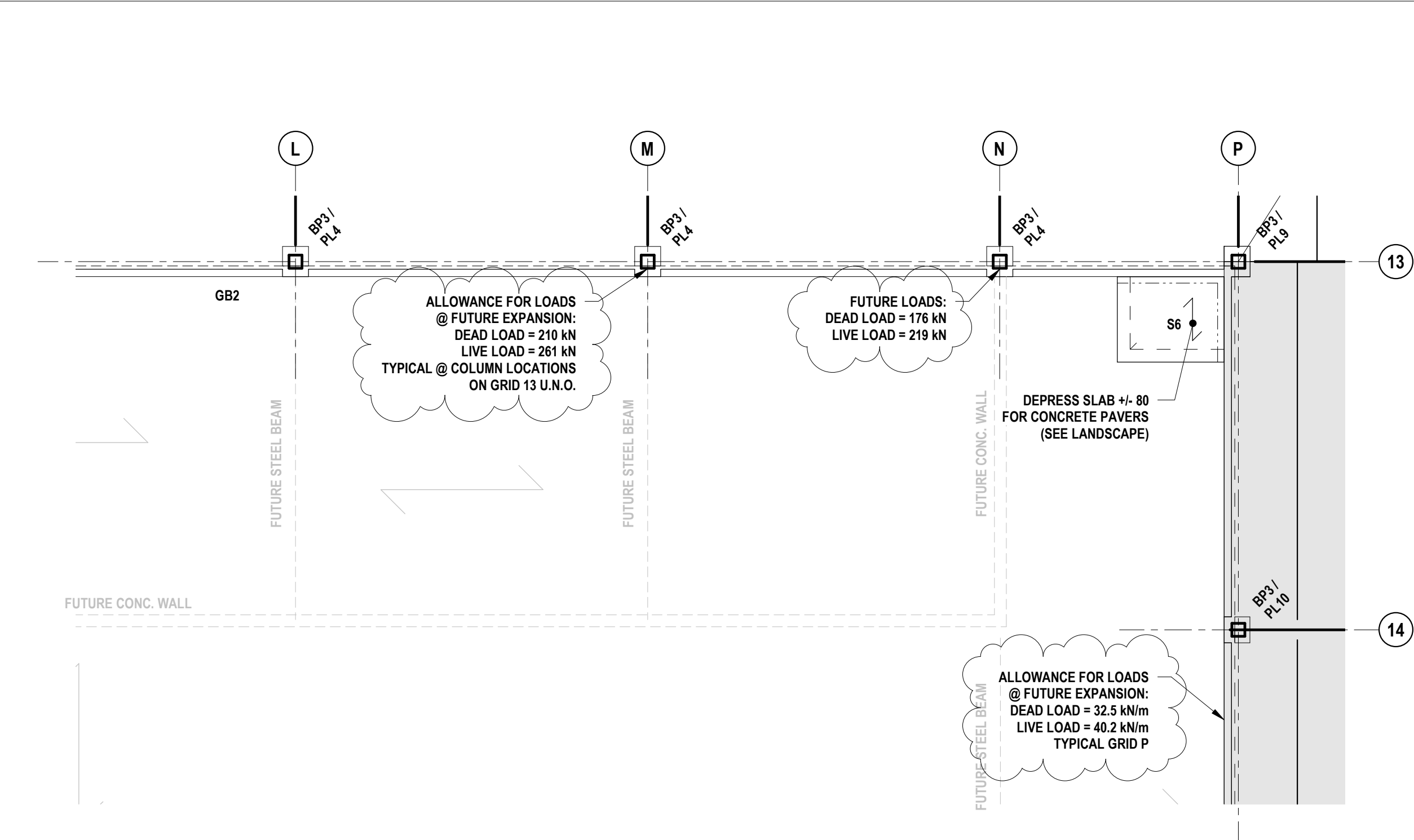
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- DS.019 SCALE: 1 : 100



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No. 1912 Date: June 6, 2019






1 PARTIAL LEVEL 1 FLOOR FRAMING PLAN - EAST
- DS.020 SCALE: 1 : 100

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No. 1912 Date: June 6, 2019





Public Works and
Government Services
Canada

Travaux publics et
services gouvernementaux
Canada

SERVICES IMMOBILIERS
Région de l'Ouest

REAL PROPERTY
SERVICES
Western Region

SERVICES IMMOBILIERS
Région de l'Ouest

Contractor to verify all dimensions & conditions on site and immediately notify the departmental representative of all discrepancies.

revisions	description	date
1	ISSUED FOR ADDENDUM #5	2019/06/05

A

C

A detail no.
no. du detail
B location drawing no.
sur dessin no.
C drawing no.
dessin no.

A

B

C

project

**NRC ADVANCED
MANUFACTURING
PROGRAM (AMP) -
WINNIPEG**
Red Fife Road, Winnipeg, Manitoba

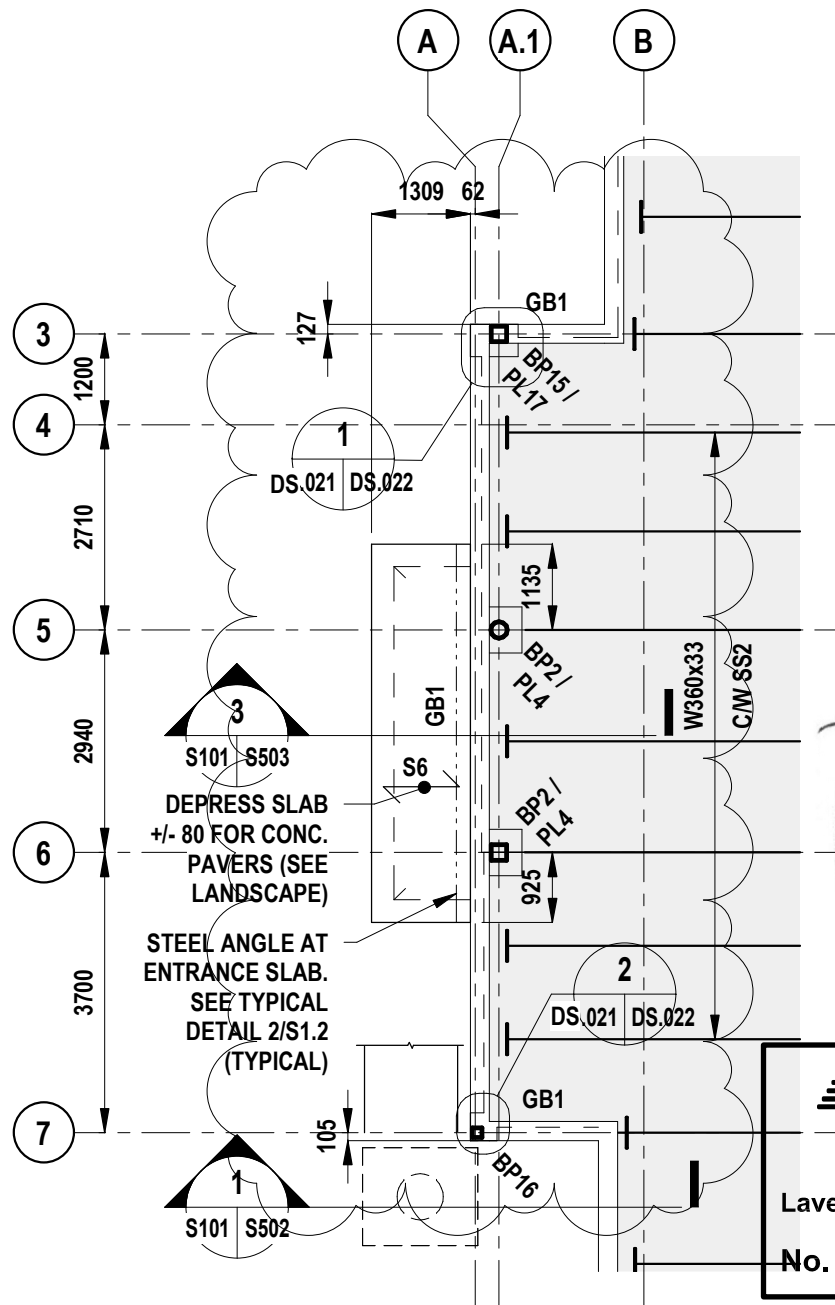
project

drawing

**PARTIAL LEVEL 1 FLOOR
FRAMING PLAN**

dessin

Designed By	DK	Conçu par
Date	2019/06/05	(yyyy/mm/dd)
Drawn By	JN	Dessiné par
Date	2019/06/05	(yyyy/mm/dd)
Reviewed By	DK	Examiné par
Date	2019/06/05	(yyyy/mm/dd)
Approved By	JN	Approuvé par
Date	2019/06/05	(yyyy/mm/dd)
Tender	KEVIN GALLAYS	Soumission
Project Manager		Administrateur de projets
Project no.	R.076948.001	No. du projet
Drawing no.	DS.020	No. du dessin




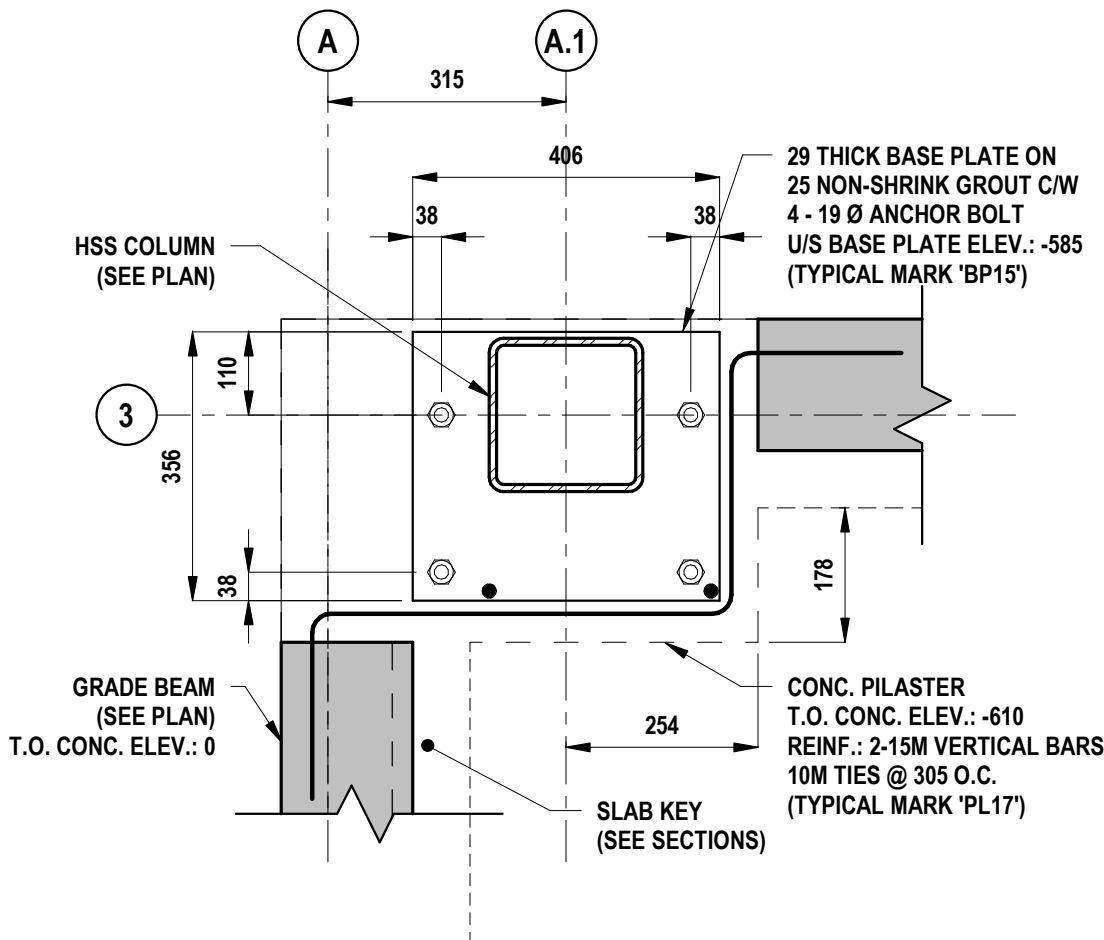
Certificate of Authorization

Lavergne Draward & Associates Inc.

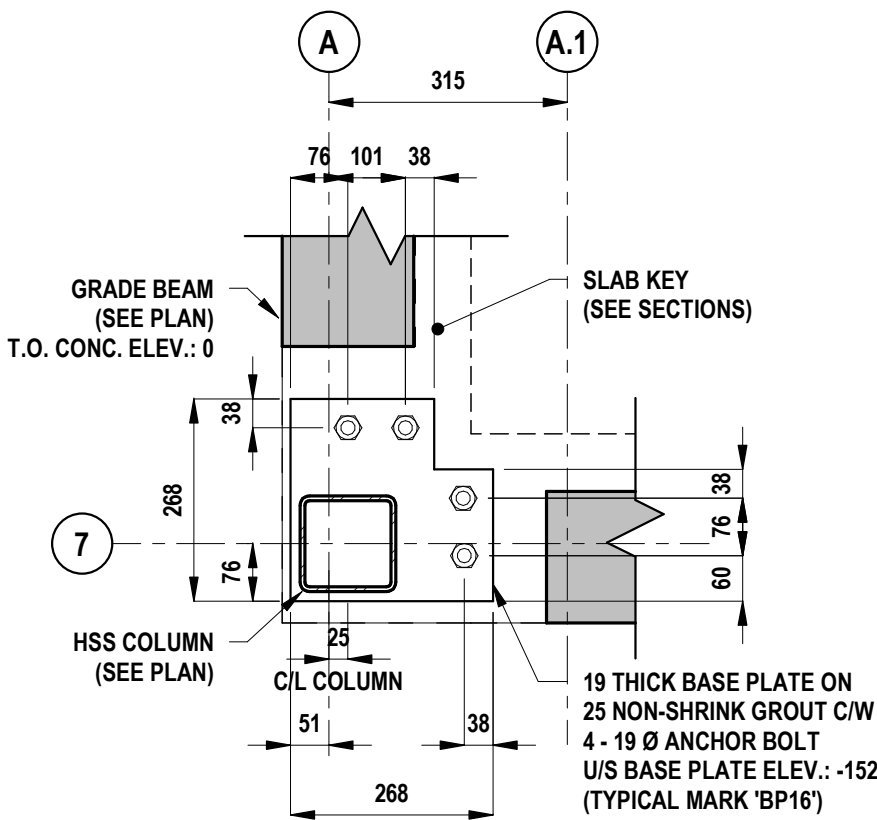
No. 1912 Date: June 6, 2019

1 PARTIAL LEVEL 1 FLOOR FRAMING PLAN - WEST
- DS.021 SCALE: 1 : 100

project		projet		Designed By DK		Conçu par				Public Works and Government Services Canada		Travaux publics et services gouvernementaux Canada	
NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba		Date		2019/06/05		(yyyy/mm/dd)		REAL PROPERTY SERVICES Western Region		SERVICES IMMOBILIERS Région de l'Ouest			
		Drawn By		JN		Dessiné par							
		Date		2019/06/05		(yyyy/mm/dd)							
		Reviewed By		DK		Examiné par							
drawing		dessin		Date		2019/06/05		(yyyy/mm/dd)		Project no.		No. du projet	
PARTIAL LEVEL 1 FLOOR FRAMING PLAN		Approved By		DK		Approuvé par		R.076948.001		Drawing no.		No. du dessin	
		Date		2019/06/05		(yyyy/mm/dd)							
		Tender		KEVIN GALLAYS		Soumission							
		Project Manager		Administrateur de projets						DS.021			



1 BASE PLATE 'BP15' & PILASTER 'PL17'
DS.021 | DS.022 SCALE: 1 : 10




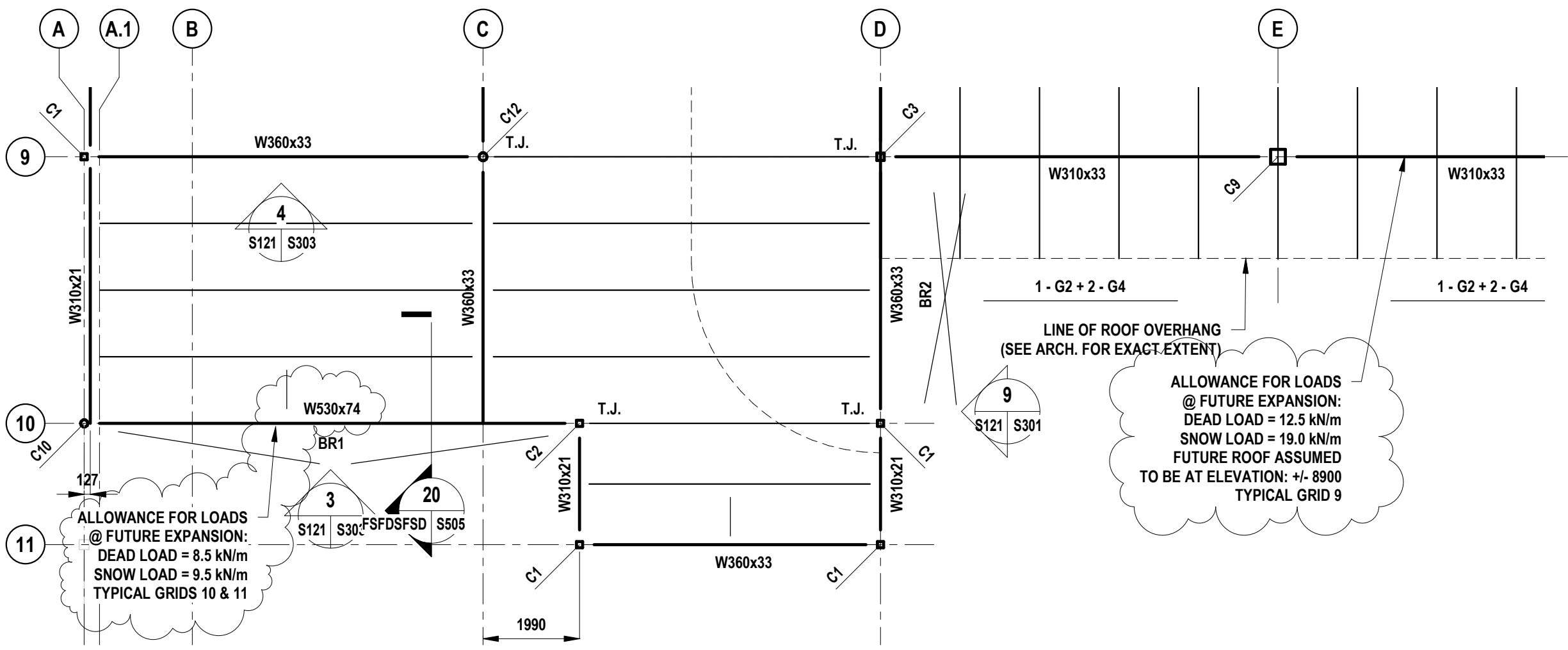
2 BASE PLATE 'BP16'
DS.021 | DS.022 SCALE: 1 : 10



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Lavergne Draward & Associates Inc.
No. 1912 Date: June 6, 2019



<div>project</div> <div>NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba</div>	<div>projet</div>	Designed By	DK	Conçu par	<div>Public Works and Government Services Canada</div> <div>REAL PROPERTY SERVICES Western Region</div>	<div>Travaux publics et services gouvernementaux Canada</div> <div>SERVICES IMMOBILIERS Région de l'Ouest</div>
		Date	2019/06/05	(yyyy/mm/dd)		
		Drawn By	JN	Dessiné par		
		Date	2019/06/05	(yyyy/mm/dd)		
		Reviewed By	DK	Examiné par		
<div>drawing</div> <div>DETAILS</div>	<div>dessin</div>	Date	2019/06/05	(yyyy/mm/dd)	Project no. No. du projet	
		Approved By	DK	Approuvé par	R.076948.001	
		Date	2019/06/05	(yyyy/mm/dd)		
		Tender		Soumission	Drawing no. No. du dessin	
			KEVIN GALLAYS		DS.022	
		Project Manager		Administrateur de projets		




1

DS.023


PARTIAL ROOF FRAMING PLAN - WEST

SCALE: 1 : 100



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No. 1912 Date: June 6, 2019





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services gouvernementaux
Canada

SERVICES IMMOBILIERS
Région de l'Ouest

Contractor to verify all dimensions &
conditions on site and immediately notify
the departmental representative of all
discrepancies.

1	ISSUED FOR ADDENDUM #5	2019/06/05
revisions	description	date

A

C

A detail no.
no. du detail
B location drawing no.
sur dessin no.
C drawing no.
dessin no.

A

B

C

project

NRC ADVANCED
MANUFACTURING
PROGRAM (AMP) -
WINNIPEG
Red Fife Road, Winnipeg, Manitoba

project

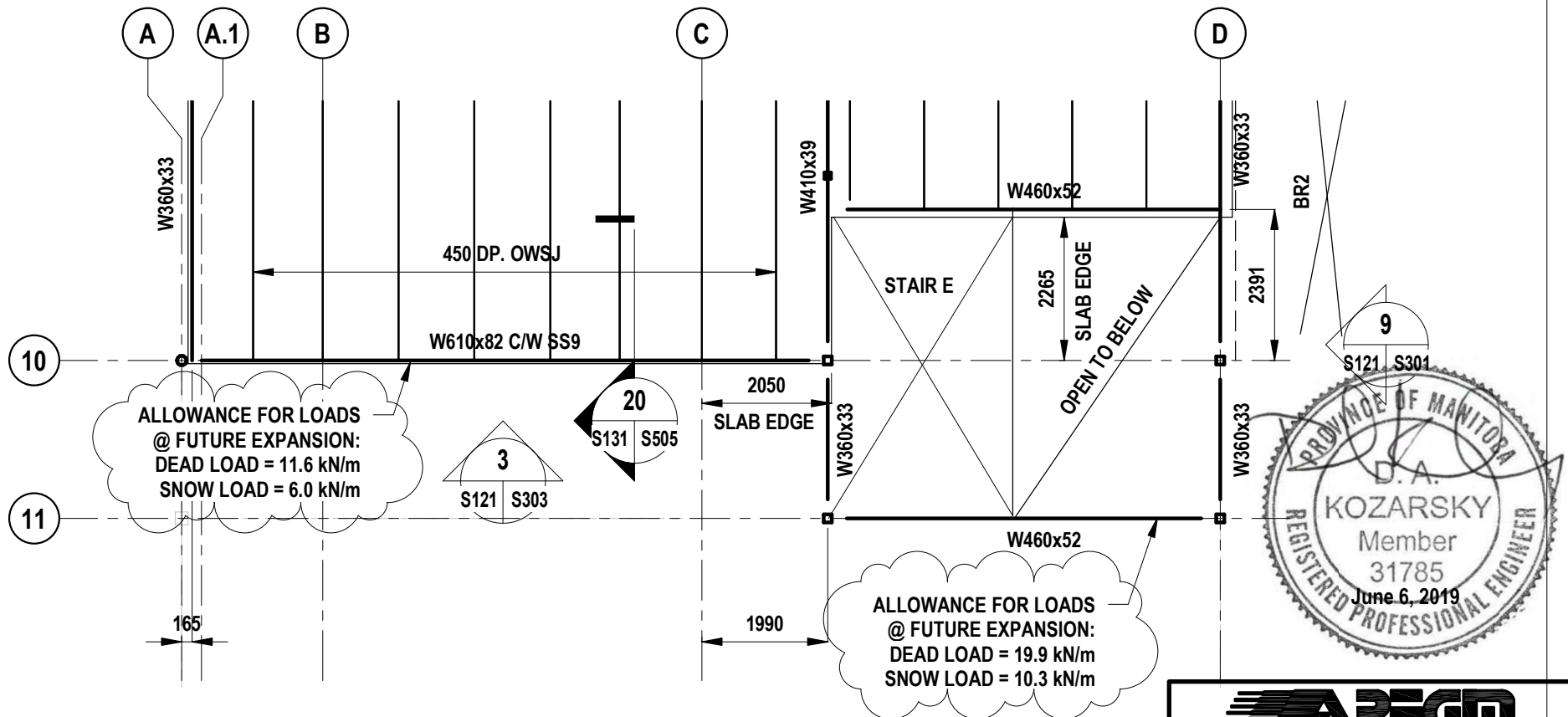
drawing

PARTIAL ROOF FRAMING
PLAN

dessin

Designed By	DK	Conçu par
Date	2019/06/05	(yyyy/mm/dd)
Drawn By	JN	Dessiné par
Date	2019/06/05	(yyyy/mm/dd)
Reviewed By	DK	Examiné par
Date	2019/06/05	(yyyy/mm/dd)
Approved By	DK	Approuvé par
Date	2019/06/05	(yyyy/mm/dd)
Tender	KEVIN GALLAYS	Soumission
Project Manager		Administrateur de projets
Project no.	R.076948.001	No. du projet
Drawing no.	DS.023	No. du dessin





1 PARTIAL LEVEL 2 FLOOR FRAMING PLAN - WEST

- DS.025 SCALE: 1 : 100

APEGM

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Lavergne Draward & Associates Inc.

No. 1912 Date: June 6, 2019

project NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG Red Fife Road, Winnipeg, Manitoba	projet Designed By DK Date 2019/06/05 (yyyy/mm/dd) Drawn By JN Date 2019/06/05 (yyyy/mm/dd) Reviewed By DK Date 2019/06/05 (yyyy/mm/dd) Approved By DK Date 2019/06/05 (yyyy/mm/dd) Tender KEVIN GALLAYS Project Manager	Conçu par (yyyy/mm/dd) Dessiné par (yyyy/mm/dd) Examiné par (yyyy/mm/dd) Approuvé par (yyyy/mm/dd) Soumission Administrateur de projets
drawing PARTIAL LEVEL 2 FLOOR FRAMING PLAN		<div> <div>  Public Works and Government Services Canada </div> <div> REAL PROPERTY SERVICES Western Region </div> </div> <div> Travaux publics et services gouvernementaux Canada </div> <div> SERVICES IMMOBILIERS Région de l'Ouest </div>

 Project no.
R.076948.001

 Drawing no.
DS.025

MOTOR NO.	NAME	LOCATION	HP (kW)	VOLTS	STARTER & ACC.	MAN	MAJ	PL	HQA	PANEL	MCC-A	CIRCUIT NUMBER	LOCATION	FEEDER	FIRE ALARM SHUTDOWN	REMARKS
AC-2	AIR COMPRESSOR	LEVEL 1	30	600 V-3540V						MCC-A	9	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-01	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						MCC-A	EC	18	PACKAGED UNIT	3M3		PROVIDE BREAKERS ONLY
AMH-02	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-03	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-04	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-05	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-06	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-07	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-08	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-09	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-10	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-11	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-12	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-13	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-14	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-15	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-16	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-17	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-18	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-19	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-20	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-21	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-22	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-23	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-24	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-25	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-26	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-27	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-28	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-29	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-30	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-31	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-32	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-33	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-34	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-35	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-36	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-37	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-38	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-39	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-40	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-41	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-42	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-43	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-44	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-45	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-46	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-47	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-48	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-49	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-50	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-51	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-52	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-53	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-54	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-55	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-56	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-57	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-58	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-59	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-60	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-61	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-62	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-63	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-64	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-65	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-66	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-67	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-68	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-69	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-70	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-71	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-72	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-73	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-74	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-75	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-76	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-77	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-78	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-79	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-80	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-81	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-82	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-83	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-84	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-85	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-86	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-87	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-88	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-89	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-90	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-91	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-92	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-93	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-94	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-95	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-96	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-97	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-98	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-99	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-100	AIR HANDLING UNIT LIGHTS	LEVEL 1	(1)	120 V-500V						EC	18	PACKAGED UNIT	3M3			PROVIDE BREAKERS ONLY
AMH-101	AIR HANDLING UNIT LIGHTS	LEVEL 1														

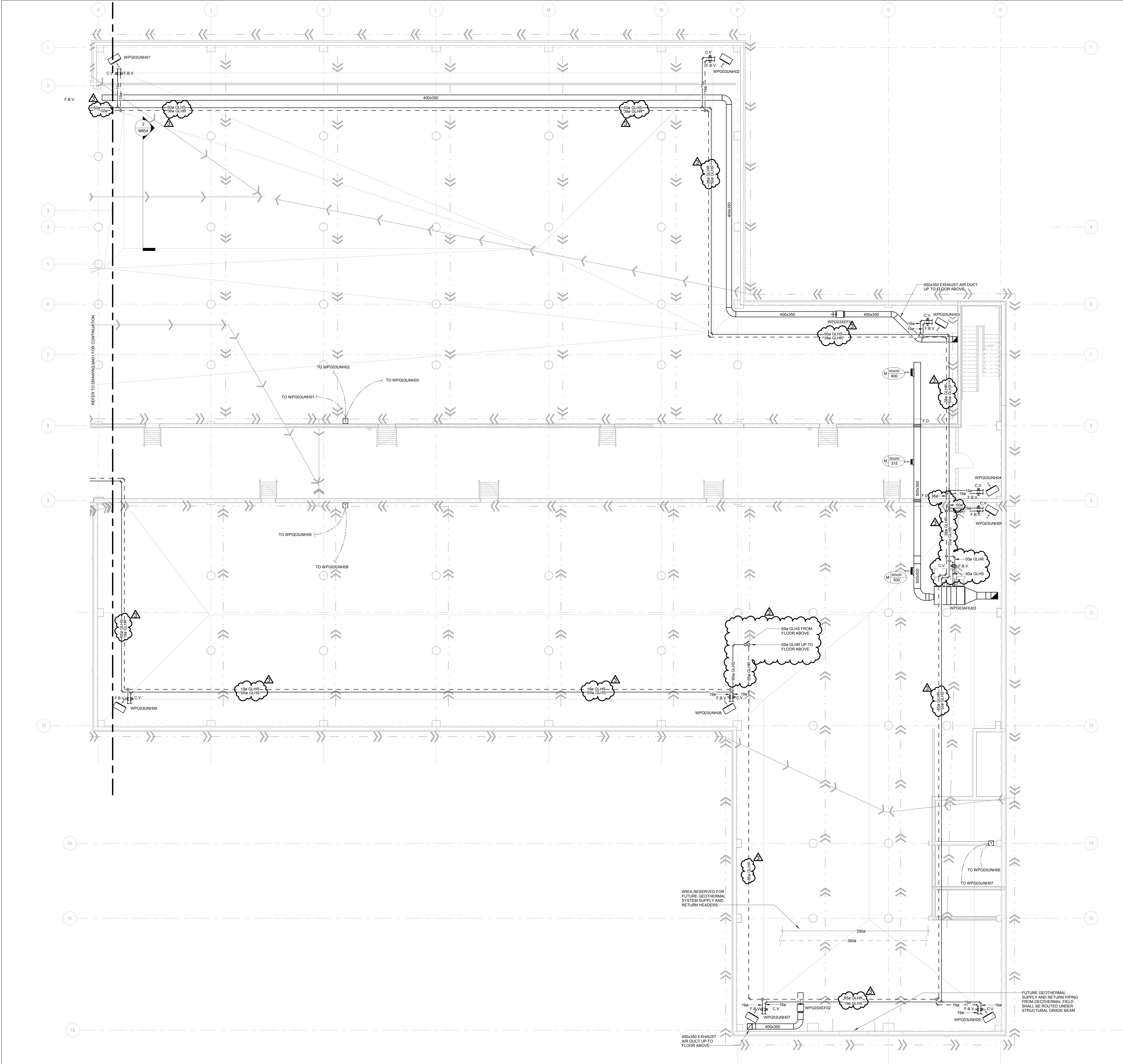
	DOOR	INTERCOM	ACCESS CONTROL / MONITORING	CARD READER	LOCAL KEY SWITCH	MAG LOCK	ELECT STRIKE	ELECT. RETRACT	DELAYED EXIT DEVICE	EXIT BUTTON (REX)	EXIT DETECTOR	ELECTRIC RELEASE HOLD OPEN	AUTO OPERATOR	PUSH BUTTON	MOTION DETECTOR	DOOR POSITION MONITOR	INTERLOCK PUSH BUTTON	DOOR HARDWARE CODE#	NOTES
	000A.1															✓			
	000A.2															✓			
	000A.3															✓			
	000A.4															✓			
	000A.5															✓			
	000A.6															✓			
	000A.7															✓			
	000A.8															✓			
	000A.10															✓			
	000A															✓			
	100A.1		✓	✓			✓				✓		✓	✓		✓			PROVIDE 2 PUSHBUTTONS
	100B			✓			✓		✓		✓		✓			✓			PROVIDE 2 DOOR POSITION MONITORS, 2 ELECTRIC STRIKES AND 2 PUSHBUTTONS
	100C			✓			✓				✓					✓			PROVIDE 2 DOOR POSITION MONITORS AND 2 ELECTRIC STRIKES
	100D			✓			✓				✓					✓			
	100E			✓			✓				✓		✓	✓		✓			PROVIDE 2 PUSHBUTTONS
	100G		✓	✓			✓									✓			
	100H			✓			✓									✓			
	100H.1			✓			✓									✓			
	100H.2			✓			✓									✓			
	100J			✓			✓						✓			✓			PROVIDE 2 DOOR POSITION MONITORS
	100L			✓			✓				✓		✓			✓			PROVIDE 2 DOOR POSITION MONITORS
	100M			✓			✓				✓		✓	✓		✓			PROVIDE 2 DOOR POSITION MONITORS
	100N			✓			✓									✓			PROVIDE 2 PUSHBUTTONS
	104.1			✓			✓									✓			PROVIDE 2 CARD READERS (EXTERIOR IS WP)
	105			✓			✓									✓			
	105.1			✓			✓									✓			
	106			✓			✓				✓					✓			
	107			✓			✓				✓					✓			
	108			✓			✓				✓					✓			
	109			✓			✓				✓					✓			
	110			✓			✓				✓					✓			PROVIDE 2 DOOR POSITION MONITORS
	111												✓			✓			PROVIDE 2 DOOR POSITION MONITORS
	111A												✓	✓		✓			PROVIDE 2 PUSHBUTTONS
	113												✓	✓		✓			PROVIDE 2 DOOR POSITION MONITORS
	113A												✓	✓		✓			PROVIDE 2 PUSHBUTTONS
	114												✓	✓		✓			PROVIDE 2 PUSHBUTTONS
	117															✓			PROVIDE 2 PUSHBUTTONS
	117.1			✓			✓				✓					✓			
	117.2			✓			✓				✓					✓			
	118			✓			✓				✓					✓			
	118.01			✓			✓				✓					✓			
	119			✓			✓				✓					✓			
	119.1			✓			✓				✓					✓			
	119.2			✓			✓				✓					✓			
	120			✓			✓				✓					✓			
	120.1			✓			✓				✓					✓			
	121			✓			✓				✓					✓			
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	125.2			✓			✓				✓					✓			
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	127.1			✓			✓				✓					✓			
	127.2			✓			✓				✓					✓			
	128			✓			✓				✓					✓			
	128.1			✓			✓				✓					✓			
	129			✓			✓				✓					✓			
	130			✓			✓				✓					✓			PROVIDE 2 DOOR POSITION MONITORS
	131			✓			✓				✓					✓			
	132.1			✓			✓				✓					✓			
	133			✓			✓				✓					✓			PROVIDE 2 DOOR POSITION MONITORS
	135			✓			✓				✓		✓	✓		✓			PROVIDE 2 PUSHBUTTONS
	136.1			✓			✓				✓					✓			
	138			✓			✓				✓					✓			
	142.1			✓			✓				✓					✓			
	202			✓			✓				✓					✓			PROVIDE 2 DOOR POSITION MONITORS
	203			✓			✓				✓					✓			
	205.1			✓			✓				✓					✓			
	207A			✓			✓				✓		✓	✓		✓			ROOF HATCH
	207B			✓			✓				✓			✓		✓			PROVIDE 2 PUSHBUTTONS
	210			✓			✓				✓					✓			
	213			✓			✓				✓					✓			PROVIDE 2 PUSHBUTTONS
	215A			✓			✓				✓		✓	✓		✓			
	215A.1			✓			✓				✓					✓			
	801			✓			✓				✓					✓			
	801.1			✓			✓				✓					✓			
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	060			✓			✓				✓					✓			
	091			✓			✓				✓					✓			
	091.1			✓			✓				✓					✓			
	092			✓			✓				✓					✓			
	092.1			✓			✓				✓					✓			ROOF HATCH
	092.2			✓			✓				✓					✓			
	ELD1		✓	✓			✓				✓					✓			COORDINATE WITH ELEVATOR SUPPLIER
	GATE ME1		✓	✓			✓				✓					✓			
	GATE ME2		✓	✓			✓				✓					✓			
	GATE SE1		✓	✓			✓				✓					✓			
	GATE SE2		✓	✓			✓				✓					✓			

NO	LOCATION	FIXED	PANFLIT ZOOM	HOUSING TYPE	LENS DESCRIPTION	DOOR LOCKING	DOOR INTERCOM	DOOR MONITOR	REMARKS
C0001	SERVICE CORRIDOR 000A		•						WALL MOUNTED
C0002	SERVICE CORRIDOR 000A		•						WALL MOUNTED
C0003	SERVICE CORRIDOR 000A		•						WALL MOUNTED
C1	SW CORNER OF SITE	•		WEATHER PROOF					POLE MOUNTED
C2	SW CORNER OF SITE	•		WEATHER PROOF					POLE MOUNTED
C3	SW CORNER OF SITE	•		WEATHER PROOF					POLE MOUNTED
C4	NW CORNER OF SITE	•		WEATHER PROOF					POLE MOUNTED
C5	NW CORNER OF SITE	•		WEATHER PROOF					POLE MOUNTED
C7	SOUTH ROOF	•		WEATHER PROOF					POLE MOUNTED
C8	NR ROOF	•		WEATHER PROOF					PARABOL MOUNTED CW GOOSENECK TO OVERHANG
C9	NW CORNER OF SITE	•		WEATHER PROOF					PARABOL MOUNTED CW GOOSENECK TO OVERHANG
C100A	ENTRY VESTIBULE 100A	•		WEATHER PROOF					POLE MOUNTED
C100C	PUBLIC CORRIDOR 100C		•						CEILING MOUNTED
C100D	CORRIDOR 100D		•						CEILING MOUNTED
C100E	LAB CORRIDOR 100E		•						WALL MOUNTED
C100G1	LAB CORRIDOR 100G		•						WALL MOUNTED ABOVE DOOR 100E
C100G2	LAB CORRIDOR 100G		•						CEILING MOUNTED
C100G42	LAB CORRIDOR 100G		•						WALL MOUNTED
C100G43	LAB CORRIDOR 100G		•						WALL MOUNTED
C100H41	LAB CORRIDOR 100H		•						WALL MOUNTED
C100H42	LAB CORRIDOR 100H		•						WALL MOUNTED
C100J	CORRIDOR 100J		•						WALL MOUNTED
C100K	STAIR A 100K		•						WALL MOUNTED
C101	STAIR A 101	•							CEILING MOUNTED
C117	PLOT PLANT 117		•						WALL MOUNTED
C118A1	HIGH BAY 118		•						WALL MOUNTED
C118A2	HIGH BAY 118		•						WALL MOUNTED
C200A	CORRIDOR 200A		•						CEILING MOUNTED
C801	STAR B 801		•						WALL MOUNTED
C802	STAR B 802		•						WALL MOUNTED
C000	STAR D 000		•						WALL MOUNTED
C001	STAR D 001		•						WALL MOUNTED
C002	STAR D 002		•						WALL MOUNTED
C000	STAR E 000		•						WALL MOUNTED
C81	NW CORNER	•		WEATHER PROOF					WEST FACE
C801	STAR E 01		•						WALL MOUNTED
C82	NW CORNER	•		WEATHER PROOF					NORTH FACE
C83	SW SIDE CORNER	•		WEATHER PROOF					WEST CORNER
C84	SE SIDE CORNER	•		WEATHER PROOF					EAST CORNER
C85	SE SIDE CORNER	•		WEATHER PROOF					WEST CORNER
C86	NW CORNER	•		WEATHER PROOF					WEST FACE

INCORING CELL	WP03 FOU42 1.5HP	WP03 EXP1 2HP			
	SIZE 1	SIZE 1			
WP03 KH04 3HP	WP03 FOU45 1.5HP	WP03 EXP2 2HP			
SIZE 1	SIZE 1	SIZE 1			
WP03 FOU1 7.5HP	WP03 EXP3 3HP	SPACE			
SIZE 1	SIZE 1				
SPACE	SPARE SIZE 1	SPACE			
SPACE	SPARE	SPACE			

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1 LEVEL 0 H.V.A.C. PLAN - EAST
M400 1:100

GENERAL NOTES

- DO NOT SCALE DRAWINGS. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR SPECIFIED THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE SITE CONDITIONS. REVIEW ALL REVISIONS WITH THE CONSULTANT.
- FLOOR PLANS SHALL BE READ IN CONJUNCTION WITH SCHEMATICS. INFORMATION SHOWN ON FLOOR PLANS SHALL BE ASSUMED TO BE APPLICABLE TO THE RELATED SYSTEM SCHEMATIC AND VICE-VERSA TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
- VERIFY STRUCTURAL INTEGRITY OF ALL TEMPORARY AND PERMANENT OPENINGS. ADDITIONAL FRAMING TO ENSURE STRUCTURAL INTEGRITY SHALL BE INCLUDED UNDER THIS CONTRACT.

H.V.A.C. NOTES

- ALL HWS AND HWR BRANCH PIPES SHALL BE MINIMUM 19MM (3/4 IN.) UNLESS INDICATED OTHERWISE.
- ALL CONTROL VALVES FOR PERIMETER TERMINAL UNITS AND RADIATION ARE TYPE-1 UNLESS INDICATED OTHERWISE.
- ALL TRANSFER AIR DUCTS SHALL BE 600X400X1200 (W0X0X) ACoustically LINED ELBOW OR STRAIGHT DUCTS AS SHOWN OR UNLESS INDICATED OTHERWISE. TRANSFER AIR DUCTS SHALL NOT BE USED IN LIEU OF SILENCERS.
- ALL POWER FOR ON-FLOOR CONTROL DEVICES SHALL BE OBTAINED FROM THE DEDICATED EMERGENCY POWER CIRCUIT IN ROOMS "000".
- ALL DUCTWORK DOWNSTREAM OF VAV BOXES AND FAN POWERED BOXES SHALL BE EQUAL TO THE BOX OUTLET SIZE (MINIMUM OR LARGER AS INDICATED). WHERE OUTLET SIZES ARE 000 SIZES, THE DUCT SIZE SHALL BE ROUNDED UP TO THE NEAREST EVEN SIZE (I.E. 319MM (12.5 IN.) OR 330MM (13 IN.) SHALL BE 350MM (14 IN.)). PROVIDE TRANSITION DUCTS AS REQUIRED.
- ALL FLEXIBLE DUCTWORK LENGTHS SHALL BE NO LONGER THAN 1.9M (6 FT.) WHEN FULLY STRETCHED.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF GRILLES AND DIFFUSERS.
- TEMPERATURE SENSORS ARE LOCATED TO AID IN PRICING ONLY AND ALL REQUIRED SENSORS MAY NOT BE SHOWN (REFER TO SPECIFICATIONS). COORDINATE FINAL LOCATION WITH THE ARCHITECT WITHIN 100MM (40 IN.) OF LOCATION SHOWN. ALL RELOCATIONS OUTSIDE OF THIS RANGE SHALL BE REVIEWED WITH THE CONSULTANT.
- TEMPERATURE SENSORS SHALL BE NOMINALLY 1200MM (48 IN.) ABOVE THE FINISHED FLOOR UNLESS INDICATED OTHERWISE.
- DIFFUSER DUCT RUN-OUTS SHALL BE THE SAME SIZE AS THE DIFFUSER INLETS UNLESS INDICATED OTHERWISE.
- AIR FLOW RATES SHALL BE BALANCED EQUALLY BETWEEN ALL INTERIOR DIFFUSERS BASED ON THE MAXIMUM AIR FLOW RATE SHOWN FOR THE ASSOCIATED VAV BOX.
- MAINTAIN A MINIMUM OF 300MM (6 IN.) CLEARANCE TO THE UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC. THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
- ALL PIPING SHALL BE OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE WITH SUFFICIENT ROOM FOR INSULATION UNLESS INDICATED OTHERWISE.
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- EXPLOSION PROOF ENCLOSURES ARE REQUIRED ON ALL ACTUATORS WITHIN CLASS 1 ZONE 2 SPACES.

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Client: NRC - CNRC

National Research Council Canada
Conseil national de recherches Canada

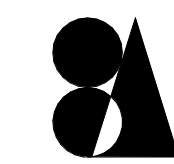
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3	ISSUED FOR ADDENDUM #5	20190606
2	ISSUED FOR ADDENDUM #3	20190513
1	ISSUED FOR TENDER	20190328

No.	Description	Date
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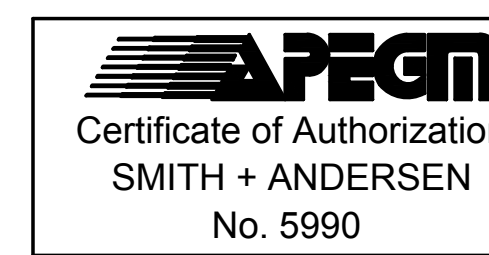
Smith + Andersen

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Number TEN Architectural Group
Diamond and Schmitt Architects Inc
Architects in Joint Venture

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Tel: 416 862 8800 Fax: 416 862 5508 info@dsai.ca www.dsai.ca

310 -115 Bannatyne Avenue, Winnipeg Manitoba, R3B 0R3
Tel: 204 942 0981 winnipeg@numberten.com www.numberten.com



Project: NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG

Winnipeg, Manitoba

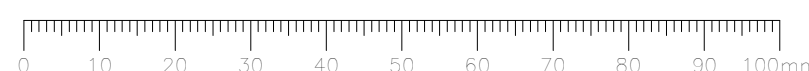
Designed by: T.B.
Design by: S.E./M.M.
Approved by: K.S.
PW03C Project Manager: KEVIN GALLAYS
Drawing title: H.V.A.C. PLAN - LEVEL 0 - EAST

Scale: 1:100 Date: 20190606

Project no./No. du projet: NRC-0200W
Drawing no./No. du dessin: R.076948.001
Revision no.: 16705-000-002

M400

3

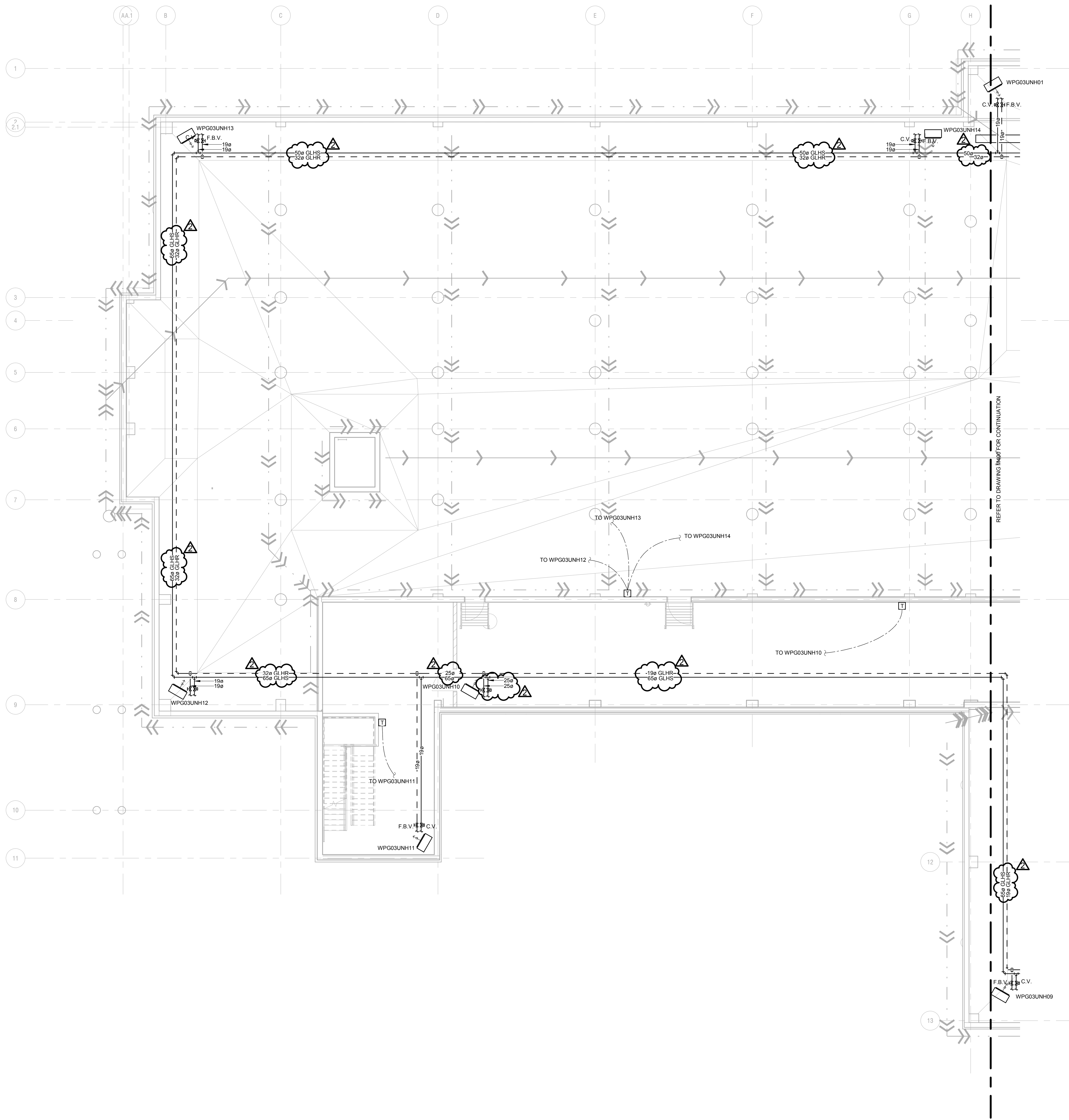


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1 LEVEL 0 H.V.A.C. PLAN - WEST
M401 1:100

PW03C - AD -1185VR61



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- ALL FLEXIBLE DUCTWORK LENGTHS SHALL BE NO LONGER THAN 1.5M (5 FT.) WHEN FULLY STRETCHED.
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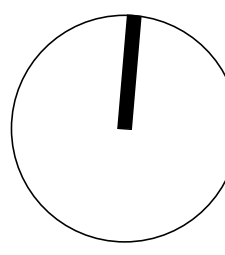
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1	ISSUED FOR TENDER	20190328
No.	Description	Date



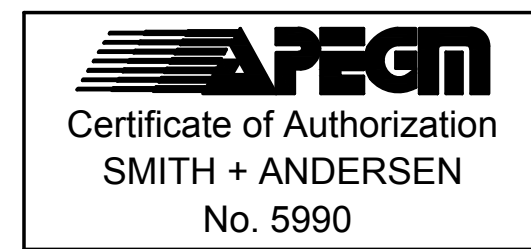
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Project Project
NRC ADVANCED
MANUFACTURING PROGRAM
(AMP) - WINNIPEG

Winnipeg, Manitoba

Designed by Cinq par

T.B.

Design by

S.E./M.M.

Approved by

K.S.

PW03C Project Manager

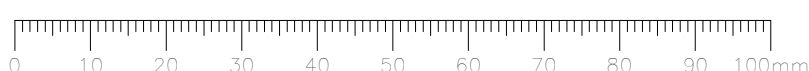
KEVIN GALLAYS

Drawing title

H.V.A.C. PLAN - LEVEL 0 - WEST

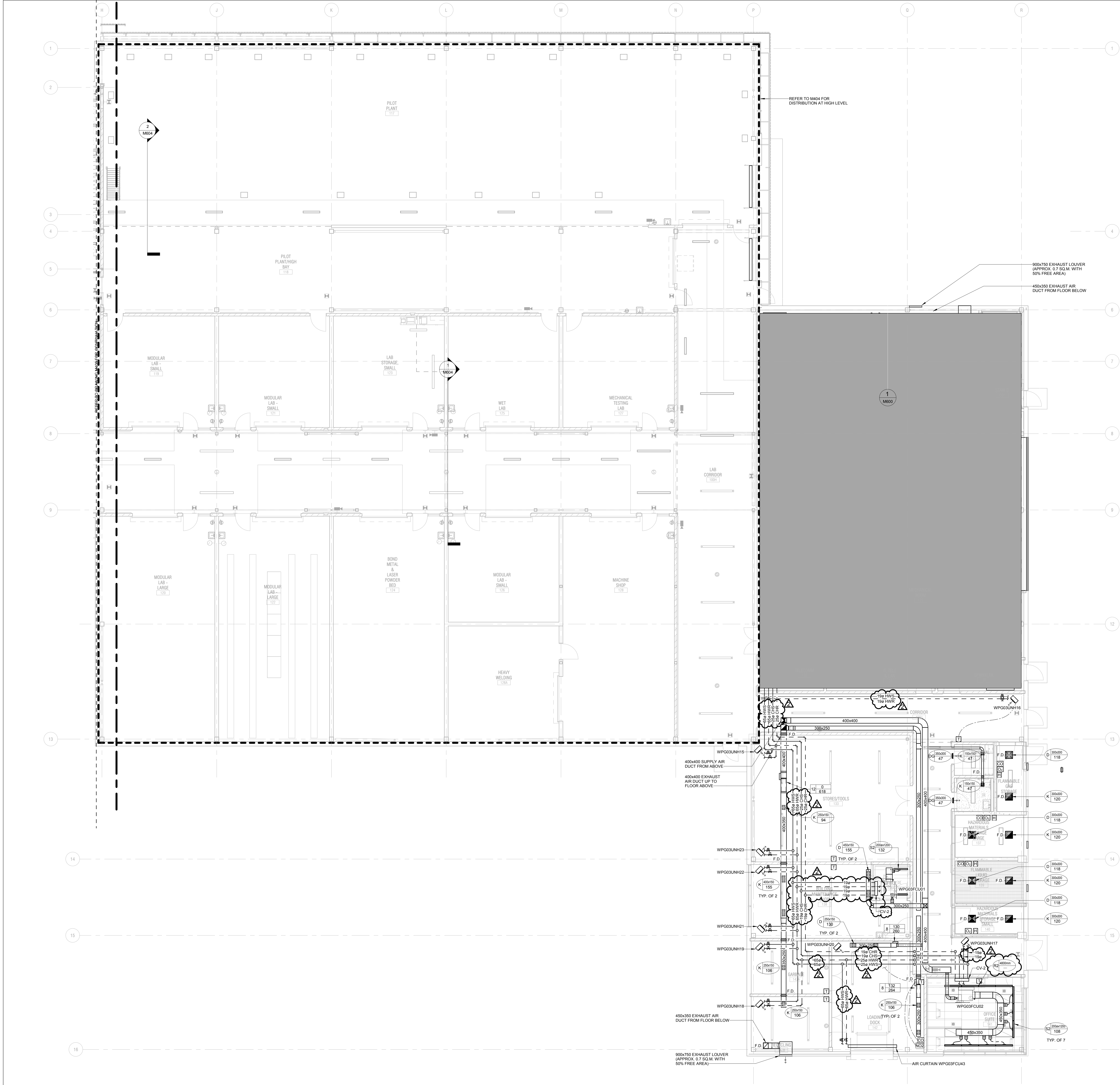
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Project no./No. du projet M401-0200W
Revision no./No. de la révision R.076945.001
16705-000-002 M401 2



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- VERIFY STRUCTURAL INTEGRITY OF ALL TEMPORARY AND PERMANENT OPENINGS. ADDITIONAL FRAMING TO ENSURE STRUCTURAL INTEGRITY SHALL BE INCLUDED UNDER THIS CONTRACT.

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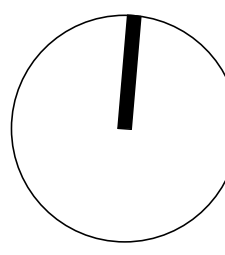
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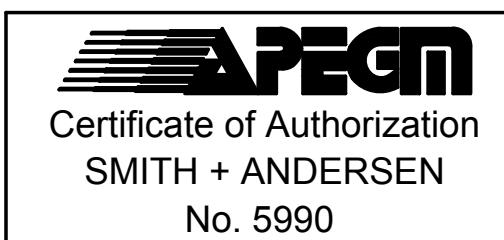
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Project
NRC ADVANCED
MANUFACTURING PROGRAM
(AMP) - WINNIPEG

Winnipeg, Manitoba

Designed by
T.B.

Designed by
S.E./M.M.

Approved by
K.S.

Project Manager
KEVIN GALLAYS

Drawing Title
H.V.A.C. PLAN - LEVEL 1 - EAST

Scale: 1 : 100

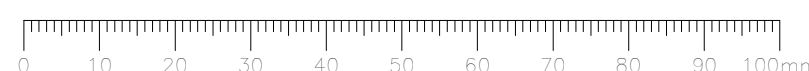
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NRC-0200W

Drawing no./No. du dessin
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16705-000-002

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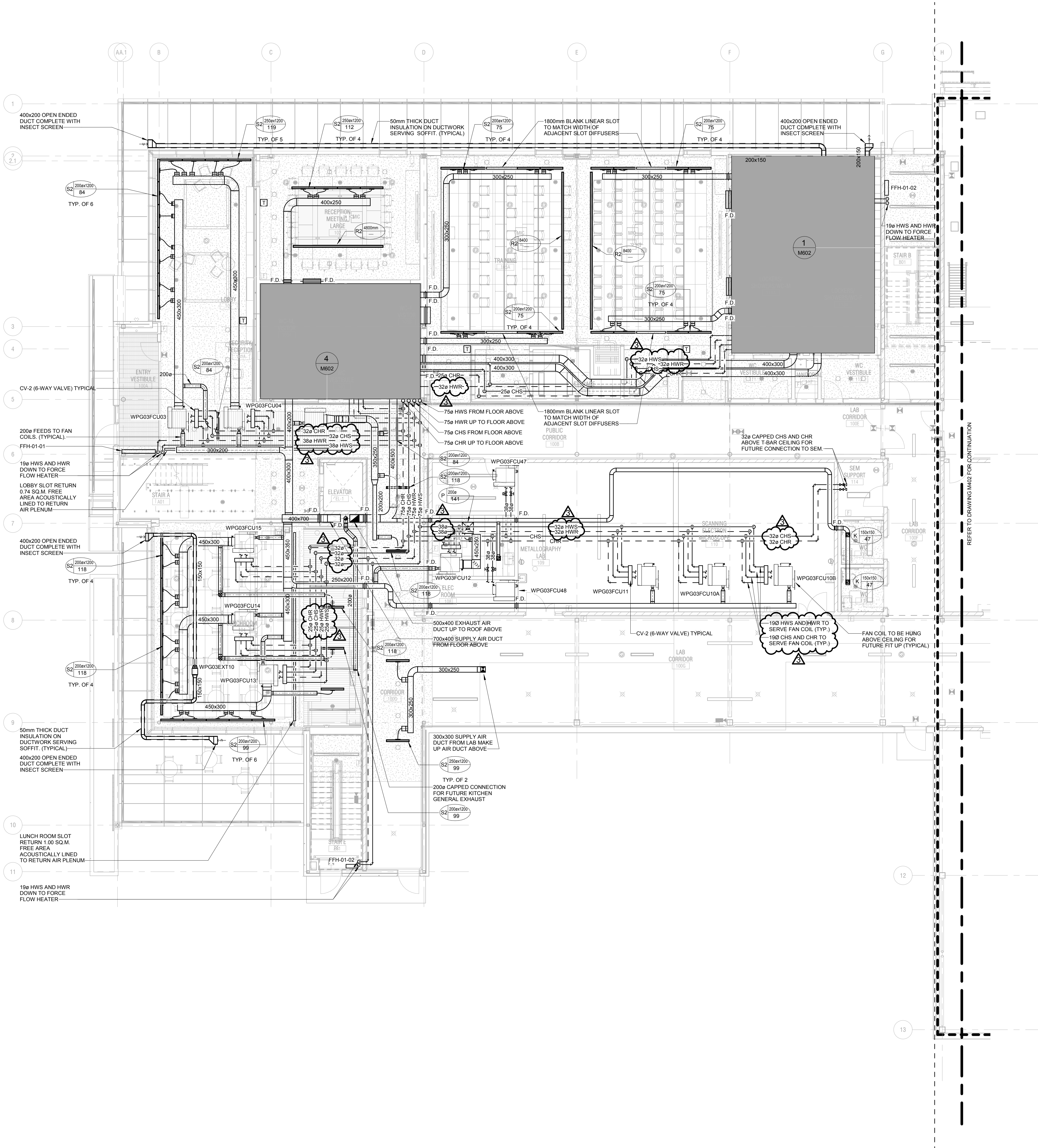
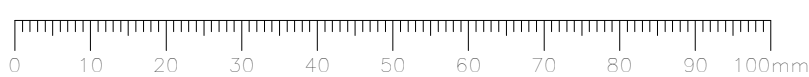
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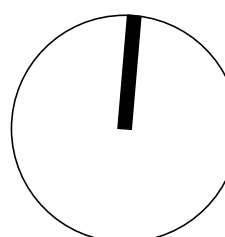
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2	ISSUED FOR ADDENDUM #3	20190513
1	ISSUED FOR TENDER	20190328

No.	Description	Date
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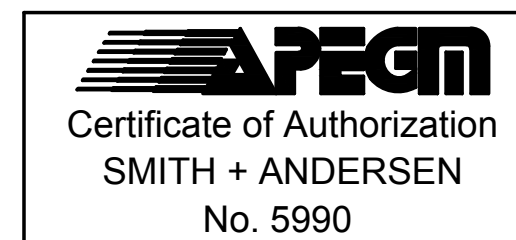
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Project: NRC ADVANCED MANUFACTURING PROGRAM (AMP) - WINNIPEG

Winnipeg, Manitoba

Designed by: T.B.

Design by: S.E./M.M.

Approved by: K.S.

PW03C Project Manager: KEVIN GALLAGHER

Drawn by: KEVIN GALLAGHER

Date: 20190606

H.V.A.C. PLAN - LEVEL 1 - WEST

Scale: 1 : 100

Date: 20190606

Project no./no. du projet: MC-0200W

Revision no./no. de la révision: R.076945.001

16705-000-002

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| 3 | ISSUED FOR ADDENDUM #5 | 20190605 |
| 2 | ISSUED FOR ADDENDUM #3 | 20190613 |
| 1 | ISSUED FOR TENDER | 20190328 |
| No. | Description | Date |



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SMITH + ANDERSEN
No. 5990

Project1

Project

NRC ADVANCED
MANUFACTURING PROGRAM
(AMP) - WINNIPEG

Winnipeg, Manitoba

Designed by	Canc. par
T.B.	
Drawn by	Dessiné par
S.E./M.M.	
Approved by	Approuvé par
K.S.	
TPSOSC, Project Manager	Administrateur de Projets TPSOC
KEVIN GALLAYS	
Drawing title	Titre du dessin

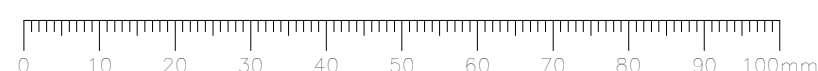
H.V.A.C. PLAN - LEVEL 2 - WEST

Scale: 1 : 100 Date: 20190606

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16705-000-002

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NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
1	17-Apr-19	The Bid and Acceptance Form (BA) shows a space for an “Industrial Security Program Organization Number (ISP ORG#) “when required”. Please confirm if this number is required as a requirement for this tender?			Not Required for this Project	Addendum #1
2	17-Apr-19	Specifications 21 05 11; 3.6 SYSTEM CLEANING; “Clean interior and exterior of all systems including strainers. Vacuum interior of ductwork and air handling units.” - Does this work need to be performed by a competent sub trade complete with videos and report? - May we have a mechanical equipment schedule please.	21 05 11	Mechanical	Section 23 08 02 Cleaning and Start-Up of Mechanical Piping systems outlines expectations of cleaning of hydronic and steam systems. Section 23 05 94 Pressure Testing of Ducted Air Systems outline the expectations of cleaning of ducted air systems. All ductwork to be protected during construction and wiped clean by the mechanical contractor prior to building turnover. Mechanical Schedules provided in Addendum #1.	Addendum #1
3	17-Apr-19	The schedules for the mechanical equipment have not been uploaded to WCA, please see the below picture of the missing spec sections.	25 00 00	Mechanical	Mechanical schedules provided in Addendum #1	Addendum #1
4	24-Apr-19	Is an organized site meeting for this project?		Architectural	No site meeting required	Addendum #1
5	24-Apr-19	RFE #1	-	-	-	-
6	24-Apr-19	RFE #2	-	-	-	-
7	25-Apr-19	1)Re: door schedule A1000 a.Door 100C & 100F (type B) are non rated doors and require 0 fire rating, however calls for GL60 fire rated glazing, please advise if rated or not rated b.Doors 100D (type B) is a non rated door but requires a 1 hr fire rating and GL60 fire rated glass, please advise if rated or not c.Door 104.1 is a frame type F3C, there is no F3C shown in the door and screen types 5/A1000 d.Door 202C.01 has glass type GL31 (non rated) but has a 1 hr rating, please advise if rated or not e.Numerous doors/frames just show glass type “GL” so no indication of which GL type, please advise 2)There is a section 085113 Aluminum Windows: Is this an alternate to the fibreglass or are their some aluminum windows on this project? 3)Section 055000 Item 2.4 Kinetic Wall – Item .2 indicates Frame: Stainless steel tubing – Drawing A302 indicates Aluminum tubing with stainless steel plates. Please advise 4)Section 084413 Item 2.4.4 Flashings- 3mm thick flashings will cause the painted/anodized finishes to craze when formed which doesn’t look very good. Typical flashings are 1.2mm (best option for sills, parapet etc flashings) or 2.1mm for larger flashings (large corner caps) . Please advise if flashings need to be 3mm thick. 5)Section 088050 Glazing a.Item 2.3.4 : Please advise location of glass type SG-4 b.Item 2.5 Security Film – Please advise location of security film	various	Architectural (NTAG/DSA)	1) a. DSA: Not rated and clarified elsewhere in this addendum. b. DSA: Not rated and clarified elsewhere in this addendum. c. DSA: Door 104.1 is part of curtainwall and frame type not indicated as F3C in door schedule. d. DSA: Not rated and clarified elsewhere in this addendum. e. DSA: Glass type GL clarified in Addendum #1. 2) There are both. 3) Revise 05 50 00 to be aluminum 4) Revised by Addendum #2. Refer to Addendum #4	Addendum #2 (item 4.8) (item 2.1) Addendum No. 4 (item 4.2)
8	25-Apr-19	1. Ref. details 8/S303 and 9/S303 do not show the specific connection required between galv. HSS girt and aluminum, currently shown as “moment connection”. Please provide details for the specific connections to be made between HSS girts and aluminum as it relates to the installation of the kinetic screens.		Structural	Detailed connection design shall be by the structural steel supplier for the moments indicated.	Addendum #2 (item 6.4)
9	25-Apr-19	RFE 3	-	-	-	-
10	25-Apr-19	RFE 4	-	-	-	-
11	25-Apr-19	1) Can you please confirm if services (WWS, WS, Electrical) Will be in place on Red Fife Road prior to start of construction. Also, please confirm if this would include Fire Hydrants along Red Fife Road. 2) Can you please provide an approximate budget cost for this project		Civil/ Electrical/ Mechanical	1) WWS, WS, Hydrants on Red Fife Road have already been installed with service stubs in place for WWS and WS up to the NRC AMP property line (as shown on the Civil drawings C003 Rev.0). The exception to this is the 250 mm PVC C900 fire hydrant lead (including tee, gate valve) near the west parking lot that has not been installed yet. 2) PSPC will not be releasing the approximate budget cost for this project. To assist with bonding and insurance requirements, this project is estimated at a value over & above \$5,000,001.00.	- -
12	25-Apr-19	There appear to be a couple spec sections missing from the tender documents for the above project. Specifically, all the sections from 23 06 20.13 to 23 06 80.13 seem to be missing from the pdf files provided. Also, there is a pdf file named 25 90 01 - EMCS Site Requirements Applications and Systems Sequence of Operation but the contents are a duplicate of 21 05 01. Please provide the missing specifications.	Div 21 & Div 22 specs	Mechanical	Addendum #3	(item 1.3)
13	26-Apr-19	RFE 5	-	-	-	-
14	26-Apr-19	Still missing Mechanical Schedules: 23 06 30.13, 23 06 30.16, 23 06 40.13, 23 06 70.43		Mechanical	Addendum #3	(item 1.3)
15	26-Apr-19	Still missing Mechanical Schedules		Mechanical	Addendum #3	(item 1.3)
16	26-Apr-19	Please confirm location in the project where section 06 82 16 Fiberglass Grating is required? Assumed it would be the catwalk areas but these are metal fabrications.	06 82 16	Architectural (DSA)	DSA: Fiberglass Grating is indicated on the tendered document as FLGR2, and is intended to be used in FLAMMABLE LIQUID STORAGE 139 only. Refer to drawing A107.	-
17	29-Apr-19	RFE 6	-	-	-	-
18	30-Apr-19	RFE 7	-	-	-	-
19	30-Apr-19	Add. #1 page 14 : 4.15.2 states to delete panel E400 and to revise breaker in MD-6A – Should this state to revise breaker in ESD-6B?			refer to addendum #2	Addendum #2

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		General Specifications Section 26 24 13 Switchboards Page 3 2.1.18 – Specification states All current carrying components such as buswork, interconnecting components, etc. shall be tin plated copper aluminum. – Please confirm if the bussing is to be Tin plated copper, Sliver plated copper or aluminum.	26 24 13		refer to addendum #2	(item 3.1)
		2.3.1 – The bussing is listed as tin plated copperaluminum and the ground bus as copperaluminum. Can you please confirm if Tin plated copper, Sliver plated copper or aluminum is required.			refer to addendum #2	(item 3.4)
		Page 5 2.4.4.1 – Zone selective interlocking for the short time and ground fault protection. I do not see zone selective interlocking on any of the branch feeder breakers in the spec or on the one-line diagram. To have zone selective interlocking, you have a zone in which you want all the breakers in that zone to have this feature. Is this required? If so, which feeder breakers would you also like to have this feature?			refer to addendum #2	(item 3.1)
		Page 7 2.8 – PFC – I do not see on the one-line where the PFC unit is being fed from. Can you please advise?			refer to addendum #2	(item 3.2)
		Section 26 24 16 CDP’s Page 2 2.1.1 – States CSA-C22.2 No.31 – Would you like the CDP’s build as 90”H switchboards or Eaton’s PRL C? Eaton’s CDP’s or PRL 4 meets CSA-C22.2 No.29.	26 24 16		SMS: Full height CDP's are required c/w full bussing.	(item 3.2)
		Page 2 2.1.9 – Specification states All current carrying components such as buswork, interconnecting components, etc. shall be tin plated copper aluminum. – Please confirm if the bussing is to be Tin plated copper, Sliver plated copper or aluminum.			refer to addendum #2	(item 3.2)
		Page 3 2.1.14 – States enclosure shall be protected from spay from sprinkler heads – This would be a sprinklerproof enclosure; however I see that the main distribution was requested as 3R. Can you please confirm if a sprinklerproof enclosure is required or if a 3R enclosure is required.			refer to addendum #2	(item 3.2)
		2.2 – Provisions for future energy consumption monitoring – As the one-line has note 6; which notes the feeders in the CDP’s that require digital metering – is this spec required?			refer to addendum #2	(item 3.2)
		Page 4 2.3.5 – As I do not know where the CDP’s will be stored on site, do I include a anti-condensation heater in each CDP?			refer to addendum #2	(item 3.2)
		Section 26 24 17 Panelboards Page 1 2.1.1.9 – States AL bus. From what I see in the other sections, cu bus is maybe what is required. Can you please confirm.	26 24 17		SMS: Yes aluminum buss.	-
		Page 2 2.1.1.12 – NEMA 1 and 3R are listed. Please confirm.			SMS: Sprinkler-proof.	(item 3.3)
		Section 26 25 00 Bus Duct Page 1 1.1.1 – Sprinklerproof and weatherproof is listed. Please confirm if sprinklerproof or 3R is required.	26 25 00		SMS: Please explain the difference.	-
		Section 26 28 21 Moulded case circuit breakers Page 2 2.6 – Are any of these required features required? If so, which features and which breakers are these required on?	26 28 21		refer to addendum #2	(item 3.5)
20	30-Apr-19	Section 26 28 23 Disconnects Page 1 2.1.4 – provision for pad-locking in on-off position. Please note that Eaton’s disconnects are lockable in the off position. Is this acceptable?	26 28 23		SMS: Yes.	(item 3.6)
		Section 26 29 10 Motor Starters Page 2 2.3.3 – Nema 1 Nema 3R – Please confirm	26 29 10		SMS: Will be clarified in next addendum.	(item 3.7)
		Section 26 43 13 Surge Protective Devices Page 6 2.3.3.7 – states that all monitoring features shall be visible from the front of the equipment. Please note that as the specification also requested Door-in-door, there will be a door covering the monitoring features. The customer will have to open the door to see the from of the SPD. Is this acceptable?	26 43 13		SMS: Acceptable.	-
20	30-Apr-19	RFE 8	-	-	-	-
21	30-Apr-19	Please provide a specification and advise the manufacturer of the new frame profile type 2 as issued in Addenda #1 sheet DA-062		Architectural (NTAG)	Refer to Section 08 41 13 issued by addendum No. 2	(item 2.2)

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
21	30-Apr-19	Please provide a specification and advise the manufacturer of the new frame prone type 2 as issued in Addenda #1 sheet DA-002.		Architectural (NTAG)	Refer to Section 08 41 13 issued by addendum No.2	(item 2.2)
22	1-May-19	Please provide layout and details for housekeeping pads required for mechanical and electrical systems.		Mech/Elect	Electrical housekeeping apds are shown on electrical drawings.	-
23	1-May-19	1. please clarify the DMR Sensor system, so we make sure we include it properly. 2. Also the it looks like the requested crane trolley speed @130fpm as well as the Crane speed is 130fpm. This not is not a typical request when the crane spans are so small (16ft span) would you be able to clarify these speeds.		Owner/Arch	1. DMR removed in Addendum #5	item 1.19
					2. Revised speeds, Addendum #4	(item 1.7)
24	1-May-19	1. Is the cost of the building permit to be included in the bid? Or will the Owner pay these costs? 2. Please confirm that any development fees are paid for by the Owner?		Architectural (NTAG)	1. Refer to Addendum #2 2. Refer to Addendum #2	(item 1.1)
25	2-May-19	What is the interrupting capacity required for MCC-6A?		Electrical		
		I cannot seem to find the panel schedules for panels 119; 121; 123; 125; 127; 120; 122; 124; 126; 126A; PP100; PP200; T3 & E100?				
		Panels PA, PB, PC & PD enclosures are marked as Weatherproof which is 3R; however the other panel schedules state 3R. In the panelboard specification 26 24 17 Page 2 2.1.13 it states that where exposed to weather a minimum of Nema 4 shall be provided. As these panels are located in the parking lot would Nema 3R or Nema 4 enclosure be required?	E502		See addendum No. 2	(item 3.3)
		In regards to the panel schedules, there are ccts that are marked as “GFI receptacle”; for example cct 9 of branch panel 1A on drawing E503. Can you please confirm if a GFI breaker is required or just your standard thermal mag breaker to feed a receptacle that is complete with GFI? Reason I ask, is I see ccts marked as “GFI heat trace”; in which I know a 30mA GFI breaker is required.			See addendum No.2	(item 5.3)
		WPG03EXF01 & F02 are these supposed to be FVNR magnetic starters in MCC-6A? Is their voltage supposed to be 600?	E508		See addendum No.2	(item 5.4)
		Elevation of MCC-6A shows wrapper units for starters consuming 3X space or 18”H each. Eaton’s starters are 2X or 12” high each. Did you want me to make them 18”H to have extra space in the wrapper units or leave as 12”H?			Utilize standard wrapper sizes.	-
26	2-May-19	The 2 nd structure shown in the elevation for MCC-6A states “spare”. Would you like a Size 1 spare FVNR magnetic starter?			Yes	-
		2.1.6 – One or two hole copper compression lugs for grounding - Does this apply to the CSTE, Switchboards, CDP’s, MCC’s and Panelboards?	26 05 26		Yes	-
		2.1.2 – States to verify plans for maximum overall dimensions. I did not see any drawings in which indicate the dimensions required. Have I missed this?	26 24 16		See addendum No.2	(item 3.2)
27	3-May-19	1. (Bid & Acceptance Form (BA06 Construction Time) It is noted that the contractor must perform and complete the work within (80) weeks from the date of notification of acceptance of the offer. In section 01 11 00 1.4 Summary of Work it notes that Substantial Performance of the Work is required for Departmental Representative occupancy before April 2, 2021. Can you please confirm that the BA06 Construction Time (80) weeks is the correct information and if not, advise us of your requirements?	01 11 00	Owner/Arch	Substantial Performance date to be deleted from 01 11 00, Refer to Addendum #2.	Addendum No.2 (item 2.5)
		2. Could you please confirm what products 2.2.1 (FAF-1), 2.2.2 (FAF-2) and 2.2.3 (FAF-3) are based on? Based on the information provided (highlighted copy of specificcation document 09 95 00 attached) our suppliers are not able to give us satisfactory recommendations for FAF-2 and FAF-3 flooring materials, and one supplier can only provide 2.1.1 (FAF-1) but there is a stipulation in the same section 2.2.4 that says, " All epoxy materials from the same manufacture." Can this stipulation 2.2.4 be removed as it is making pricing of this division difficult and not contributing to the overall reduction of the price because of reduced competition?	09 95 00	Architectural (NTAG)	A) TBC B) Refer to Addendum No.2	
28	3-May-19	Section 26 32 14 item 2.2.2 it has asked for a 125C temperature rise our unit would have a 130C rise at a standby rating and 105 C at prime power rating will this be acceptable.	26 32 14	Electrical	Stand-by rating required.	Addendum No. 2 (item 2.11)
		Section 26 32 14 item 2.2.11 Thermistors or platinum resistance temperature transducers embedded in stator winding and connected to alternator control circuitry. On this size of generator this options is not available. We see this requires on our larger generator and in prime power application which we can supply in that range.			See addendum No.2	
		Section 26 32 14 item 2.1.8.8 You have asked for an oil pan heater that is thermostatically control is this required when the unit wil have a block heater and the unit will be inside a heated enclosure. This is not a standard factory option.			See addendum No.2	
		Section 26 32 14 item 2.5.2.1 Spring isolators have been spec . On this size of unit it will come with standard rubber mount isolation so spring isolator are not required.			See addendum No.2	
29	3-May-19	Clarification on transition mode; Closed transition and Open transition both mentioned in specification. Please clarify if both ATs are to be Closed or open transition? Both Sprinkler protection and NEMA 3R Enclosures mentioned in specifications Please clarify if NEMA 1 + Sprinkler protection sufficient or NEMA 3R(Outdoor) enclosure required.	26 36 23	Electrical	See addendum No.2 See addendum No.2 See addendum No. 2 See addendum No. 2	Addendum No.2 (3.9)
29	3-May-19	10 75 00 calls for a design requirement for the flag poles of 356km/h flagged wind speeds. I am told by a trade this is not achievable. The maximum flagged wind speed is 305km/h. please confirm this is acceptable.	10 75 00	Landscape	Revised in Addendum 4	(item 3.1)

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
30	3-May-19	Another question with reference to Section 055000 Item 2.4 Kinetic Wall Item 2.4.1.1 "Finish: Water based Light industrial coating Where is this coating required? The 316 stainless is material not a product that requires a coating for outdoor use. Please advise	05 50 00	Architectural (NTAG)	Refer to drawing A302 - Finish to be applied as logo on kinetic screen.	-
31	6-May-19	1. Drawing M300 between grid line’s 14 & 15 provide spec for the emergency overflow tank for flammable liquid storage if this is to be provided by mechanical. 2. Flammable liquid storage drain piping, what is the approved spec for this piping as well as the approved venting requirements? 3. Spec for TD-1 (Trench Drain) is not shown in the spec book section 22 42 01 – 2.1? Please clarify. 4. Air compressor schedule drawing M203 – 1, the pipe sizing does not match the continued piping on drawing M300. Which sizing is correct? 5. Provide spec for grit interceptor on drawing M300 gridlines N & P@6. 6. The 2 oil interceptors shown in the crawlspace of drawing M300 don’t seem to be the under counter type that the spec calls up (Section 22 42 01-2.15). Please clarify. 7. Spec for DF-1 drinking fountain. 8. Plumbing fixture tag is missing from the drinking fountain drawing M602-2 near gridline #8. 9. Provide spec for the storm outlet nozzle in drawing M303 gridlines C&11. 10. Is it acceptable to use Stainless steel piping for the domestic water piping 2-1/2” and over? 11. Please provide the Pump Schedule.		Mechanical	See addendum No. 3 See addendum No. 3 See addendum No. 3 See addendum No. 3 See addendum No. 3 See addendum No. 3 See addendum No. 3 See addendum No. 3 This is acceptable. See addendum No. 3	(item 1.6) (item 1.1) (item 1.1) (item 2.6) - (item 1.1) (item 1.2) (item 2.7) - - (item 1.3)
32	6-May-19	Addenda #1 Item 1.2.1.11 Glass type GL41 is listed as 2 layers of 5mm low Iron with translucent interlayer. This glazing goes into the new frame profile 2 which is 2 layers of single glazing however where does the interlayer go as this is not a laminated application according to the detail showing this glazing is in the new frame profile type 2 which I questioned below	Addenda #1	Architectural (DSA)		Addendum No.2
33	7-May-19	Part 1.3.2 – the crane is electric so there would not be a hydraulic platform Part 2.4.6- Is the DMR sensor referring to load sensor? Part 3.2.2.1 Manufacturer’s Field Services- we install our own cranes, is this just to ensure someone is stopping by to ensure install is correct?	14 43 21	owner / Architectural (DSA)	Reference to hydraulic platform removed in Addendum #5 DMR Sensor removed in Addendum #5 Refer to Addendum #5	item 1.19 item 1.19 item 1.19
34	8-May-19	4. The spec calls for FSC Lumber in the green globes requirement as well as in 10 14 53 (Sign Posts and boards). Please confirm that any rough carpentry (including sign posts and sign boards) does not need to be FSC certified? In the past it has been extremely difficult to get pricing on FSC wood and the FSC certified chain of custody is broken when lumber yards or us (who are not FSC certified) handle it. Please confirm this is not a requirement for any rough carpentry on this project? 5. 01 52 00 calls for security personnel. Is this a requirement or can this be at the contactors option if we provide a construction fence. 6. 01 91 19 – 1.1.2 calls for all building envelope component manufacturer to provide verification that component types will meet specified requirement at the time of tender. Please confirm that this is not required at the time of bid closing? 7. Please confirm that the building envelope consultant and the commissioning consultant mentioned in 01 91 19 – 3.1 as well as the Commissioning authority/independent testing agency in 01 91 31 are hired and paid for by the owner? 8. 03 30 00 – 3.6.3 calls for concrete tests to be paid by contractor. There is also a concrete testing cash allowance. Please confirm that concrete testing is by cash allowance? 9. 23 90 00 – 1.1.1 calls for a separate price for the Facility Monitoring System. Is this required? There is not space provided on the Bid form for this. 10. 07 21 13 – 3.2.2 calls for cement board install. This cement board is not called up anywhere else. is this a typo?	10 14 53 01 52 00 01 91 19 01 91 19 03 30 00 23 90 00 07 21 13	Architectural (NTAG) Architectural (NTAG) / Owner Commissioning Commissioning Architectural (NTAG) Mechanical Architectural (NTAG)	reference to FSC to be removed from 10 14 53. FSC certified wood not required for rough carpentry. Deleted. Refer to Addendum #4 Not required at tender unless an alternate material/system is being submitted as an unsolicited alternate Yes, 01 45 00 refers to commissioning portion of work. (Item 1.2.1) Deleted refer to Addendum #4 Refer to Addendum #5 Refer to wall sections. Refer to 2.3.3 in section 07 21 13	Addendum No. 5 (Item 1.7) Addendum No. 4 (item 1.4) - - Addendum No. 4 (item 1.5) item 2.5 -
35	9-May-19	1) 2.2.1; Fluid Applied Flooring (FAF-1) - Is this an Epoxy Terrazzo System, or a Quartzite Trowel System? I've attached the corresponding product data sheets for your reference. 2) 2.2.2&.3 - Fluid Applied Flooring (FAF-2&3) - Are both of these floors to be conductive systems? Although both are described as conductive, only FAF-3 lists the Static Control Properties. 3) 2.2.2&.3 - Fluid Applied Flooring (FAF-2&3) - Thickness are listed at 6 mm and 3.3 mm respectively. Are these thickness required for heavy-duty performance demands in the space, or can the systems be thinner as long as they provide the conductive properties?	09 95 00	Architectural (DSA)	Refer to Addendum #5 - DSA: FAF-1 is a Quartzite Trowel System. Revised in Addendum #2 DSA: FAF-2 & FAF-3 thicknesses are for heavy duty performance demands.	- - -
36	9-May-19	RFE 9	-	-	-	-

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

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NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		iv. Dampers- MTU OE provides motorized intake and gravity type air discharge dampers. Air discharges into a vertical discharge scoop. Engine exhaust silencer is mounted in the scoop. Are gravity type air discharge dampers permissible for this Project?			Refer to Addendum #4	-
		v. Enclosure Interior Heater the MTU OE generator set enclosure is designed to meet CSA 282 10°C with a 1500W heater. Please see cut sheet for detail. Is the MTU OE 1500W heater acceptable for this Project?			Refer to Addendum #4	-
42	13-May-19	Extension to Tender Period: due to the complexity of the design and request of trade response and to assist in providing a competitive price to department of public works and government services of Canada, we formally request 2-week extension to the tender period.		Owner	Granted. Refer to addendum #3.	Addendum No. 3 (item 1.3)
		Item 1.9.1 requests full time security personnel to guard site and contents of site after working hours and during holidays. With an 80-week durations to the project this will add significant cost to the construction of the building. Please confirm if CCTV remotely monitored (if adequate broadband is available) can be an alternative option.		Owner	Security not required. Refer to addendum #4.	(item 1.4)
		Can you please confirm if the dock is designed as a drive-in application, so the trailer is backed inot the dock then the back doors of the trailer are opened.		Architectural (NTAG)	No, trailer does not enter building at loading dock.	-
		S132- Level 2 Floor Framing Plan East, and Section 14 43 21 Overhead Cranes: There is a not on the drawing that says the 2.5 t Overhead Brdige Crane is (by others) but the specification document specifies this cranes to be included in the price. Can you please confirm that the 2.5 t crane is to be included in our bid.			Included in bid.	-
		S001 - General Notes: There is a mention of House Keeping pads in the reinforcing steel notes. Can you please identify the locations where these pads are required in the building.		Structural	Equipment requiring a housekeeping pad to be identified by mechanical/electrical. Exact sizes and layouts also by mechanical/electrical and will depend on final equipment selections.	-
		S003 - Typical Details: Detail 8 Planter Section has a not that says the aluminum planter and bolts are by others. Can you please confirm if the planter and bolts are to be included in our bid?		Structural	Included in bid.	-
43	13-May-19	For the purposes of pricing the installation of the kinetic screen we will need to know the connection of the aluminum kinetic panels to the structural steel, whether this connection is to be welded or bolted the details of this connection will be needed for pricing the installation of the kinetic screen at the tender stage.		Architectural (NTAG)	Please allow for a bolted connection as shown in the details.	-
44	13-May-19	Are we also to price out the different type of grass’s, or does it go under some other category?		Landscape	There is not a separate category for the native grasses installation. It is acceptable that the landscape contractor complete all landscaping works identified in the landscape drawings and specification.	-
45	14-May-19	1. Who pay for building Permit?		Owner	1. See item 1.1 Building Permit Fee of Addendum 2	-
		2. Section 01 11 00 1.4 Substantial Performance - April 02, 2021, Bid and Acceptance Form (BA) BA06 the contractor must perform and complete the work within 80 weeks? This means December 2020? Please clarify?			2. See item 2.5 of Addendum 2 deleting article 1.4 from Specification Section 01 11 00	-
46	14-May-19	RFE 11	-	-	-	-
47	14-May-19	1. New Section 084113 New Aluminum framed entrances and storefront : This section does not address question sent earlier		Architectural (DSA)	DSA: Requires minimum STC 45. Based on PC350 system.	-
		a. Please provide a specification and advise the manufacturer of the new frame profile type 2 as issued in Addenda #1 sheet DA-062. I am not aware of any aluminum frames that are made in the configuration drawn and the new specification does not indicate a manufacture we can go to for pricing of same. Please advise where we can purchase these manually dual glazed aluminum frames detailed?			PC 350 basis of design, other manufacturers that meet the performance of the specification are acceptable	-
48	14-May-19	1. RFI list question 7 – Section 085113 Aluminum windows: Answer indicated there are windows which are from this section. Please advise which frames are to be the windows specified in Section 085113. Currently ALL aluminum frames shown on drawings are detailed as curtainwall or fibreglass and I am unable to see any details indicating that some of the windows are from section 085113		Architectural (NTAG)	No Aluminum windows. Section 08 51 13 to be removed.	Addendum No. 4 (item 1.2)
		Panels PA, PB, PC & PD enclosures are marked as Weatherproof which is 3R; however the other panel schedules state 3R. In the panelboard specification 26 24 17 Page 2 2.1.13 it states that where exposed to weather a minimum of Nema 4 shall be provided. As these panels are located in the parking lot would Nema 3R or Nema 4 enclosure be required?		Electrical	Refer to Addendum #4	Addendum No. 4
		In regards to the panel schedules, there are ccts that are marked as “GFI receptacle”; for example cct 9 of branch panel 1A on drawing E503. Can you please confirm if a GFI breaker is required or just your standard thermal mag breaker to feed a receptacle that is complete with GFI? Reason I ask, is I see ccts marked as “GFI heat trace”; in which I know a 30mA GFI breaker is required			Refer to Addendum #4	-
		WPG03EXF01 & F02 are these supposed to be FVNR magnetic starters in MCC-6A? Is their voltage supposed to be 600?			Refer to Addendum #4	-
		2.2 – Provisions for future energy consumption monitoring – As MD-6A has digital metering on all the feeder breakers – is this spec required?			Refer to Addendum #4	-
		2.2 – Provisions for future energy consumption monitoring – As the one-line has note 6; which notes the feeders in the CDP’s that require digital metering – is this spec required?	26 24 13		Refer to Addendum #4	-
			26 24 16		Refer to Addendum #4	-

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		2.3.5 – As I do not know where the CDP’s will be stored on site, do I include a anti-condensation heater in each CDP?	26 28 21 Addendum #2		Refer to Addendum #4	-
		2.6 – Are any of these required features required? If so, which features and which breakers are these required on? – Add# 2 states as shown on drawings however real time metering in the trip units would not show on the drawing. Can you please confirm if this is required.			Refer to Addendum #4	-
		Page 7 5.3 .1 requests 3R enclosure to be replaced with sprinklerproof. Does this apply to drawing 507 as well?			Refer to Addendum #4	-
49	14-May-19	I am wondering if there is any more info as to what is required for the submersible pump systems such as what gpm are required and the total dynamic feet of head. I just want ensure I am sizing these system’s correctly. If there is any additional info that can be provided, it would be much appreciated.		Mechanical	Refer to Addendum #3	Addendum No.3 (item 1.3)
50	14-May-19	Is your customer/electrical engineer accepting alternate/equal/better solutions for the security systems in this project?		Owner	the only security system for which we have a sole source justification is the card reader system. For other systems alternate systems can be considered if they meet the performance specification.	-
51	14-May-19	In reference to the digital metering required for this project: Is specification 26 24 06 just for the customer digital metering unit mounted under the main breaker on drawing E601 and all Note 6 digital meters listed on drawing E601 and E602 are only to have KWH/KVA and communications into the Green dashboard? Or are all digital meters to meet specification 26 24 06? As Eaton’s breakers do not have digital metering, for the note 6 listed on the breakers on the bus duct run A, can the digital meter be placed in the downstream panel? For instance, note 6 listed on the 40A-3P breaker feeding Pnl 119, can I place the digital meter in panel 119?		Electrical	Refer to Addendum #5	(item 6.8)
52	15-May-19	Section 03 30 00 Item 3.6 Field Quality Control states site test requirements for concrete that the contractor must pay to be carried out. Section 01 45 00 item 1.2.1 states independent inspection and testing agencies that will be engaged by department representatives and to allocate costs to section 01 21 13, otherwise testing is noted to be carried out by contractor as listed per specific specification section. We do not seem to have section 01 21 13, but we will assume that it is Section 01 21 00 and item 1.2 has a schedule of cash allowances which include testing for concrete, mortar and compaction. Can you confirm that your instruction is not to include any costs in our Bid other than the Cash Allowances for Concrete, Mortar and Soil or Stone fill Compaction Testing.	03 30 00	Arch Specifications	Refer to Addendum No. 4	Addendum No. 4 (item 1.3)
53	15-May-19	RFE 12	-	-	-	-
54	15-May-19	RFE 13	-	-	-	-
55	15-May-19	Please find the following RFI from a Structural Steel Trade: 1) What finish is required on the grating panels at the service catwalks and platforms? 2) Spec Section 05 12 23 Page 2 Item 1.2.6 refers to AESS (Architecturally Exposed Structural Steel) but I don’t see any indication on the drawings as to where this might apply or to what level of finish these needs to be. (AESS 1, AESS 2, AESS 3 or AESS 4). Please clarify extent and intent.		Artchitectoral (DSA) / Structural	Galvanized finish. See Addendum No. 4 See Addendum No. 4.	Addendum No. 4 (item 6.2) (item 6.1)
56	15-May-19	RFE 14	-	-	-	-
57	15-May-19	In the Invitation to Tender, SI09 directs to see Appendix 3 regarding parts of the work requiring submission of subcontractor names. Please confirm this should actually be Appendix 2.		owner	Should be Appendix 2 and will be corrected in a forthcoming amendment	Addendum No. 4
58	15-May-19	Section 3.5.1. reuires a Vapour Barrier to the crawl space which can be carried out as per the specification document. Section 2.1.3 requires a membrane vapour barrier 10 mil thick to the crawl space. Without a concrete substrate can you clarify howthis product should be applied.		Architectural (NTAG)	Refer to Addendum No. 5	Addendum No. 5 (item 1.11)
59	15-May-19	Please provide layout and details for housekeeping pads required for mechanical systems.		Mechanical	Refer to Mechanical room part plans for outline of house keeping pads and note the depths. All air handling unit house keeping pads must be 300mm deep. All other equipment may be permitted to be 100mm deep.	-
60	16-May-19	Section 28 13 00 Access Control 2.4.1 - it mentions glass breaks. There are no glass breaks on the drawings. Is this supposed to be power for the shock sensors? 2.5 - this is a mullion reader. Is every card reader being installed on a mullion? 2.8.2 - panic switches? There are no panic switches on the drawings. Section 28 23 00 CCTV 1.2.1.1.4 - mentions existing CCTV. Is there existing CCTV the system proposed is being connected to? 2.8 - Is the 360 indoor camera to be the indoor PTZ camera as listed in the CCTV schedule on drawing E508? Or are all interior cameras supposed to be a PTZ, not a 360 (set in PTZ mode)? If so, what’s the purpose of the 360-camera listed in item 2.8?		Electrical	Shock Sensors Standard readers, only mullion readers where shown on door frames correct, no panic switches No existing, new only All interior cameras to be PTZ. Item 2.8 to be removed.	- - - - -

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		<p>2.9 - Designed for analog systems. IP system is networked through fibre patch panels and switches as per Division 27.</p> <p>2.11 - Designed for analog systems. Exterior IP cameras as specified are powered by POE+.</p> <p>2.12 - Discontinued switch.</p> <p>2.14 - Discontinued model. Updated model is TH42LF80U</p> <p>Section 27 52 16 Public address and Mass Notification systems-</p> <p>Part 1, 1.4.1.2:</p> <p>Will an external antenna be required? If so, please provide a mounting detail and spec.</p> <p>1.4.2.1</p> <p>If the wireless mic is to be used for paging, what is the required type (handheld, headset) and range?</p> <p>Part 2, 2.6-2.8</p> <p>Can a single digital signal processor be used to replace these separate analog components as long as the specified functionality is provided?</p> <p>Are the volume controls associated with the paging system intended to be Priority Attenuators? Please provide a spec for this component.</p> <p>Section 27 52 16 Sound Masking System-</p> <p>Part 2, 2.2.9</p> <p>Please provide locations for the in-room occupant controls if required</p> <p>Drawing 202-E303, Detail 3:</p> <p>The drawing shows the sound masking control panel connected to the Paging system amplifier via a Cat6 cable.</p> <p>Is the intent a contact out from the paging system to mute the masking during an All Call?</p> <p>Please clarify.</p>			<p>Yes</p> <p>Please propose alternate.</p> <p>Updated model is TH42LF80U</p> <p>No</p> <p>Handheld at reception desk</p> <p>Yes</p> <p>Please provide cutsheet for component</p> <p>None required</p> <p>Yes, intent to mute masking during all call</p>	<p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p>
61	16-May-19	RFE #15	-	-	-	-
62	16-May-19	In the Invitation to Tender, the Bid Form indicates the work must be completed within 80 weeks of acceptance. However clause 01 11 00.1.4.1 of the project specification indicates substantial performance is required for occupancy before April 2, 2021, which would be later than 80 weeks based on a 30 day award. Please clarify the requirement for Substantial Performance of the Work.		Owner	This was addressed in Addendum No. 2. Refer to Item 2.5 of the Addendum & Item #26 of Request for Information (RFI) Log.	-
63	16-May-19	Clause 26 05 00.2.6.4 of the project specification calls for all conduits to be factory painted for all systems. Is this directly to ½” to 4” EMT on the entire project or a portion thereof? Please confirm as this would be a costly item.		Electrical	This is a requirement of NRC and applies to conduits up to 52 mm in diameter.	-
64	16-May-19	RFE #16	-	-	-	-
65	16-May-19	<p>Transformer “TR-EPB”</p> <p>What panel is it fed from?</p> <p>What is the size and spec of the transformer?</p> <p>Heat Trace</p> <p>Please see attached</p> <p>Spoke with our heat trace supplier, he is suggesting we would need to use the attached. Please confirm if this is ok.</p> <p>O/H Crane Location</p> <p>Drawing E-601 shows O/H crane fed from MD-6A, Drawing E-123 Shows O/H Crane fed from PNL 128. Which panel are we to feed O/H Crane from?</p> <p>CU-01-01</p> <p>Please confirm CU-01-01 location.</p>		Electrcical	<p>Refer to forthcoming Addendum #5</p> <p>One overhead crane outlet will be added at Grid Lines 3 & N for the large OH crane fed from MD-6A.</p>	<p>(item 6.9)</p> <p>-</p>
66	16-May-19	<p>I have a question about the Thermal Broken clip system, is this a clip that is manufactured by Engineered Assemblies called a T-Clip? Also it says for it to be fabricated from 24ga steel but that doesn’t make any sense to me as you would never use 24 ga steel girts attached to a roof system. I have attached what the spec says below.</p> <p>.1 Sub-Framing Thermal Spacer: 100% pultruded glass fibre and thermoset polyester resin, Clips: Thermally responsive clips to be fabricated from a minimum of 0.61 mm steel with a minimum Z275 galvanized coating designed to accommodate expansion and contraction of the roof system. Continuous hat bar and zee clips made from galvanized material, thickness to suit design parameters, to accommodate depth of insulation.</p> <p>This is from section 07 61 00 and can be found under components 2.2 #1</p> <p>I would also like to know if this thermal clip is the same for the whole building for the metal roof and all exterior wall assemblies?</p>		Architectural (NTAG)	<p>Thermal clip and angle acceptable as long as it meets engineered shop drawings.</p> <p>Design basis was to have different types, refer to 07 21 13. Using the same clip system is acceptance as long as it meets performance and shop drawing requirements.</p>	<p>-</p> <p>-</p> <p>-</p>

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		RFE #17	-	-	-	-
67	16-May-19	Our engineer was wondering why sealed shop drawings would be required if we are going to produce shop drawings according to the structural drawings in the project package, as the design for precast or cast in place would be identical. Or are you saying that sealed shop drawings are only required if the manufacturer wants to deviate from the original design drawings in the project documents?	Addendum 2 - item 6.1	Structural	The precast option proposed is inherently different than the cast-in-place detail provided. For this reason, sealed shop drawings are required.	-
68	16-May-19	I am contacting you with regards to the above noted project and some discrepancies I see in the specification. For this project you are asking for a 42” wide <u>FLAT</u> exterior which IMP manufactures cannot produce if I’m not mistaken.		Architectural (NTAG)	Revised to 40". Refer to Addendum #4	Addendum No. 4 (item 1.6)
69	16-May-19	In pricing ESD-6B, if the meters required are just power meters and do not need to meet spec. 26 24 06, then I can use Eaton’s Optim 1050 trip unit. The only issue I run into is the 2-20A-3P breakers required. The lowest amperage that I can provide with the Optim 1050 trip is 28A. Can you please confirm that the 3 – 20A breakers are to be c/w metering? If so, I will have to provide 3 separate digital meters to cover these three breakers. The two 600A-3P breakers listed on drawing E602 to the left of the generator, are these to be included in the generator enclosure?		Electrical	The 3 - 20 A breakers will need a meter each The 2-600 A breakers are separate from EMD-6A, they should be part of the generator enclosure.	- -
70	16-May-19	RFE #18	-	-	-	-
71	16-May-19	RFE #19	-	-	-	-
72	16-May-19	RFE #20	-	-	-	-
73	16-May-19	RFE #21	-	-	-	-
74	17-May-19	Item 2.1.1.2 calls for a panel thickness of 101.6mm if we provide you with panels this thick they will have steel skins and we cannot adhere wood veneer (Item 2.1.1.4) to the face. We can provide a 76mm thick panel with MDF skin that would provide an STC rating of 47 with the wood veneer requirement, however the Top seals would be a fixed seal. Item 2.1.1.8 calls for Operable Top seals.		Architectural (DSA)	DSA: This a product substitution request for equal. More details required to make a determination	- -
75	17-May-19	1. Drawing M300 along grid lines 6 & 9 , hot and cold lines feeding past the water meter thru a empty square box symbol, is this to be an (B.P) backflow preventer? If so what is the spec of it, if it is a RPZ that requires a drain where should that be drained to? 2. Add #1 boiler schedule calls up 2 – WPG03BL203’s, seems like the first should be a 01? Please clarify. 3. Add#1 humidifier schedule WPG03HUM03 model number is missing. 4. Drawing M600 does not shown the space reserved for the domestic water expansion tank WPG03EXT06. Clarify location. 5. Drawing M202 detail #1 the domestic hot water schematic shows a hot, cold and recirc lines feeding the hot water tanks along with a solid line piped from the top of the tank, this solid line piping does not match up with any of the pipe plumbing symbols from M000. Clarify what this piping is for? 6. Expansion tank schedule is missing. 7. Heat exchanger schedule is missing. 8. Unit heater schedule is missing. 9. Fan coil unit schedule is missing. 10. In-floor heating schedule is missing. 11. Finned tube radiation heaters schedule is missing. 12. Compressed air piping spec 22 15 00 – 2.5.2 if the copper piping to be used for this system is cleaned for oxygen service should the system be under a nitrogen purge while its being brazed to keep the system clean? 13. Please provide an anticipated load for the future 1-1/2” natural gas lines in order to correctly size the regulator shown on drawing M300 typical.		Mechanical	These are RPZ backflow preventors. Each shell lab is has a sanitary service. Add a hub drain to sanitary pipe closest to the backflow preventor and drain to this location. Correct, first boiler tag should read WPG03BLR01. Addendum #5 Locate expansion tank adjacent to WPG03DHW01 c/w 100mm deep house keeping pad. The solid line is a natural gas pipe. Refer to Addendum #2 Refer to Addendum #2 Refer to Addendum #5 Refer to Addendum #5 Refer to Addendum #5 Refer to HVAC drawings for active lengths and heat output. Refer to Addendum #5 Refer to Addendum #5	- - - - - - - item 2.9 item 2.9 item 2.9 - item 2.6 item 2.6
76	21-May-19	For Section 12 window coverings, could you please have the architects/designers clarify the needs for each window to be covered. The specs call for the following: WS1 – Manual Shade 3% WS2 – Motorized Blackout WS3 – Manual DUAL SYSTEM Shade 3% and Blackout However, on the drawings the windows are marked as the following: WS1 – Manual Shade (3% openness assumed) WS3 – Motorized Shade (3% openness assumed) WS4 – Motorized Blackout		Architectural (DSA) NTAG NTAG DSA	DSA: See below clarifications. WS1 Manual Shade 3% is correct. WS2 revise specification to Motorized Dual system, 3% and blackout shades. WS3 revise specication to Motorized Shade 3% privacy WS1 correct. WS3 correct. WS4 revise to indicate WS2 on the drawings and legends.	- item 1.18 item 1.18 - - item 4.3

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
77	21-May-19	12. Appendix 3 – Voluntary certification to support the use of apprentices. I assume this is optional as the title suggests and not a mandatory requirement for the bid submission?		Owner	This is optional	-
		13. Please confirm that the natural gas line up to the building will be supplied by the city of Winnipeg free of charge to the contractor?		Civil/Mech	Correct	-
		14. The drawings show security monitors, and AV monitors. These are not indicated as N.I.C. Please confirm that this equipment will not be included in this contract?		Owner	All AV equipment in contract	-
		15. The Room finish Schedule calls for SLD walls in the basement corridor. Are the concrete walls designated ‘Architectoral finish’ or are they standard form finish with sealer?		Architecture (DSA)	DSA: Concrete standard form finish with sealer is acceptable in the Service Corridor.	-
		16. The RM of Rosser/south Interlake planning district informed me that besides the Building, sewer, water, and lot grading permits there is also a City of Winnipeg buy-in charge and a Winnipeg up front charge. The buy-in charge & up front charge will add up to a significant amount. Are these charges the responsibility of the contractor or have they been paid for by the Owner?		Owner	To be paid by owner.	-
78	21-May-19	On drawing E-143, Keynote 1 indicates area to be Zone 2 with equipment to be Class 1 Division 2. This is the only drawing that states the area classification. Is this note intentional?		Electrical	Refer to Addendum #5	item 6.6
		Drawing E-302, Fire alarm riser diagram. Where is the landing point for the “CAT-6 in conduit”?			Cat 6 cable to be terminated at the main fire alarm panel FACP as shown.	
79	22-May-19	In lieu of security personnel would a monitored alarm system be acceptable?			Security not required. Refer to addendum #4.	-
80	22-May-19	1. Drawing M200 show all pipe sizing on this mechanical room schematic. 2. Drawing M600 / M601, show all piping connections into mains for services coming into and out of the mechanical room (IE: glycol heating, chilled water) 3. Piping schematic is required with all sizing shown for all heating equipment in the building. 4. Drawing M603 detail #1, detail of the 6-way valve assembly is required. 5. Drawing M604 piping needs to be labeled and sized.		Mechanical	Refer to Addendum #5	item 5.6
81	23-May-19	Drawings A801, A805, A806 show numerous whiteboards (WB-1) however there is no information in the Spec for the Whiteboards and they are not marked NIC on the drawings. Are these an owner supplied item or does the contractor include the supply and install cost in the bid submission?		Architectural (DSA)	Refer to Addendum #4.	-
82	23-May-19	The finished floor elevation of 241.00 is approximately 2 m above the existing grade. This will require a large quantity of fill to build up the finished grades around the building and parking lots. Just wanted to make sure that the finished floor elevation is correct.			The floor elevation is correct.	-
83	23-May-19	Crawl Space vapour barrier Is there a reason 0.0183 perminator is specificed? Is there a reason >3,500 grams and 52lb force/inch is specified? Is a class A fire rating important? Is there only a 3 year warranty for a specific reason? Is there any slab on grade vapour barrier being used or is it only for a crawlspace?		Architectural (NTAG)		Addendum No. 5 (item 1.11)
84	23-May-19	RFE #22	-	-	-	-
85	23-May-19	RFE #23	-	-	-	-
86	24-May-19	SF2 Floor type is listed as a 1 hour rated floor. On all building section drawings and wall section drawing the crawl space is listed as a SF2 rated floor. The life safety drawing A060, Building Code Synopsis specifies that the floor above crawl space does not require a rating. Can you please clarify if the floor above the crawl space or floor above the service corridor requires cementitious fireproofing?		Architectural (DSA)	DSA: Floor above crawlspace does not require a rating or fireproofing. Floor above Service Corridor requires spray applied fireproofing.	-
		On drawing A108 at GLs E-6 and E-8 the columns are listed as PRC-4. Is this a misprint and it is supposed to be FR-C4, an Intumescent coated column?			DSA: The note PRC-4 at columns E6 and E-8 will be revised to FR-C4 and is clarified elsewhere in Addendum #5.	item 4.2
87	24-May-19	Reference Section 10 22 26.33 folding panel partitions Part 2 Products 2.1.1.4.1 Certified wood Note that the panel partition supplier can meet all the requirments but is not FSC certified and, therefore, cannot provide a product with certified wood and provide the required chain of custody. Typically, FSC certification is an architectural woodwork and millwork requirement. Getting a folding partition subtrade who typically deals with vinyl finishes to allow for this will be difficult for such a small order. Please advise if this requirement can be waived to allow us to quote this spec section.		Footprint	FSC to be removed from spec	Addendum No. 5 (item 1.17)

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
88	27-May-19	Could you clarify what product floor finish TT1 is?		Architectural (DSA)	Traffic Coatings 07 18 00 - Refer to drawings; A121 Floor Finishes Plan Level 1, A122 Floor Finishes Plan- Level 2 and A1050 Room Finish Schedule.	-
89	27-May-19	1) What finish is required on the grating panels at the service catwalks and platforms?		Architectural (DSA)	DSA: Refer to Addendum #4.	-
		2) Spec Section 05 12 23 Page 2 Item 1.2.6 refers to AESS (Architecturally Exposed Structural Steel) but I don't see any indication on the drawings as to where this might apply or to what level of finish these needs to be. (AESS 1, AESS 2, AESS 3 or AESS 4). Please clarify extent and intent.			DSA: Refer to Addendum #4.	-
90	27-May-19	Thank you for the clarifications on Addendum #2 with regards to Section 09 95 00 - Epoxy Flooring & Wall Finish. I am however still hoping for clarification on the system thicknesses as per item# 3 below of my original inquiry. Our conductive system is approx 1mm in thickness, vs the specified FAF-2 @ 6mm and FAF-3 @ 3.3 mm. I am unfamiliar with conductive systems at these thicknesses and was hoping for feedback.		Architectural (DSA)	DSA: Refer to RFI #35 response.	-
91	28-May-19	- Item 2.1.15 Waterproofing Membrane - where is this required and with which tiles? - Item 3.3.2 calls for the supply and installation of crack isolation membrane at all control joint locations And active cracks. Firstly, what is the Spec for the Crack Isolation Membrane. Secondly, how do we Quantify the number/length of cracks that might need membrane installed over? - Are there transition strips required on top of the tile Base? - Drawing A712 calls for "round SS Indicators" for Stair 1, being installed on both the Limestone Landing (Limestone by Masonry) and the Procelain Tile Floors at Level 1 & 2. Is there a Spec for these stainless Steel indicators?	093013 Ceramic Tiling	Architectural (NTAG)	Refer to Addendum #5 DSA: Refer to A052. Termination strips to be provided at top of tile base. Refer to Addendum #5	Item 1.15 - Item 1.15
92	28-May-19	1. Is there a detail on connecting the 75 X 50 X 3.2mm aluminum Square hollow section of the frame (Drawing A302 Detail 4) to the steel outrigger (A652 detail 15) 2. Is the finish on the aluminum frame for the kinetic wall mill finish or is it painted to match the wall?		Architectural (NTAG)	refer to S303 - Framing elevations painted to match exterior cladding finish	- -
93	28-May-19	On the above noted in section 14 43 31 part 2 it asks for a vehicle restraint interlock Do you just need the interlock or the vehicle restraint itself? As of right now there is no information describing what type of vehicle restraint is required that I can find		Architectural (NTAG)	Refer to Addendum No. 5	item 1.20
94	28-May-19	What is the type of AVB for the Walls? Blueskin SA or what product? What is the Type of Thermal Clip to be used in bid as I cannot find anything on it? RFE #24 What is the type of acoustic insulation to be used for the Deck and The Interior Wall P61?	-	Architectural (NTAG) - -	SA or Torched is acceptable as per Section 07 28 00. Which ever meets the performace and sealed shop drawing requirements. - follow performance specifications	- - - -
95	29-May-19	RFE #25	-	-	-	-
96	29-May-19	Requestion clarification on the following item: Please provide a Cash Allowance amount to be carried for commissioning as no amount is noted in Section 01 21 00. Section 01 45 00 Quality Control states the following: 1.2 INDEPENDENT INSPECTION AGENCIES .1 Independent Inspection and Testing Agencies will be engaged by Departmental Representative for purpose of Commissioning portions of Work. Allocate Costs to Section 01 21 13, otherwise testing	-	-	Addressed in Addendum #4, item 1.1.3. "third party commissioning to be provided by the consultant.	-
97	29-May-19	-Are we to provide 2 Cat6A patch cables for each data/voice cable installed, or 2 for each data/voice symbol on the drawings (most are triple drops). -The drawings indicate single mode fiber is to be installed, however the spec refers to OM4 multimode, which is correct single mode or multimode? -Please confirm that only Cat6 cable is required for the WAP drops and underground drops, all other locations are Cat6A.		Electrical	Cable drop counts at each outlet and in the patch panels to be as per symbol legend. Refer to Addendum #5 Confirmed	- item 3.2 -
98	30-May-19	Please verify color of Tyndall Stone Stair Treads and Landings		Architectural (DSA)		

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		<p>There does not appear to be any indication of color required for the Tyndall Stone® Stair Treads or Landings within the contract documents (Specifications or Architectural Drawings).</p> <p>*See drawings A701 and A712</p> <p>Please indicate if Grey Colour Tyndall Stone® or Buff Colour Tyndall Stone® is required.</p> <p>Please verify finish of Tyndall Stone Stair Treads and Landings</p> <p>Section 04 22 00 Concrete Unit Masonry indicates that Stair Treads and Landings are to be Flamed Finish.</p> <p>Please note that Tyndall Stone® will not be supplied with "Flamed Finish". Tyndall Stone® may be supplied with either a Bush Hammered Finish or Pointed Finish if a textured surface is required on tread surfaces for traction purposes.</p> <p>Please indicate if Bush Hammered Finish or Pointed Finish is required for Tyndall Stone®.</p> <p>NOTE:</p> <ul style="list-style-type: none">• Tyndall Stone® is a natural stone product, and as such will have naturally occurring variations in colour and pattern on mottling• Given the inherent nature of Tyndall Stone®, typically, Grey Colour Tyndall Stone® would be less susceptible to staining than Buff Colour Tyndall Stone®• Installer to ensure that:<ul style="list-style-type: none">◦ White non-staining thinset / grout is used◦ Thinset is applied to back of each tile with full coverage, and at even thickness◦ Tiles must be pre-sealed before grouting			Refer to Addendum #5	item 1.8
99	30-May-19	<p>1. Is a VFD required for AHU 4, electrical drawing E508 lists VFD rated cable for this AHU but the remarks do not have a VFD listed?</p> <p>2. Do WPG03CTP01A &B require VFD’s, VFD’s are shown on M200 but not electrical schedule, E508?</p> <p>3. Do WPG03HRP02A, B & C require VFD’s, VFD’s are shown on M200 but not electrical schedule, E508?</p> <p>4. M400 shows the AHU in the crawlspace as AHU01 can you confirm if this should be AHU04?</p> <p>5. M201 shows a future MUA for the Lab, please confirm this is not in the scope of the project?</p> <p>6. HVAC Notes on the mechanical drawings (general notes), note 2 specifies control valves for perimeter radiation should be type-1, I was not able to find what Type-1 is in reference to, what type of valve is required?</p> <p>7. Do all office spaces served by AHU 1, 2 and 5 require space CO2 sensors?</p> <p>8. Water meters are listed under miscellaneous monitored points Div 25. Are we required to monitor all water meters (ex. all water makeup meters), or is the main domestic water meter sufficient?</p> <p>9. Occupancy sensors are listed under miscellaneous monitored points Div 25. No locations of occupancy sensors are shown on the plans. Electrical section 26 09 41 - Programmable Low Voltage Lighting Control, specifies a Bacnet capable system that can communicate occupancy sensor status. Are the occupancy sensors provided by Division 26, and brought in through a Bacnet connection sufficient? If not, could you please provide locations for the required sensors.</p> <p>10. Could you please provide a sequence of operation for the Fan coils as well as flow rates for valve sizing.</p> <p>11. Section 26 24 31, 3.2, states power and control wiring for mechanical control system are to be provided by this Division, but does not state voltage ratings. Could you please confirm that Division 25 is to provide low voltage power and control wiring for Division 25 systems?</p>		Mechanical Electrical Electrical Electrical Mechanical Mechanical Mechanical Mechanical Mechanical Mechanical	<p>Yes a VFD is required. Refer to fan schedule for fan associated to AHU 04.</p> <p>Refer to Addendum #5</p> <p>Refer to Addendum #5</p> <p>Refer to Addendum #5</p> <p>Correct, the future MUA is not part of the scope of this project. Future unit shown to reserve space for future expansion.</p> <p>Refer to Detail 11, M001</p> <p>Yes</p> <p>All water meters are to be monitored.</p> <p>Yes, occupancy sensors are by Division 26 and may be connected to BMS via Bacnet.</p> <p>Refer to Addendum #5</p> <p>Yes, Division 25 is to provide low voltage power and control wiring for Division 25 systems.</p>	- item 6.7 item 6.7 - - - - - - - - - -
100	30-May-19	Missing responses to RFI 19, 25 and 48 in addendum #2 and #4.		Electrical	answers found in addendum #2 and #4	-
101	30-May-19	<p>1. 25 10 02 item 2.2 describes the OWS. It appears to describe the need for 4 PC’s. I would like to confirm that 4 PC’s are required? Our software can be accessed from any computer connected to the BMS network through a web browser. No special software is required for the secondary PC’s. As a costs savings idea, the owner could use their desktops/laptops to access the BMS system in lieu of the additional PC’s.</p> <p>2. 25 10 02 item 2.4 describes a desk for the OWS and rack for the printer. Please confirm Div 25 is required to provide a desk and the quantity/locations?</p>		Mechanical	<p>4 PC's are required to be supplied. Two PC's are to be located in the maintenance shop office and two PC are to be located at front reception desk.</p> <p>Desk and rack for printer do not hvae to be supplied by Division 25.</p>	- -
102	30-May-19	25 30 02 item 2 (hh) & (ii) describes a chiller room refrigerant gas detection system. There is no refrigerant gas detection system shown on the plans, or sequence of operation. Could you please confirm that a refrigerant gas detection system is required?		Mechanical	Not required.	-
103	3-Jun-19	1. Millwork - The color of quartz has not been specified yet on this project and it’s hard to make an exact pricing for quartz materials if the supplier doesn’t have the exact color, unless we just assume for price range color. Can you provide it while there is still time? Also, is there solid surface required in this project, seems like I see one in the millwork schedule, but it was not in the specs.		Architectural (DSA)	DSA: Quartz to be caesarstone 1141 Pure White. SSM1 to be Corian Modern White.	Addendum No. 5 (Item 1.9)

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		2. Roller Shades - The WS1/WS2/WS3 shade system types in the specification do not match the WS1/WS3/WS4 shade system types present on the A200 RCP drawings. Notably the drawings describe 2 types which are to be motorized and only one manual, all single shade systems - and the spec describes all systems as manual while one is a dual system. Please clarify the scope and provide missing information. If motorized blinds are part of the scope the specification for this system is required. Additionally, please provide the accepted manufacturer which the specified system is based on.			DSA: Refer to clarifications in RFI #76	-
104	3-Jun-19	Can you clarify the fiber requirement for the backbone? Plan page E303 has both single mode and multimode stated and both 12-strand and 12-pair (24-strand).		Electrical	Refer to addendum #5	item 3.2
105	3-Jun-19	RFE #26	-	-	-	-
106	3-Jun-19	RFE #27	-	-	-	-
107	3-Jun-19	I would like to know what is the lead time requested / required for the switchboards / panels, of this RFQ, to arrive on site? I know the documents stated that the Substantial performance of the work is required for departmental representative occupancy before April 2 nd , 2021. However the delivery for the distribution to be on-site could be much sooner than April 2021.			All work to be completed by substantial performance date listed.	-
108	3-Jun-19	1. Spec section 05 12 23 Page 2 item 1.2.6 refers to AES (Architecturally Exposed Structural Steel) but I don't see any indication on the drawings as to where this might apply or what level of finish these needs to be. (AESS 1, AESS 2, AESS 3, or AESS 4). Please clarify extent and intent.		Architectural (DSA) / Structural	Refer to RFI #55	-
		2. Please confirm the finish required on the grating panels to the service catwalks and platforms.		Architectural (DSA) /Structural	Refer to RFI #55	-
		3. Geotechnical report 5.15 states all engineering design recommendations presented in this report are based on the assumption that an adequate level of testing and monitoring will be provided during the construction by either the designer or other suitable qualified personnel. Structural Drawing S001 states that a "Geotechnical Engineer must provide a letter of certification with an engineer's seal, stating that the granular layer and sub-base preparation has been installed in accordance to their recommendation and requirements. Lavergne, Draward, & Associates Inc will not certify these items. The letter of certification is to be forwarded to the contractor, Architect and Owner." Can you please clarify the above contract document request and confirm if this cost of providing certification is a requirement for the General Contractor to include in our bid?		Structural	To be carried by general contractor.	-
109	3-Jun-19	RFE #28	-	-	-	-
110	3-Jun-19	We can not find any info on the 5 blast doors in the specs. Info on blast categories is required, as per attached chart. (Category 1-5) Note: Doors noted on Addendum #1.		Architectural (NTAG)	Refer to Addendum #5	item 1.2
111	3-Jun-19	please confirm who is carrying the supply and install of the Facility Monitoring system 23 90 00. It reads in the spec that div 25 is to communicate with it, but it sounds like an FMS manufacturer will have their own field technicians.		Mechanical	Separated price to be removed from spec section.	item 2.5
112	4-Jun-19	1. Addendum #4 – RFI / Contractor Questions Item# 39, hydronic system piping sizes calls up addendum #3 as a response to the question, Is this meant to clarify or answer any mechanical pipe sizing? One example being addendum #3 revised drawing M403, grid lines 5&D HWS/R is a 75mm pipe until branch at grid line #7 then no further sizing, as per general note #1 on this drawing all branch pipe is to be 19mm (3/4"). Can you explain / show where the sizing reduction is to take place as this is not shown.		Mechanical	Refer to Addendum #5	-
		2. On a project of this size correct pipe sizes need to be indicated throughout the mechanical drawings and schematics to clearly shown system tie in points and routing. By not showing this on these systems creates inconsistent information which will lead to the mechanical quotes to vary a great deal and result in problems during the construction period.			Refer to Addendum #5	-
113	4-Jun-19	17. 05 50 00 R1 is not attached to addendum #3.		Mechanical	Refer to Addendum #5	item 1.4
		18. 21 05 01 – 3.8.5 says departmental representative will video tape training. 27 10 05 – 1.13.1 says it is by us. Please clarify if videotaping the training sessions is part of our scope. If so, does this need to be done by a trained professional or by the contractors staff?		Mechanical	requirement for video recording of training sessions to be removed (per owner). Refer to Addendum #5	item 3.2
		19. 07 72 33 – 2.2.1 calls for an aluminum roof hatch access ladder (labelled LADDER-1). Detail 21/A505 shows a steel ladder. A300 and A301 label the roof transition ladders LADDER-1? Please clarify.		Architectural (NTAG)	Ladder to be aluminum	-
		20. S001 calls for a geotechnical engineer to supervise the excavation backfill and compaction. Please confirm that this is part of the testing cash allowance.		Structural	testing to be carried by general contractor.	-
		21. 07 28 00 – 2.2.8 calls for 750x750 pavers. Are standard sized 600 x 600 pavers acceptable?		Architectural (NTAG)	acceptable	-
114	4-Jun-19	1 Please provide description of CG2 (Corner Guard 2)		Architectural (DSA)	Refer to spec section 09 22 16	-
		2 On drawing A850 WA13.5 and WA13.2 should be added to the Washroom Accessories list		(DSA)	DSA: Refer to Addendum #5	item 1.18

NRC AMP Winnipeg Tender Period - Requests for Information/Contractor Questions

Issued for Tender Documents - April 17, 2019

Item #	Date of Request	Question	Section/ Drawing Reference	Dicipline	Response	Issued
		3 On Drawing A850 WA 13.2 Shower Hook location not shown 4 What is the value of the Permit Review Fee Paid to Date to the South Interlake Planning District? 5 Please clarify Window Roller Blind WS4, it's on the drawings but not in the Spec 6 Please confirm that Window Roller Blind WS2 has not been used		(DSA) - (DSA) (DSA)	DSA: Refer to Addendum #5 Refer to Addendum #2 - item 1.1 DSA: Refer to clarifications in RFI #76 DSA: Refer to clarifications in RFI #76	item 1.18 - - -
115	5-Jun-19	Drawing E001 , General note J. "All data cabling to run in conduit/cable tray." Please confirm that J-hooks are not permitted. Drawing E303 , detail 5 and 6, fiber links between 106, 130, and catwalk. Please clarify fiber type - 12 strand or 12 pair. Please clarify type - single mode or OM4 multimode. 21 13 13 3.4.4 , Provide wiring in rigid metal conduit or intermediate metal conduit. – Section 28 does not talk about rigid metal conduit or intermediate metal conduit at all. Is EMT permitted for the fire alarm wiring?		Electrical	Confirmed, J-hooks not permitted Refer to Addendum #5 -	item 3.2 -
116	5-Jun-19	22. On A050 GB1 finish has 75mm of rigid insulation and GB2 finish has 100mm thick rigid insulation. Is this intentional or should both be either 75 or 100mm? 23. 07 21 13 calls for cement board to 800 below grade, covered by either parging or 18ga. Steel sheet. drawing A050 calls for parging on mesh or a 24ga. Steel sheet on plywood only to 400mm below grade. Please advise which one to follow.		Architectural (NTAG)	Insulation to be 100mm. Refer to Addednum #5 specification revised to read 400mm below grade.	item 4.1 item 4.16
117	5-Jun-19	24. 18/A652 calls for an aluminum Colum cover. A106 calls for a intumescent covered (FRC4) column. Which is correct?		Architectural (NTAG)	Refer to Addendum #5	item 4.2
118	5-Jun-19	I was just going thru the drawings for AMP in Winnipeg The plumbing drawings are fantastic , but I noticed that there is no sizing on the chilled water , glycol , heating drawings , I have checked thru all addendums still no sizing . Could you please clarify the sizing for me. This job is far to big to guess.		Mechanical	Refer to Addendum #5	item 5.6
119	-	-	-	-	-	-
120	6-Jun-19	section 08 50 00 - part 2.1.4 Explosive Venting System shows design pressure to be 50 Kpa. Typical range of design criteria is between 1 to 2 Kpa, this design may need to be revised or can we interpret unit of measurement will revise to PSF instead? Section 08 50 00 - part 2.1.1 Explosive Venting system shows there is no insulation inside the sandwich panel, it is highly recommended to apply insulation layer to achieve 0.23 U-value of wall assembly otherwise can you clarify what is required U-value for exterior walls?		Architectural (NTAG)	50 Kpa as per hazardous material consultant 0.16 U-value, refer to Addendum #5.	- Item 1.5

NRC AMP Winnipeg Tender Period - Requests for Equals

Issued for Tender Documents - April 17, 2019

No.	Date of Request	Specified Product	Dicipline	Accepted/Rejected	Issued	Comments
1	24-Apr	Overhead Door	Architectural	n/a	n/a	RFE not required, please meet performance spec
2	24-Apr	Nabco Door operator	Architectural	Accepted	Addendum #2	(item 2.9)
3	25-Apr	Artspan Insulated steel panel (IMP)	Architectural	Rejected	-	-
4	25-Apr	Overhead Coiling Door and Grilles	Architectural	n/a	n/a	RFE not required, please meet performance spec
5	26-Apr	Door Operator	Hardware	Accepted	Addendum #2	(item 2.9)
6	29-Apr	PA system / Sound Masking	Electrical	n/a	-	RFE not required, please meet performance spec
7	30-Apr	Concrete Pole foundations	Structural	Accepted	Addendum #2	(item 6.1)
8	30-Apr	CCTV equipment	Electrical	n/a	n/a	RFE not required, please meet performance spec
9	9-May	Electrical Distribution - Power-Xpert Meter PXM1300 series with PXM1K-BIPP & PXM1K-210	Electrical	accepted	Addendum #4	
10	9-May	Alpolic	Architectural	n/a	-	RFE not required, please meet performance spec
		Kingspan Shadowline		rejected	-	-
		new tech panel		n/a	-	RFE not required, please meet performance spec
		HF-12		n/a	-	RFE not required, please meet performance spec
11	14-May	Hardware (list)	Hardware	accepted	Addendum #4	-
12	15-May	Horton Door operators	Hardware	accepted	Addendum #4	-
13	15-May	Securock Gypsum Fiber Roof Board	Architectural	n/a	-	RFE not required, please meet performance spec
14	15-May	Pheonix Valves	Mechanical	Rejected	-	Quad valve assembly does not meet dimensional constraints. Required to be 4x1 configuration.
15	16-May	Telecor Digital Clock	Owner	accepted	Addendum #4	-
16	16-May	Blueskin SA (walls) & Blueskin RF200 (standing seam)	Architectural	n/a	n/a	RFE not required, please meet performance spec
17	16-May	Roxul	Architectural	n/a	-	RFE not required, please meet performance spec
		ISO Clip		n/a		RFE not required, please meet performance spec
18	16-May	Cladco Alpolic C2000	Architectural	n/a	-	RFE not required, please meet performance spec
19	16-May	TSS150 Standing Seam Wall and Roof Panel	Architectural	n/a	-	RFE not required, please meet performance spec
20	16-May	HF-12F or HF-12NF Wall panels	Architectural	n/a	-	RFE not required, please meet performance spec
21	17-May	Kingspan IMP	Architectural	n/a		RFE not required, please meet performance spec

NRC AMP Winnipeg Tender Period - Requests for Equals
 Issued for Tender Documents - April 17, 2019

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22	23-May	DeDietrich (boilers)	Mechanical	n/a	-	RFE not required, please meet performance spec
		Arctic Chill (chiller)		n/a	-	RFE not required, please meet performance spec
		CoolWater Technology (closed circuit chiller)		n/a	-	RFE not required, please meet performance spec
		Ventrol (AHU)		n/a	-	RFE not required, please meet performance spec
		Titus (VAVs)		n/a	-	RFE not required, please meet performance spec
		Taco (heat exchanger)		n/a	-	RFE not required, please meet performance spec
		Pure Humidifiers (humidifiers)		n/a	-	RFE not required, please meet performance spec
23	23-May	Structural Panels Inc	Architectural	rejected	-	-
24	28-May	Roxwool Cavityrock	Architectural	n/a	-	RFE not required, please meet performance spec
25	29-May	Bell & Gossett (plumbing pumps)	Mechanical	n/a	-	RFE not required, please meet performance spec
		Bell & Gossett (balancing valves)		n/a	-	RFE not required, please meet performance spec
		Bell & Gossett (diaphragm type expansion tank)		n/a	-	RFE not required, please meet performance spec
		Bell & Gossett (auto air vent)		n/a	-	RFE not required, please meet performance spec
		Bell & Gossett (air separator in-line)		n/a	-	RFE not required, please meet performance spec
		Bell & Gossett (combination separators/strainers)		n/a	-	RFE not required, please meet performance spec
		Bell & Gossett (suction diffusers)		n/a	-	RFE not required, please meet performance spec
		Bell & Gossett (hydronic pumps)		n/a	-	RFE not required, please meet performance spec
		Selkirk (breeching chimneys & Stacks)		n/a	-	RFE not required, please meet performance spec
		Raypack (heating boilers)		Rejected	-	-
		California Dynamics (vibration isolation)		n/a	-	RFE not required, please meet performance spec
		VAW systems (silencers)		n/a	-	RFE not required, please meet performance spec
		Nailor (Air Terminal Units)		n/a	-	RFE not required, please meet performance spec

NRC AMP Winnipeg Tender Period - Requests for Equals
Issued for Tender Documents - April 17, 2019

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		Camfil (air filtration)		n/a	-	RFE not required, please meet performance spec
		Lakos (condeser water filtration)		n/a	-	RFE not required, please meet performance spec
		Haakon (air to air energy recovery equip)		n/a	-	RFE not required, please meet performance spec
		Rittling (finned tube radiation heaters)		n/a	-	RFE not required, please meet performance spec
		Rittling (unit heaters)		n/a	-	RFE not required, please meet performance spec
		TMI (air curtains)		n/a	-	RFE not required, please meet performance spec
		ABB (variable frequency drives)		n/a	-	RFE not required, please meet performance spec
		Loren Cook (fans.lab ehaust fans)		n/a	-	RFE not required, please meet performance spec
		Nailor (fire dampers)		n/a	-	RFE not required, please meet performance spec
		Daikin (fan coils)		n/a	-	RFE not required, please meet performance spec
		Nailor (grilles, registers & diffusers)		n/a	-	RFE not required, please meet performance spec
26	3-Jun	Dri-Steem GTS (humidifier)	Mechanical	n/a	-	RFE not required, please meet performance spec
27	3-Jun	LG Ductless Split Systems	Mechanical	n/a	-	RFE not required, please meet performance spec
28	3-Jun	Norbec Insulated metal panels - Norex L	Architectural	n/a	-	RFE not required, please meet performance spec