Part 1 General

1.1 SUMMARY

.1 Install bird control landing barrier on exposed or protected ledges where birds settle, roost or nest, to prevent damage from droppings and nesting materials.

.2 Install bird control screen around rooftop HVAC systems where birds have access to underside of units for roosting or nesting.

1.2 RELATED SECTIONS

.1 Section 07 62 00 – Sheet Metal Flashings and Trim

.2 Section 08 44 13 – Glazed Aluminum Curtain Wall

.3 Division 23 – Heating, Ventilation and Air Conditioning: Rooftop mounted equipment.

1.3 QUALITY ASSURANCE

.1 Installer shall be certified by the bird control device manufacturer for installation of the specified products and have experience with projects of similar scope and complexity.

1.4 DESIGN RESPONSIBILITY

.1 Review drawings and design bird control landing barriers of sufficient width, locations and having appropriate fasteners for attachment to substrates indicated on Drawings.

.2 Review drawings and design bird control screen support systems based on size of enclosure to cover rooftop equipment or building openings as indicated on Drawings.

1.5 SUBMITTALS

.1 Provide requested information in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit sample of specified material for confirmation to the Consultant, minimum length 150 mm of strip materials and 300 mm square of net materials.

.3 Submit manufacturer's detailed installation instructions and shop drawings indicating specific installation locations, methods of attachment, preservation of architectural features and means of access.

1.6 PROJECT CLOSEOUT SUBMISSIONS

.1 Submit maintenance instructions for inclusion in operating and maintenance manual in accordance with Section 01 78 00 – Closeout Submittals, Operations and Maintenance Data.

1.7 PRODUCT HANDLING

.1 Protect products from damage before, during and after installation; replace damaged materials immediately.

Part 2 Products

2.1 MANUFACTURERS

.1 Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include; but are not limited to, the following:

.1 Bird-B-Gone Inc.
.2 Bird Barrier America Inc.
.3 Cat Claw Inc.
.4 Nixalite of America Inc.

2.2 BIRD CONTROL LANDING BARRIER

.1 Stainless steel blunt spikes, Type 316 spaced to humanely prevent birds from landing on surfaces indicated on Drawings; mounted to central flexible base strip complete with manufacturer's recommended mounting system, and as follows:

.1 Width of Coverage: Minimum nominal 100 mm, to manufacturers next size standard.
.2 Height: Nominal 100 mm to 115 mm to manufacturer's standard.
.3 Length: Minimum 600 mm per section, cut sections where shorter lengths are required.
.4 Number of Rows: As designed by the manufacturer and based on project conditions.
.5 Mounting System: As designed by the manufacturer and based on project conditions.

.2 Acceptable materials:

.1 Bird-B-Gone Inc., Bird Spike 2001
.2 Bird Barrier America Inc., Bird Flite Spikes
.3 Cat Claw Inc., Standard 2B
.4 Nixalite of America Inc., Model S

2.3 BIRD CONTROL SCREENS

.1 Netting: Ultra-violet stabilized polyethylene or polypropylene strands to manufacturer's standard, knotted at cross-over locations, having mesh opening of 19 mm; colour translucent, having a minimum breaking strength of 22 kg.

.2 Mounting Systems: Design steel enclosure for netting support, sized for application; connections and attachments to suit substrates, and allowing for personnel access to rooftop equipment.

.3 Acceptable materials:

.1 Bird-B-Gone Inc., Bird Net 2000
.2 Bird Barrier America Inc., Stealth Net
.3 Nixalite of America Inc., K-Net HT Bird Netting

Part 3 Execution

3.1 EXAMINATION

.1 Examine installation area; notify Consultant of conditions detrimental to installation of specified systems.

.2 Proceed with work after detrimental conditions are corrected.

3.2 SURFACE PREPARATION

.1 Clean ledges and mounting surfaces leaving, dry and free of peeling paint, rust, bird droppings or other debris.

.2 Bird droppings shall be removed in safe manner; large quantities shall be removed and disposed of by reputable waste removal companies.

.3 Remove or repair articles that may damage the installed systems after installation, such as tree limbs, brush, and loose parts of building.

3.3 INSTALLATION: BIRD CONTROL LANDING BARRIER

.1 Install bird control in accordance with manufacturer's written instructions and reviewed shop drawings.

.2 Install bird control landing barrier to overhang ledge by minimum 6 mm, and maximum 65 mm from vertical surfaces at back face of ledge.

.3 Install bird control landing barrier to completely cover top surface, and from corner to corner, of ledges, parapets and similar flat surfaces; installation at the outer perimeter will not be acceptable.

.4 Install bird control landing barrier straight and level, following contours of architectural features, spaced evenly with no spaces that could present a landing opportunity for deterred birds.

3.4 INSTALLATION: BIRD CONTROL NETTING

.1 Install bird control netting in accordance with manufacturer's written instructions and reviewed shop drawings.

.2 Install bird control netting so that it fits around the rooftop units or openings in building, leaving no gaps or openings that could allow birds to enter the protected area.

.3 Install bird control netting square and level, pulled taught and secured to frame assembly; remove any loose of sagging materials that could entrap birds.

3.5 REPAIRS AND ADJUSTMENTS

.1 Verify that inspect bird control devices are fastened or adhered to mounting surfaces securely in accordance with manufacturer's requirements, or are

subject to other installation or surface preparation that could impair long term performance of bird control devices; repair as necessary immediately.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 03300 – Cast-in-Place Concrete

.2 Section 06 10 00 – Rough Carpentry

.3 Section 07 21 13 – Board Insulation

.4 Section 07 27 13 – Modified Bituminous Air and Vapour Barrier

.5 Section 07 92 00 – Sealants

1.2 REFERENCES

.1 ASTM International Inc.

.1 ASTM C836/C836M-18, Standard Specification for High Solids Content, Cold` Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.

.2 ASTM C1325-17a Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units

.3 ASTM D146/D146M-04 (2012) e1, Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing.

.4 ASTM D412-16, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

.5 ASTM E96/E96M-16, Standard Test Methods for Water Vapor Transmission of Materials.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning waterproofing Work, with waterproofing contractor's representative, Engineer, Consultant, and Contractor in accordance with Section 01 31 19 – Project Meetings to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.4 ACTION SUBMITTALS /INFORMATIONAL SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 – Submittals:

.1 Submit manufacturer's printed product literature, specifications and data sheet.

.2 Provide two copies of most recent data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Provide two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with WHMIS acceptable to Labour Canada, and Health and Welfare Canada and indicate VOC content.

.2 Manufacturer's Installation Instructions: submit manufacturers recommended installation instructions and procedures.

1.5 QUALITY ASSURANCE

.1 Installer qualifications: Use a qualified installer who is authorized, approved, or licensed by waterproofing manufacturer to install manufacturer's products, who has experience with installations of similar complexity and scope.

.2 Obtain primary waterproofing materials from single manufacturer and/or ensure materials ordered and supplied are compatible with one another.

.3 Compatibility between components of waterproofing system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

.4 Mock-ups

.1 Provide required Sample Installation in accordance with Section 01 45 00 – Quality Control.

.2 Apply waterproofing to 10 m^2 area of wall to demonstrate surface preparation, crack and joint treatment, corner treatment, thickness, texture, and execution quality.

.3 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

1.6 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 Store adhesives, primers and membrane materials at temperatures of 5° C and above to facilitate handling.

.4 Do not store at temperatures above 32° C for extended periods.

.5 Protect materials during handling and application to prevent damage or contamination.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

1.8 FIELD CONDITIONS

.1 Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer.

.2 Apply waterproofing to dry substrates, when relative humidity is less than 85%, and when surface and ambient temperatures are 3°C above dew point.

.3 Do not apply waterproofing in snow, rain, fog or mist, or when such weather conditions are imminent during application and curing period.

.4 Maintain adequate ventilation during application and curing of waterproofing materials.

1.9 WARRANTY

.1 Submit written warranty, signed by waterproofing manufacturer agreeing to repair or replace waterproofing that does not comply with requirements or that does not remain watertight for a period of two (2 years from Substantial Performance, and as follows:

.1 Warranty is inclusive of all failures except for failures resulting from failure of substrate prepared and treated in accordance with requirements or formation of new joints and cracks in substrate exceeding 1.5 mm in width.

.2 Warranty is inclusive for procedures to gain access to waterproofing membrane including removal and reinstallation of earthwork, protection board, drainage panels, and insulation.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable manufacturers: Subject to compliance with requirements of this Section, products by the following manufacturers are acceptable. However, it is Contractor's responsibility to provide only products compatible with adjacent materials in assembly.

.1 Bakor Inc./Henry Company

.2 Tremco Commercial Sealants and Waterproofing.

.3 W.R. Meadows Inc.

2.2 MATERIALS

.1 Waterproofing Membrane: single-component, polymer-modified, cold-applied, water based liquid waterproofing membrane able to develop bond to substrate under conditions of service and application indicated and with the following properties:

.1 Solids by volume: 60% minimum.

.2 Film thickness: 120 mils wet, 60 mils dry.

.3 Total cure time: 16 – 24 hours.

.4 Elongation: 1500% to ASTM D412.

.5 Water vapour transmission: 0.03 perms to ASTM E96, B.

.6 Acceptable materials:

.1 Aqua-Bloc 720-38, Henry/Bakor.

.2 Mel-Rol LM, W.R. Meadows.

.3 TREMproof 250GC, Tremco.

2.3 ACCESSORIES

.1 Primer: Manufacturer's standard, factory-formulated polyurethane or epoxy primer.

.2 Reinforcing Sheet: fibreglass mesh or polyester fabric material designed for and compatible with membrane bitumen as required by waterproofing membrane manufacturer.

.3 Flashing and Transition Membrane: Nominal 1.5 mm, manufacturer's standard non-staining premanufactured elastomeric membrane and adhesive.

.4 Joint Sealant: Multi-component polyurethane sealant, compatible with waterproofing; and as recommended by manufacturer for substrate and joint conditions.

.5 Adhesive for overlay board and insulation: Water-based rubberised liquid coating as recommended by manufacturer.

.6 Below Grade Insulation: refer to Section 07 21 13.

.7 Drainage board: high-strength drainage panel consisting of polypropylene core and fabric for installation over waterproof membranes with the following characteristics:

.1 Thickness: 10 mm

.2 Compressive strength: 550 kPa

.3 Flow rate: 223 L/min/m.

.4 Acceptable materials:

.1 DB 6200, Henry/Bakor.

.2 Delta-Drain 6200, Cosella-Dorken.

.3 TREMDrain 1000 (with polymeric film), Tremco.

.8 Provide drainage board accessories as required for complete installation as recommended by drainage board manufacture.

Part 3 Execution

3.1 EXAMINATION AND PREPARATION OF SURFACES

.1 Do not proceed with work until conditions are in accordance with manufacturers instructions.

.2 Ensure surfaces are smooth, dry, clean and free of ice and debris as per manufacturer's recommendations.

.3 Verify the compatibility of membrane components with curing compounds, coatings, or other materials which are already installed on the surfaces to be treated.

.4 Mask off adjoining surfaces not receiving waterproofing to protect other materials from spillage or overspray.

.5 Ensure concrete is smooth and free from voids and honeycombing prior to application of waterproofing membrane. Where voids, cracks, holes and other damages to surfaces exist, repair prior to application of waterproofing membrane.

3.2 PREPARATION AT TERMINATIONS AND PENETRATIONS

.1 Prepare vertical and horizontal surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, and sleeves in accordance with manufacturer's written instructions.

.2 Prime substrate in accordance with waterproofing manufacturer's written instructions.

.3 Apply double thickness of waterproofing and embed joint reinforcing strip in preparation coat.

.4 Provide sealant cants around penetrations and at inside corners of deck-to-wall butt joints.

3.3 JOINT AND CRACK TREATMENT

.1 Prepare, treat, rout, and fill joints and cracks in substrate in accordance with manufacturer's written instructions.

.2 Remove dust and dirt from joints and cracks before coating surfaces.

.3 Apply bond breaker between sealant and preparation strip.

.4 Prime substrate and apply a single thickness of preparation strip extending minimum 75 mm along each side of joint.

.5 Apply double thickness of waterproofing and embed joint reinforcing strip in preparation coat.

.6 Install sheet flashing and bond to deck and wall substrates where indicated or as required by waterproofing manufacturer's written instructions; extend sheet flashings onto perpendicular surfaces and other work penetrating substrate.

3.4 WATERPROOFING MEMBRANE INSTALLATION

.1 Apply waterproofing in accordance manufacturer's written instructions after concrete has cured to acceptable moisture levels and vapour emissions, and not less than 7-14 days after concrete forms are removed as recommended by membrane manufacturer.

.2 Apply primer over prepared substrate in accordance with manufacturer's written instructions.

.3 Mix materials and apply waterproofing by spray, roller, notched squeegee, trowel, or other application method suitable to spatial orientation of substrate.

.4 Apply membrane in sufficient coats to obtain seamless installation free from trapped gasses or air pockets to an average dry film thickness of 1.5 mm, with no less than 1.3 mm dry film thickness at any point of the installation.

.5 Verify wet film thickness of waterproofing every 10 m^2.

3.5 PROTECTION BOARD INSTALLATION

.1 Ensure membrane is undamaged before application of protection board.

.2 Install protection board over waterproofing membrane to prevent damage from materials used in backfilling.

.3 Allow waterproofing to completely cure prior to applying protection board.

.4 Apply protection board adhesive in 12 mm wide strips spaced at 450 mm o.c. and immediately embed protection board. Press into adhesive to ensure full contact.

.5 Do not backfill until adhesive has cure dried.

3.6 DRAINAGE BOARD INSTALLATION

.1 Allow waterproofing to completely cure prior to applying drainage board.

.2 Install drainage material in accordance with manufacturers written instructions.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 35 00 – Delegated Design Submittals

.2 Section 06 10 00 – Rough Carpentry

.3 Section 07 21 13 – Board Insulation

.4 Section 07 42 13 – Preformed Metal Siding

.5 Section 07 62 00 – Sheet Metal Flashing and Trim

.6 Section 07 92 00 - Sealants

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM B209 Standard Specification for Aluminum Sheet and Plate.

.2 ASTM E1680 Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.

.3 ASTM E1646 Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference

.4 ASTM E1592 Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.

.2 Canadian Standards Association (CSA International)

.1 CSA-S136-12 Package North American Specification for the Design of Cold-Formed Structural Members Includes Update No. 1 (2014), Update No. 2. (2014), Update No. 3 (2015)

.3 Factory Mutual Global Group

.1 FM 4471, August 1995: Approval Standard for Class 1 Panel Roofs.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.5 National Research Council Canada (NRC)/Institute for Research in Construction (IRC) - Canadian Construction Materials Centre (CCMC)

.1 CCMC-2002, Registry of Product Evaluations.

.6 Roofing Contractor’s Association of British Columbia (RCABC)

.1 Roofing Practices Manual

.2 Roofing Contractors Association of B.C. Guarantee Corp. Guarantee Program.

.7 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)

.1 Architectural Sheet Metal Manual, 7th Edition, 2012.

1.3 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 – Submittals:

.1 Submit WHMIS SDS - Safety Data Sheets in accordance with WHMIS acceptable to Labour Canada, and Health and Welfare Canada.

.2 Submit shop drawings in accordance with Section 01 33 00 – Submittals:

.1 Indicate arrangements of sheets and joints, types and locations of fasteners and special shapes and relationship of panels to structural frame engineered with British Columbia stamp.

.3 Submit samples in accordance with Section 01 33 00 – Submittals:

.1 Submit duplicate 300 x 300mm samples of each sheet metal material.

.4 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence and cleaning procedures.

1.4 QUALITY ASSURANCE

.1 Installer Qualifications:

.1 Installer shall be experienced in the installation of standing seam roof systems.

.2 Installer must be approved by the manufacturer.

.3 Installer shall have completed projects of similar size and scope.

.2 Manufacturer Qualifications:

.1 Manufacturer shall have experience in commercial and industrial roofing systems.

.2 Manufacturer must have technical services, engineering services, operations, project management personnel permanently based in North America.

1.5 MOCK-UPS

.1 Submit mock-ups in accordance with Section 01 45 00 - Quality Control.

.2 Mock-up will be used:

.1 To judge workmanship, substrate preparation, operation of equipment and material application.

.3 Locate where directed.

.4 Allow 24 hours for inspection of mock-up by Owner before proceeding with sheet metal flashing work.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Materials stored at a project site shall be covered for moisture protection and tilted to shed moisture, as per manufacturer’s recommendations.

.2 Materials stored on site shall be vented to prevent condensation accumulation on the panels.

.3 Store products in manufacturer's unopened packaging until ready for installation.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

1.8 WARRANTY

.1 Manufacturer's Warranty: Standard performance warranty provided by the manufacturer to warrant all panels, flashings, sealants, fasteners, and accessories against defective materials and/or workmanship for a period of up to twenty (20) years.

.2 Provide RCABC Roofstar Warranty Certificate for 10 years as indicated in Roofing Manual.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Manufacturers: Subject to compliance with requirements specified in this Section and as established by the Basis-of-Design Materials, manufacturers offering products that may be incorporated into the Work include the following:

.1 Tata Steel, Kalzip

.2 BEMO USA Inc.

2.2 PERFORMANCE/DESIGN CRITERA

.1 The standing seam roof system shall be designed to safely resist the positive and negative loads as required for the location and type of project designed.

.2 Structural-uniform uplift load capacity of the panel system shall be determined in accordance with the principles of ASTM E1592, "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.

.3 The Factor of Safety on the test results shall be 1.65 for the panel and clip/halter ultimate loads with no increase for wind.

.1 The Factor of Safety for fasteners shall be 3.0 for single fastener in each connection, 2.25 for 2 or more fasteners in each connection and 4.0 in masonry.

.2 Design uplift capacity for condition of gage, span or loading other than those tested may be determined by interpolation of test results.

.3 Deflection shall be I/180 for positive loading.

.4 Water penetration of the panel assembly at 20psf pressure for 15 minutes shall have "no uncontrollable leakage" when tested in accordance with ASTM E1646.

.5 Air infiltration of panel assembly at 20psf pressure shall be no more that 0.02 cfm/sf of panel when tested in accordance with ASTM E1680.

.6 Fasten the roofing panels to the structure through the use of concealed halters/clips which are designed to allow for up to and including a full 3-3/4" of panel movement without impeding the performance of the panel.

2.3 SHEET METAL MATERIALS

.1 Aluminum:

.1 Base Metal Thickness: 0.80 mm.

.2 Surface: as indicated

.3 Factory Finish: Coil coated KYNAR® 500 or HYLAR® 5000 based Polyvinylidene Fluoride (PVDF) or Fluoro Ethylene – Alkyl Vinyl Ether (FEVE) resin in conformance with AAMA 2605.

.4 Profile: to match Kalzip profile as directed 65/400

2.4 VAPOUR BARRIER MEMBRANE

.1 Air and Vapour Barrier and Primer: adhered SBS-modified bituminous membrane for high temperature applications; rubberized asphalt will not flow up to temperatures as high as116°C.

.1 Primer: as recommended by manufacturer

.2 Acceptable materials:

.1 Grace Construction Products, Ice and Water Shield HT

.2 Soprema, Lastobond Shield HT

2.5 INSULATION

.1 Fibrous Mineral Wall Insulation: Unfaced, preformed rigid fibrous mineral slag board insulation in accordance with CAN/ULC S702 and as follows:

.1 Thermal Resistance: RSI 0.75/25 mm minimum.

.2 Combustion Characteristics: non-combustible in accordance with CAN/ULC S114.

.3 Flamespread: 0 in accordance with CAN/ULC S102.

.4 High Density To ASTM C303

.5 Edges: square.

.6 Size: width of girts x 1220 mm x thickness as indicated on Drawings.

.7 Acceptable Materials:

.1 Rockwool Multifix, MB plus.

.2 Polyisocyanurate Insulation: Closed-cell polyisocyanurate foam core laminated to heavy non-asphaltic glass fibre reinforced facers; 25 mm thickness of largest panels practical, having square edges, minimum LTTR RSI 1.04/25 mm; conforming to ULC S704, Type 3, Class 2, to a tolerance not exceeding 3 mm from nominal size in any dimension, and as follows:

.1 Basis-of-Design:

.1 ACFoam III, Atlas Roofing Corporation

.2 E'NRGY 3, Johns Manville

.3 Secureshield GC, Hunter Panel

.4 Sopra-ISO Plus, Soprema

.5 Therm III, IKO

2.6 ACCESSORIES

.1 Provide components required for complete metal roofing system assembly including trim, copings, fasciae, corner units, ridge cap, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items; match material and finish of metal roofing system.

.2 Isolation coating: alkali resistant bituminous paint.

.3 Plastic cement: to CAN/CGSB-37.5.

.4 Concealed Clips:

.1 Fasten standing seam roofing to structure with specially designed and tested clips/halters manufactured exclusively for the roofing system.

.2 Clips/halters must be designed to allow the roofing materials free movement in either direction parallel to the standing leg of the panel.

.3 Absolutely zero wear of the panel will be allowed during the 100,000 cycle clip tests with a 10 lb load at each clip point (using the hook clip). Any clip attachment that causes any direct wear on the panel itself will not be approved or allowed on this project.

.4 Basis of Design:

.1 Kalzip E clip

.5 Thermal Spacers:

.1 Spacing: as indicated on Drawings or as required to suit conditions.

.2 Fasteners: as recommended by manufacturer in length to suit wall construction.

.3 Acceptable Materials:

.1 Kalzip E-Clips

If Z bars are used, they must maintain the effective R value as indicated

.6 Sealant: Asbestos-free sealant, compatible with systems materials, recommended by system manufacturer and as indicated in Section 07 92 00.

.7 Rubber-asphalt sealing compound: to CAN/CGSB-37.29.

.8 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

.9 Fasteners: concealed

.10 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.11 Flashing, Roof Curbs, Gutters and Downspouts, and Trim: Prefinished flashing materials to match roofing materials in accordance with Section 07 62 00

.12 Touch-up paint: as recommended by sheet metal roofing manufacturer.

.13 Snow Guards: continuous type, fabricated of non-corrosive prefinished metal as directed by Departmental Representative. Installed without penetrating metal roofing system, and complete with predrilled holes, clamps, or hooks for anchoring. Basis of Design S - 5

2.7 FABRICATION

.1 Fabricate all components of the system, ready for field installation.

.2 Provide roof sheet and all accessories in longest practicable length to eliminate field lapping of joints.

Part 3 Execution

3.1 EXAMINATION

.1 Examine substrates to ensure proper attachment to framing.

.2 Examine roof deck to verify deck is clean and smooth, free of depressions, waves or projections and within flatness tolerances required by metal roofing system manufacturer

.3 Verify roof opening, curbs, pipes, sleeves, ducts or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

.4 Verify deck is dry and free of snow or ice.

3.2 INSTALLATION

.1 Install in accordance with manufacturer's instructions and approved shop drawings and Delegated Design Requirements.

.2 Do not permit unnecessary walking on the finished roof. All personnel shall wear rubber-soled footwear when installing or walking on a finished roof. If walking on the finished roof is required, walking on the seams is recommended.

.3 All attachments (other than the Engineered fixed points) shall allow for thermal expansion and contraction. Properly align clips to prevent damage from thermal expansion and contraction.

.4 Metal roofing to be installed per approved drawings with fixed points determined by direction of expansion.

.5 Complete seaming of standing seam panel by automatic seaming machine designed to obtain the proper seam dimension and height.

3.3 CLEANING

.1 Remove temporary protective coverings and strippable films, if any, as metal roofing system are installed, unless otherwise indicated in manufacturer's written installation instructions.

.2 Clean finished surfaces as recommended by metal roofing system manufacturer upon completion of metal roofing system installation; maintain in a clean condition during remainder of construction.

.3 Replace metal roofing system components that become damaged or have deteriorated beyond successful repair by finish touch-up or similar minor repair procedures.

.4 Remove all excess materials, debris and equipment at completion.

.5 Clean all panels clean and free of all grime and dirt.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 09 21 16 - Gypsum Board Assemblies

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM E84-18a, Test for Surface Burning Characteristics of Building Materials.

1.3 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

.1 Product Data.

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For caulking materials during application and curing.

.2 For adhesives.

.2 Shop Drawings.

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate, by large scale details, materials, finishes, dimensions, anchorage and assembly.

.3 Samples.

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 300 mm long samples of profiles and colours for corner and door frame.

.4 Manufacturer's Instructions.

.1 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 MATERIALS

.1 Impact Resistant Wall Covering: Extruded rigid plastic to ASTM D1784 and as follows:

- .1 Thickness: 2 mm
- .2 Size: 1220 x 2440 mm
- .3 Height: as indicated on Drawings
- .4 Impact resistance: min. 1.36 kN to ASTM D256
- .5 Flame Spread Index: 25 or less
- .6 Smoke Developed Index: 450 or less.
- .7 Colour: As selected by Consultant from manufacturers full range.
- .8 Basis of Design:
  - .1 Altro Whiterock

2.2 ACCESSORIES

.1 Vinyl welding rod:

- .1 Acceptable Material:

.2 1. Altro weld rod

.3 Provide manufacturers joint strips, start and edge trim, and cut-tile transition strips.

.4 Adhesive: water resistant type as recommended by manufacturer for substrate.

.5 Sealant: Manufacturer's recommended silicone sealant; colour matched to panels.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 PREPARATION

.1 All surfaces must be free from dust and cleaned prior to installation. The working environment must also be dust free. Failure to comply with these conditions will reduce the bond strength between the adhesive and substrate, and may cause the panels to debond.

.2 Apply sealer e.g. PVA primer or similar, to absorbent / porous substrates (particularly plaster finishes and unprimed sheetrock) minimum of 12 hours prior to the installation.

.3 If fitting to door frames, these must be in place prior to installation of panels.

.4 Prior to installation, complete painting which comes in contact with panels, as sealant used at junctions is non-paintable.

.5 Store panels flat and be pre-conditioned a minimum of 24 hours in ambient temperatures similar to the prevailing operational conditions.

.6 Store panels on a level flat surface off the ground (risk of condensation on the panels if stored on damp surfaces). Storage on uneven surfaces could cause the panels to distort prior to installation.

3.3 INSTALLATION

.1 Install panels in accordance with manufacturer's written instructions; maintain a reference copy of installation instructions on site for review by installers and the Consultant.

.2 Position panels leaving a minimum 6 mm gap at ceiling and floor junction; minimum 3 mm gap between each panel and division bar moulding to allow for normal expansion and contraction; minimum 3 mm gap around pipes, electrical fittings, other projections; and pre-drill oversize by 3 mm holes ready for fastenings.

.3 Cut and drill panels using a carbide tipped saw blade or drill bit; or cut with snips as recommended by manufacturer.

.4 Pre-fit each panel before securing in place; leave leading edge of first panel unfastened; trim division bar to accommodate ceiling cove or base moulding:

.5 Use combination of mechanical fasteners and adhesive to ensure flat surface, using compatible adhesives recommended by panel manufacturer prior:

.1 Fasten panel at top and work toward bottom or start at centre and work outward.

.2 After installation of first panel is completed remove excess sealant immediately.

.3 Install second panel into division bar.

.4 Pull panel back to leave a minimum 3 mm clearance.

.5 Check plumb.

.6 Remove excess sealant.

.7 Fasten second panel except for leading edge.

.8 Repeat previous steps until all panels are installed.

.6 Remove excess silicone sealant during installation.

.7 Weld corner seams, wall seams, ceiling, and base junctions; install accessories as installation progresses, leaving a minimum 3 mm clearance for normal expansion and contraction of panels.

.8 Do not commence welding of coverings for a minimum of 24 hours after fitting or until adhesive has completely set.

.9 Cut trims neatly, use only full length except where joins are permitted by Consultant; tightly mitre trims at right angle corners; tightly cut trims at Tee junctions to maintain flush straight fit.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

.3 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1. General

1.1. WORK INCLUDED

.1 Conform to Section 21 05 00.00 – GENERAL INSTRUCTIONS FOR MECHANICAL SECTIONS.

2. Product

2.1. MATERIAL

.1 The BOILER shall be a having a modulating input rating of 110,000 Btu/Hr, an output of 104500 Btu/Hr and shall be operated on Propane Gas. The BOILER shall be capable of following performance:

Turndown	Minimum Input	Maximum Input
10:1	11,100	110,000

.2 Maximum unit dimensions shall be: 19 inches Deep, 18-1/2 inches Width and 33-1/4 inches Height. Maximum operating (wet) unit weight shall be no more than 570 pounds.

.3 The BOILER shall bear the ASME "H" stamp for 160 psi working pressure and shall be National Board listed. The BOILER shall have a fully welded, stainless steel, fire tube heat exchanger. Multiple pressure vessels in a single enclosure are not acceptable. There shall be no banding material, bolts, gaskets or "O" rings in the pressure vessel construction. The heat exchanger shall be designed for a single-pass water flow to limit the water side pressure drop. The complete heat exchanger assembly shall carry a ten (10) year limited warranty.

.4 The heat exchanger shall have a volume of water no less than:

Water Content
3.2 gallons

.5 The BOILER shall be certified and listed by C.S.A. International under the latest edition of the harmonized ANSI Z21.13 test standard for the U.S. and Canada. The BOILER shall comply with the energy efficiency requirements of the latest edition of ASHRAE 90.1 and the minimum efficiency requirements of the latest edition of the AHRI BTS-2000 Standard as defined by the Department of Energy in 10 CFR Part 431. The BOILER shall operate at a minimum of 97% Combustion and Thermal Efficiency at full fire as registered with AHRI. The BOILER shall be certified for indoor installation.

.6 The BOILER shall be constructed with a heavy gauge steel jacket assembly, primed and pre-painted on both sides. The combustion chamber shall be sealed and completely enclosed, independent of the outer jacket assembly, so that integrity of the outer jacket does not affect a proper seal. A burner/flame observation port shall be provided for

observing the burner flame and combustion chamber. The burner shall be a premix design constructed of high temperature stainless steel with a woven Fecralloy outer covering to provide smooth operation at all modulating firing rates. The BOILER shall be supplied with a negative pressure regulation gas valve and be equipped with a pulse width modulation blower system to precisely control the fuel/air mixture to the burner. The BOILER shall operate in a safe condition with gas supply pressures as low as 4 inches of water column. The burner flame shall be ignited by direct spark ignition with flame monitoring via a flame sensor.

.7 The BOILER shall utilize a 24 VAC control circuit and components. The control system shall have a factory installed display for boiler set-up, boiler status, and boiler diagnostics. All components shall be easily accessed and serviceable from the front and top of the jacket. The BOILER shall be equipped with a temperature/pressure gauge; high limit temperature control with manual reset; ASME certified pressure relief valve set for 50 psi (standard); outlet water temperature sensor with a dual thermistor to verify accuracy; system supply water temperature sensor; outdoor air sensor, flue temperature sensor with dual thermistor to verify accuracy; low water cut off with manual reset, blocked drain switch and a condensate trap for the heat exchanger condensate drain.

.8 The BOILER shall feature the “SMART SYSTEM™” control which is standard and factory installed with 128 x 128 resolution display, password security, outdoor air reset, pump delay with freeze protection, pump exercise, ramp delay featuring six steps, domestic hot water prioritization with limiting capabilities, USB drive for simple uploading of parameters and a PC port connection for connection to a local computer for programming and trending. A secondary operating control that is field mounted outside or inside the appliance is not acceptable. The BOILER shall have alarm contacts for any failure, runtime contacts and data logging of runtime at given modulation rates, ignition attempts and ignition failures. The BOILER shall have a built-in “Cascade” with leader redundancy to sequence and rotate while maintaining modulation of up to eight boilers of different Btu inputs without utilization of an external controller. The internal “Cascade” function shall be capable of lead-lag, efficiency optimization, front-end loading, and rotation of lead boiler every 24 hours. The BOILER shall be capable of remote communication via optional CON-X-US™ Remote Connectivity with the capability of historical trending and sending text message or email alerts to notify the caretaker of a boiler alarm and remote programming of onboard boiler control. The BOILER shall be capable of controlling an isolation valve (offered by manufacturer) during heating operation and rotation of open valves in standby operation for full flow applications. The control must have optional capability to communicate via Modbus protocol with a minimum of 46 readable points. The BOILER shall have a gateway device which will allow integration with BacNet protocols.

.9 The “SMART SYSTEM™” control shall increase fan speed to boost flame signal when a weak flame signal is detected during normal operation. A 0-10 VDC output signal shall control a variable speed boiler pump (offered by manufacturer) to keep a fixed Delta T across the boiler regardless of the modulation rate. The BOILER shall have the capability to receive a 0-10 VDC input signal from a variable speed system pump to anticipate changes in system heat load in order to prevent flow related issues such as erratic

temperature cycling.

.10 The BOILER shall be equipped with two terminal strips for electrical connection. A low voltage connection board with 46 connection points for safety and operating controls, i.e., Alarm Contacts, Runtime Contacts, Louver Proving Switch, Tank Thermostat, Domestic Hot Water Building Recirculation Pump Contacts, Domestic Hot Water Building Recirculation Temperature Sensor Contacts, Remote Enable/Disable, System Supply Temperature Sensor, Outdoor Temperature Sensor, Tank Temperature Sensor, Modbus Building Management System Signal and Cascade Control Circuit. A high voltage terminal strip shall be provided for Supply voltage. Supply voltage shall be 120 volt / 60 hertz / single phase on all models. The high voltage terminal strip plus integral relays are provided for independent pump control of the System pump, the Boiler pump and the Domestic Hot Water pump.

.11 The BOILER shall operate at altitudes up to 4,500 feet above sea level without additional parts or adjustments. The BOILER shall be certified for operation at elevations of 4,500 feet, and above, by a 3rd party organization.

.12 The BOILER shall be suitable for use with polypropylene glycol up to a 50% concentration. The derate associated with the glycol will vary per glycol manufacturer.

3. Execution

3.1. INSTALLATION

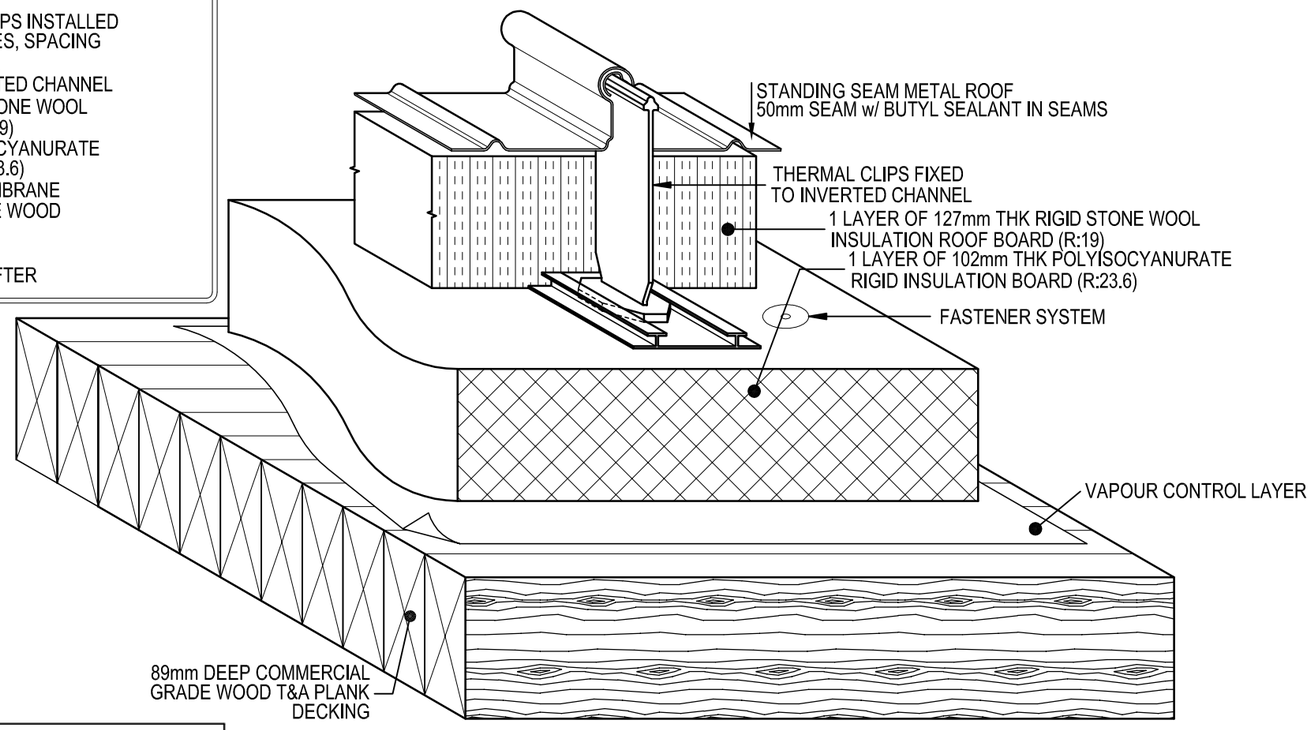
.1 Install in accordance with manufacturer's current installation instructions.

.2 The BOILER shall be installed and vented with a Direct Vent system with vertical roof top termination of both the exhaust vent and combustion air. The flue shall be Category IV approved material constructed of PVC, CPVC, Polypropylene or Stainless Steel. A separate pipe shall supply combustion air directly to the boiler from the outside. The boiler's total combined air intake length shall not exceed 100 equivalent feet. The boiler's total combined exhaust venting length shall not exceed 100 equivalent feet. The air inlet must terminate on the rooftop with the exhaust.

.3 Boiler control shall be installed and setup by manufacturer certified installer.

R1

STANDING SEAM METAL ROOF PANEL (24ga) 0.61mm THK
w/ GALVALUME COATING
NON-PENETRATING THERMAL CLIPS INSTALLED
ON NEOPRENE BEARING PLATES, SPACING
AS DETERMINED BY ENGINEER
THERMAL CLIPS FIXED TO INVERTED CHANNEL
1 LAYER OF 127mm THK RIGID STONE WOOL
INSULATION ROOF BOARD (R:19)
1 LAYER OF 102mm THK POLYISOCYANURATE
RIGID INSULATION BOARD (R:23.6)
VAPOUR CONTROL BARRIER MEMBRANE
89mm DEEP COMMERCIAL GRADE WOOD
T&A PLANK DECKING
15.5mm DOUGLAS FIR PLYWOOD
203mm x 305mm SOLID WOOD RAFTER



1 / ASK-1 R1 ASSEMBLY
SCALE 1 : 5

ASSEMBLIES

ROOF

	R1		HYBRID ROOF SYSTEM: STANDING SEAM METAL ROOF PANEL (24ga) 0.61mm THK WITH GALVALUME COATING NON-PENETRATING THERMAL CLIPS INSTALLED ON NEOPRENE BEARING PLATES, SPACING AS DETERMINED BY ENGINEER 1 LAYER OF 140mm THK HIGH DENSITY MINERAL FIBRE INSULATION BOARD (R-VALUE: 23) 1 LAYER OF 102mm THK RIGID INSULATION BOARD (R-VALUE=23.6) VAPOUR CONTROL BARRIER MEMBRANE 89mm DEEP COMMERCIAL GRADE WOOD T&A PLANK DECKING 15.5mm DOUGLAS FIR PLYWOOD 203mm x 305mm SOLID WOOD RAFTER AS PER STRUCTURAL

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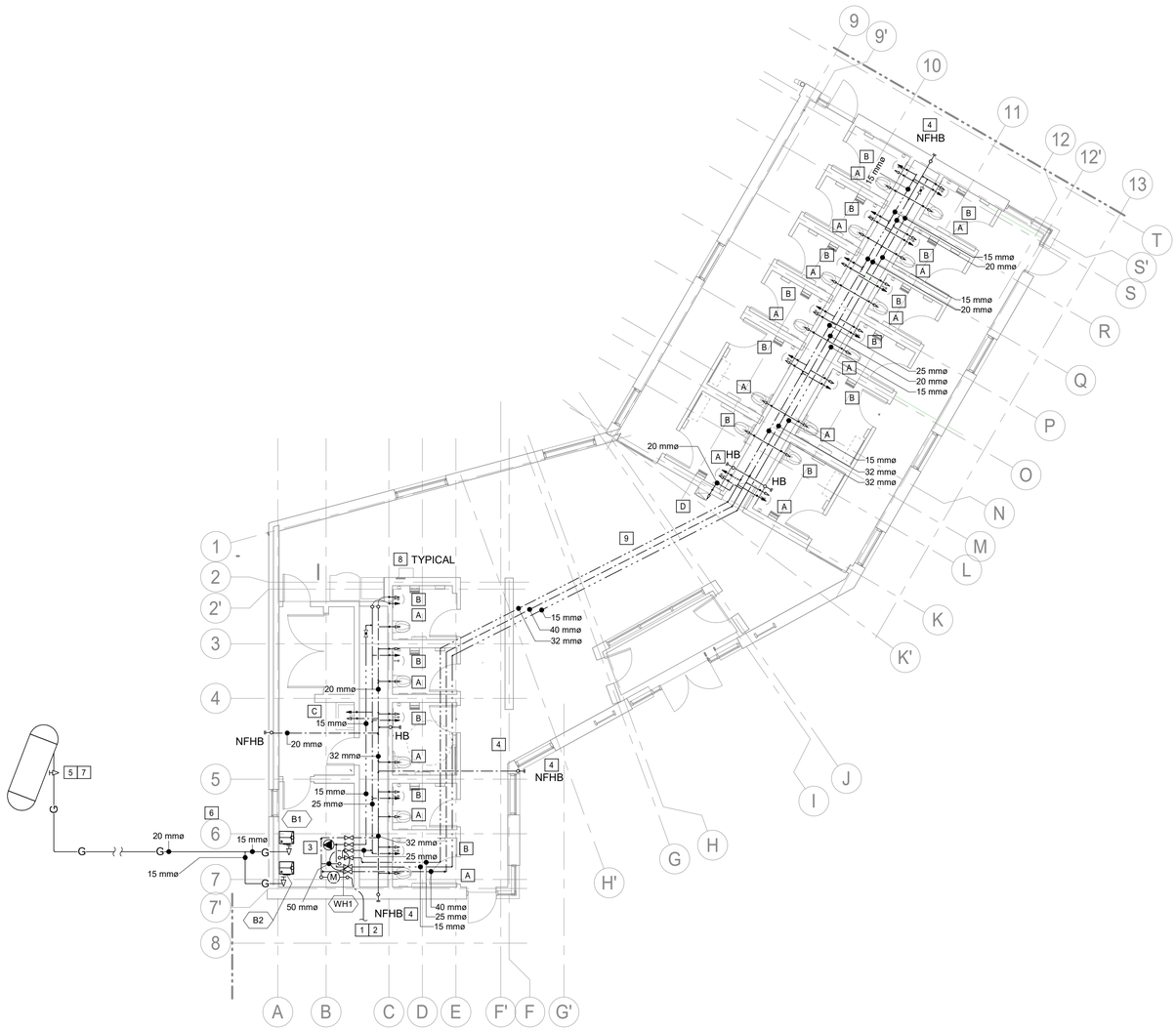
Drawn: PD	Project: ROGERS PASS WASHROOM FACILITY AND DAY USE AREA	Project: 17-4083
Checked: LH		Revision
Scale: 1:5	Sheet Title: R1 ASSEMBLY	Sheet No.: ASK-1
Date: 06.06.2019		

Plotted: February 06, 2019 9:03 MST Filename: P:\2017\17-4083 PCA - Rogers Pass Washroom Facility\Drawings\10 ASK\ASK-1.dwg



GENERAL NOTES

1. BIDDING CONTRACTORS ARE TO REVIEW ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, CIVIL AND STRUCTURAL DRAWINGS PRIOR TO SUBMITTING TENDER PRICE.
2. LOCATIONS OF EXISTING SERVICES ARE APPROXIMATE, VERIFY ON SITE.
3. CONTRACTOR TO ENGAGE STRUCTURAL ENGINEER TO VERIFY ALL SEISMIC REQUIREMENTS FOR PIPE AND DUCT HANGING METHODS.
4. WHERE DISCREPANCIES ARE FOUND, CONTACT ENGINEER IN WRITING PRIOR TO SUBMITTING PRICE.
5. PLUMBING LINES ETC. ARE SHOWN DIAGRAMMATICALLY, FINAL LOCATIONS, ROUTING ETC. TO BE CO-ORDINATED ON SITE.
6. PROVIDE TRAP SEALER FOR ALL FLOOR AND HUB DRAINS.
7. EXTEND SANITARY VENT LINE FROM FIXTURES AS PER NATIONAL AND LOCAL PLUMBING CODES.
8. ALL FLOOR MOUNTED MECHANICAL EQUIPMENT TO BE MOUNTED ON 100mm HOUSE KEEPING PAD.
9. CONTRACTOR TO PROVIDE LAPTOP IN MECHANICAL ROOF TO FACILITATE COMMISSIONING/ MAINTENANCE.
10. CONTRACTOR TO ENSURE ALL MECHANICAL EQUIPMENT SHALL BE RATED TO PERFORM AT HIGH ELEVATION.

PLUMBING NOTES

1. APPROXIMATE LOCATION OF INCOMING 100mmø DCW LINE. CONTRACTOR TO CONFIRM EXACT LOCATION ON SITE.
2. EXTEND 100mmø PVC PIPE INSIDE THE BUILDING AND TERMINATE ABOVE THE FLOOR IN MECHANICAL ROOM. PROVIDE APPROVED CONVERSION FROM PVC TO PEX AND RUN JOINLESS PEX TO WATER METER IN MECHANICAL ROOM.
3. EXTEND 40mmø CW, 25mmø HW AND 15mmø RECIRC LINE TO SOUTH WING WASHROOM AND EXTEND 40mmø CW, 32mmø HW AND 15mmø RECIRC LINE TO NORTH WING WASHROOM.
4. EXTEND 20mmø CW TO NON-FREEZE HOSE BIBB. NFHB TO BE 914mm A.F.F. COORDINATE WITH ARCHITECT. NON-FREEZE HOSE BIBB TO BE JAY-R SMITH 55090QT OR EQUIVALENT.
5. APPROXIMATE LOCATION OF 500 GALLON PROPANE GAS TANK C/W REGULATOR TO BE SUPPLIED AND INSTALLED BY CONTRACTOR AS PART OF THIS CONTRACT. ENSURE TANK HAS 10FT CLEARANCE FROM BUILDING AND PROPERTY LINE. CONTRACTOR TO CONFIRM EXACT REQUIRED EQUIPMENT WITH THE SUPPLIER BEFORE SUBMITTING BID. ENSURE TANK IS RATED FOR HIGH ALTITUDE OPERATION AS PER CSA B149.2-15.
6. EXTEND 20mmø GAS LINE FROM PROPANE TANK TO BOILERS C/W GAS COCK. CONFIRM PIPE SIZE BASED ON THE EXACT LENGHT OF THE GAS PIPE ON SITE. GAS PIPE FROM PROPANE TANK TO THE BUILDING TO BE BURIED UNDERGROUND. CONFIRM UNDERGROUND DEPTH OF THE PIPE AND DETAIL WITH SUPPLIER.
7. PROPANE TANK TO BE LOCATED 38FT (11582mm) FROM THE BUILDING. CONTRACTOR TO COORDINATE WITH LANDSCAPING FOR EXACT LOCATION OF THE TANK ON SITE.
8. PROVIDE ZURN MODEL 1260XL, WADE 4481 OR APPROVED EQUIVALENT WATER HAMMER ARRESTOR AT CW AND HW BRANCHES SERVING THE FIXTURES.
9. COORDINATE WITH PCA FOR PIPE INSULATION COLOR WHERE THE PIPE IS EXPOSED TO PUBLIC AREA.

NORTH

01
M2

FLOOR PLAN - PLUMBING LAYOUT

1 : 100

PWGSC - A1 - 841 X 594

0 10 20 30 40 50 60 70 80 90 100mm

Park Canada
Government Services Canada

Park Canada
Services gouvernementaux Canada

PROJECT DELIVERY SERVICES WEST
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Revision / Revision	Description / Description	Date / Date
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7	ISSUED FOR TENDER	18-12-13
6	99% REVIEW	18-10-26
5	99% REVIEW	18-10-19
4	99% REVIEW	18-10-03
3	90% REVIEW	18 08 17
2	60% REVIEW	18 06 08
1	30% REVIEW	18 03 23

Client / client

Parks Canada Parcs Canada

Project title/Titre du projet

ROGERS PASS WASHROOM FACILITY AND DAY USE AREA

Approved by/Approuve par
MB

Designed by/Concept par
DL

Drawn by/Dessine par
DL

Project Manager/Administrateur de Projets

Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie

Client / client
Parks Canada

Drawing title / Titre du dessin

FLOOR PLAN - PLUMBING LAYOUT

Project No. / No. du project	Sheet / Feuille	Revision no. / La Révision no.
CAI 752	M2	

01 E1 FLOOR PLAN - LIGHTING

1 : 75

NORTH

GENERAL NOTES

1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. WHERE DISCREPANCIES ARE FOUND, THEY SHOULD BE BROUGHT FORWARD PRIOR TO TENDER CLOSE.

2. CONDUCTOR SIZES INDICATED IS MINIMUM REQUIRED. INCREASE CONDUCTOR SIZE (AND CONDUIT SIZE WHERE APPLICABLE) TO ACCOMMODATE VOLTAGE DROP PER CEC REQUIREMENTS.

3. ASHRAE 2010, BC BUILDING CODE 2012, CEC 2015, NATIONAL BUILDING CODE AND ALL APPLICABLE CODES APPLY.

NOTES

1. PROVIDE MINIMUM #10 DC WIRING FOR ALL EMERGENCY REMOTE HEADS. INCREASE CONDUCTOR SIZE AS REQUIRED TO NEGATE VOLTAGE DROP AS PER THE C.E.C.
2. PROVIDE REQUIRED PHOTOCELL MOUNTED ON WALL FOR EXTERIOR LIGHTING CONTROL. REFER TO EXTERIOR LIGHTING CONTROL SCHEMATIC DETAIL 02/E4.
3. EXTERIOR LIGHTING TO BE CONTROLLED BY PHOTOCELL-TIMECLOCK. REFER TO EXTERIOR LIGHTING CONTROL SCHEMATIC DETAIL 02/E4. LUMINAIRES TO BE MOUNTED AT 8FT ABOVE GROUND ON STRUCTURA COLUMNS.
4. WALL MOUNT MANUAL ON/AUTO OFF OCCUPANCY SENSOR TO CONTROL LUMINAIRES AS INDICATED. SET TIMER TO 10 MIN DELAY.
5. PROVIDE INTERIOR TIME CLOCK TO CONTROL ALL LIGHTING. INTERLOCK ALL LUMINAIRES WITH INTERIOR TIMECLOCK. SEE DETAIL 03/E4.

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Canada

PROJECT DELIVERY SERVICES WEST
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4	99% REVIEW	18-10-03
3	90% REVIEW	18 08 17
2	60% REVIEW	18 06 08
1	30% REVIEW	18 03 23

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Project title/Titre du projet

ROGERS PASS WASHROOM FACILITY AND DAY USE AREA

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DK

Drawn by/Dessine par
FT

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Architectural and Engineering Resources Manager/
Ressources Architectural et de Directeur d'Ingénierie

Client / client
Parks Canada

Drawing title / Titre du dessin

FLOOR PLAN - LIGHTING

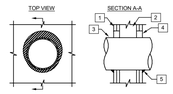
Project No. / No. du project	Sheet / Feuille	Revision no. / La Révision no.
CAI 752	E1	

PWGSC - A1 - 841 X 594

0 10 20 30 40 50 60 70 80 90 100mm

UL/cUL SYSTEM NO. W-L-1054
CAN/ULC S115

METAL PIPE THROUGH 1 HR. OR 2 HR.
GYPSUM WALL ASSEMBLY
FH-RATING = 1HR OR 2 HR, FTH-RATING = 0 HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ.FT.
L-RATING AT 400°F = LESS THAN 1 CFM/SQ.FT.



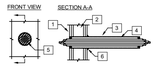
1. GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NORMAL 2"X4" LUMBER SPACED 16INCH OC. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE AND SPACED MAX 24INCH OC.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. NOM 30 INCH DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. NOM 30 INCH DIAMETER CAST OR DUCTILE IRON PIPE.
   C. 6 INCH NOMINAL DIAMETER COPPER PIPE.
   D. 6 INCH NOMINAL DIAMETER COPPER TUBING.
   E. 4 INCH NOMINAL DIAMETER EMT.
4. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT:
   A. MINIMUM 5/8" FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" FOR A 2-HR. FIRE-RATING.
5. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE FIRESTOP SEALANT AT POINT OF CONTACT OF BOTH SURFACE AND WALL.

NOTES:
1. MAXIMUM DIAMETER OF OPENING.
   A. 32-1/4" FOR STEEL STUD WALLS.
   B. 14-1/2" FOR WOOD STUD WALLS.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/2".

DETAIL A

UL/cUL SYSTEM NO. W-L-3065

CABLE BUNDLE THROUGH 1 HR. OR 2 HR. GYPSUM WALL ASSEMBLY
F-RATING = 1 HR OR 2 HR, T-RATING = 0 HR AND 3/4 HR.



1. GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NORMAL 2"X4" LUMBER SPACED 16INCH OC. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE AND SPACED MAX 24INCH OC.
3. OPTIONAL. MAX. 4" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 40 OR HEAVIER) (SEE NOTE NO. 4 BELOW).
4. CABLE BUNDLE TO CONSIST OF ANY COMBINATION OD THE FOLLOWING:
   A. MAXIMUM 7/C NO. 12 AWG CABLE.
   B. MAXIMUM 25 PAIR NO. 24 AWG TELEPHONE CABLE.
   C. RG/U COAXIAL CABLE WITH PE INSULATION
   D. MAXIMUM 3/C NO. 8 AWG METAL-CLAD CABLE.
   E. MAXIMUM 5/8" DIAMETER FIBRE OPTIC CABLE.
5. MINIMUM 5/8" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP CABLE.
6. SEE NOTE 4 BELOW.

NOTES:
1. MAXIMUM SIZE OF OPENING = 4-1/2".
2. ANNULAR SPACE = MINIMUM 1/4", MAXIMUM 3/4".
3. CABLES TO FILL MAXIMUM 45% OF CROSS-SECTIONAL AREA OF OPENING.
4. STEEL SLEEVE MAY BE FLUSH WITH WALL SURFACE OR EXTEND UP TO 18" BEYOND WALL SURFACE. WHEN SLEEVE IS EXTENDED BEYOND ONE OR BOTH SIDES OF WALL, APPLY MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT TO WALL/SLEEVE INTERFACE.

DETAIL B

FIRE STOPPING NOTES:

A. DETAILS SHOWN ARE TYPICAL DETAILS. IF FIELD CONDITIONS DO NOT MATCH REQUIREMENTS OF TYPICAL DETAILS, APPROVED ALTERNATE DETAILS SHALL BE UTILIZED. FIELD CONDITIONS AND DIMENSIONS NEED TO BE VERIFIED FOR COMPLIANCE WITH THE DETAILS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   * MINIMUM AND MAXIMUM THICKNESS OF FIRE-RATED CONSTRUCTION.
   * TYPE AND THICKNESS OF FIRE-RATED CONSTRUCTION. THE MINIMUM ASSEMBLY RATING OS THE FIRESTOP SHALL MEET OR EXCEED THE HIGHEST RATING OF THE ADJACENT CONSTRUCTION.

B. IF ALTERNATE DETAILS MATCHING THE FIELD CONDITIONS ARE NOT AVAILABLE, MANUFACTURER'S ENGINEERING JUDGEMENT DRAWINGS ARE ACCEPTABLE. DRAWINGS SHALL FOLLOW THE INTERNATIONAL FIRESTOP COUNCIL (IFC) GUIDELINES FOR EVALUATING FIRESTOP SYSTEMS ENGINEERING JUDGEMENTS.

C. REFERENCES:
   * 200 ULC FIRE RESISTANCE DIRECTORY- VOLUME III OR UL PRODUCTS CERTIFIED FOR CANADA (CUL) DIRECTORY
   * CANADIAN ELECTRICAL CODE
   * CAN/ULC S115
   * ALL GOVERNING BUILDING CODES

D. FIRESTOP SYSTEM INSTALLATIONS MUST MEET REQUIREMENTS OF ULC OR CUL (ULC-11/UL TESTED ASSEMBLIES THAT PROVIDE THE REQUIRED ASSEMBLY RATING.

E. ALL RATED ASSEMBLIES SHALL BE PROMINENTLY LABELED WITH THE FOLLOWING INFORMATION:
   * ATTENTION: FIRE-RATED ASSEMBLY
   * ULC OR CUL #
   * PRODUCT(S) USED
   * HOURLY RATING (ASSEMBLY RATING)
   * INSTALLATION DATE

F. ELECTRICAL OUTLET BOXES ARE NOT PERMITTED TO BE INSTALLED BACK-TO-BACK IN A FIRE SEPARATION. THEY MUST BE INSTALLED IN A STAGGERED POSITION, IN ACCORDANCE WITH 3.1.9.4. PENETRATION BY OUTLET BOXES OF THE 2015 NBC.
"3.1.9.4.3) IN ADDITION TO THE REQUIREMENTS OF SENTENCE (2), OUTLET BOXES ON OPPOSITE SIDES OF A VERTICAL FIRE SEPARATION HAVING A FIRE-RESISTANCE RATING SHALL BE SEPARATED BY
A) A HORIZONTAL DISTANCE OF NOT LESS THAN 600 MM, OR
B) A FIRE BLOCK CONFORMING TO ARTICLE 3.1.11.2."

CONTRACTOR TO PROVIDE APPROPRIATE FIRE STOPPING TO ALL ELECTRICAL/COMMUNICATION/SECURITY/ETC. WALL PENETRATIONS BETWEEN FIRE RATED ZONES. UTILIZE FIRE STOPPING THAT ARE APPROVED BY CSA AND GOVERNING BUILDING CODES. REFER TO ARCHITECTURE DRAWINGS FOR FIRE RATED ZONES AND FIRE RATINGS

1
E3
FIRE STOPPING DETAIL
NTS

MECHANICAL EQUIPMENT SCHEDULE

TAGS	DESCRIPTION	LOAD	O/C	CONDUIT/WIRING	NOTES
B1-B2	BOILER	120V, 1PH, 2W, 500W	1P-15A	21mmC-2#12 RW90XL CU	SEE MECHANICAL FOR DETAILS.
HRV1-HRV2	HEAT RECOVERY VENTILATION	120V, 1PH, 2W, 5.7A, 640W	1P-15A	21mmC-2#12 RW90XL CU	SEE MECHANICAL FOR DETAILS.
EDH1-EDH2	DUCT HEATER	208V, 3PH, 4W, 20KW	3P-70A	35mmC-4#4 RW90XL CU	SEE MECHANICAL FOR DETAILS. SUPPLIED BY MECHANICAL AND INSTALLED BY ELECTRICAL CONTRACTOR.
P1-P2	PUMP	120V, 1PH, 2W, 102W	1P-15A	21mmC-3#12 RW90XL CU	SEE MECHANICAL FOR DETAILS.
P3-P4	PUMP	120V, 1PH, 2W, 160W	1P-15A	21mmC-3#12 RW90XL CU	SEE MECHANICAL FOR DETAILS.
P5-P6	PUMP	120V, 1PH, 2W, 152W	1P-15A	21mmC-3#12 RW90XL CU	SEE MECHANICAL FOR DETAILS.
P7	PUMP	120V, 1PH, 2W, 85W	1P-15A	21mmC-3#12 RW90XL CU	SEE MECHANICAL FOR DETAILS.

ELECTRICAL EQUIPMENT SCHEDULE

TAGS	DESCRIPTION	LOAD	O/C	CONDUIT/WIRING	NOTES
FF1	CEILING MOUNT FORCE FLOW HEATER	208V, 1PH, 3W, 4000W	2P-30A	21mmC-3#10 RW90XL CU	OUELETTE MODEL NO: OACP4008 C/W INTEGRAL MOUNTED THERMOSTAT.
FF2	FORCE FLOW HEATER	208V, 1PH, 3W, 2000A	2P-15A	21mmC-3#12 RW90XL CU	OUELETTE MODEL NO: OAWH2008 C/W INTEGRAL MOUNTED THERMOSTAT.
FF3	FORCE FLOW HEATER	208V, 1PH, 3W, 4000W	2P-30A	21mmC-3#10 RW90XL CU	OUELETTE MODEL NO: OAWH4008 C/W INTEGRAL MOUNTED THERMOSTAT.

ASHRAE INTERIOR LIGHT POWER DENSITY CALCULATION

SPACE BY SPACE METHOD				
SPACE	ASHRAE 2010 LPD	SQUARE FEET	WATTAGE	ACTUAL LPD
RESTROOM	0.98W/SQFT	979	918	0.93W/SQFT
ELECTRICAL/MECHANICAL ROOM	0.42W/SQFT	119	45	0.38W/SQFT
CORRIDOR	0.66W/SQFT	914	48	0.05W/SQFT
LOBBY	0.90W/SQFT	947	64	0.06W/SQFT

CALCULATIONS FOR LIGHTING POWER ALLOWANCES FOR GENERAL EXTERIOR BUILDINGS

EXTERIOR APPLICATION	ZONE	X: BASIC SITE ALLOWANCES	A: NUMBER OF LUMINAIRES	B: TOTAL WATTS PER LUMINAIRE	C = B X A: CONNECTED EXTERIOR LIGHTING POWER	D: AREA	E: LIGHTING POWER ALLOWANCE FOR EXTERIOR APPLICATION	F = D X E: GENERAL EXTERIOR LIGHTING POWER ALLOWANCE	G = F + X (IF NEEDED): TOTAL EXTERIOR LIGHTING POWER ALLOWANCE
UNCOVERED PARKING AREAS	3	750 W	8	60W	480	1259 SQFT	0.1 W/SQFT	126	876
IF CONNECTED EXTERIOR LIGHTING POWER ≤ TOTAL EXTERIOR LIGHTING POWER ALLOWANCE THEN EXTERIOR LIGHTING POWER IS COMPLIANT WITH THE PRESCRIPTIVE PATH									

Branch Panel: A

Location:
Supply From:
Mounting: Recessed
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating:
Mains Type:
Mains Rating: 400 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	EXIT LIGHTS/BATTERY PACK/NIGHT LIGHT	20 A	1	317 VA	180 VA					1	15 A	PANEL RECEPTACLE	2
3	LIGHTING	20 A	1			718 VA	180 VA			1	15 A	TELEPHONE BOARD RECEPTACLE	4
5	LIGHTING	20 A	1					840 VA	180 VA	1	15 A	PHONE RECEPTACLE	6
7	LIGHTING	20 A	1	720 VA	540 VA					1	15 A	WEATHERPROOF EXTERIOR RECEPTACLE	8
9	PHONE RECEPTACLE	15 A	1			180 VA	540 VA			1	15 A	WEATHERPROOF EXTERIOR RECEPTACLE	10
11	TV RECEPTACLE	15 A	1					360 VA	720 VA	1	15 A	CONVENIENCE RECEPTACLE	12
13	CONVENIENCE RECEPTACLE	15 A	1	720 VA	540 VA					1	15 A	CONVENIENCE RECEPTACLE	14
15	CONVENIENCE RECEPTACLE	15 A	1			720 VA	360 VA			1	15 A	RECEPTACLES	16
17	LIGHTING CONTROLLER	20 A	1					400 VA	180 VA	1	15 A	VENDING MACHINE RECEPTACLE	18
19	CONVENIENCE RECEPTACLE	15 A	1	720 VA	180 VA					1	15 A	VENDING MACHINE RECEPTACLE	20
21	RECEPTACLES	15 A	1			540 VA	500 VA			1	20 A	B1	22
23	HRV1	20 A	1					640 VA	500 VA	1	20 A	B2	24
25	HRV2	20 A	1	640 VA	480 VA					1	20 A	EXTERIOR LIGHTING	26
27	DOOR OPERATOR	20 A	1			0 VA	50 VA			1	20 A	HAND DRYER	28
29	DOOR OPERATOR	20 A	1					0 VA	400 VA	1	20 A	JUNCTION BOX FOR SITE SIGNAGE	30
31	DOOR OPERATOR	20 A	1	0 VA	180 VA					1	15 A	RECEPTACLE	32
33						6667...	6667...						34
35	EDH1	70 A	3					6667...	6667...	3	70 A	EDH2	36
37				6667...	6667...								38
39	SITE POLE LIGHTING	20 A	1			500 VA	102 VA			1	15 A	P1 - PUMP	40
41	P2 - PUMP	15 A	1					102 VA	160 VA	1	15 A	P3 - PUMP	42
43	P4 - PUMP	15 A	1	160 VA	152 VA					1	15 A	P5 - PUMP	44
45	P6 - PUMP	15 A	1			152 VA	85 VA			1	15 A	P7 - PUMP	46
47	FF1	30 A	2					2000...	1000...	2	15 A	FF2	48
49				2000...	1000...								50
51	HAND DRYER	20 A	1			1200...	1200...			1	20 A	HAND DRYER	52
53	HAND DRYER	20 A	1					1200...	1200...	1	20 A	HAND DRYER	54
55	HAND DRYER	20 A	1	1200...	1200...					1	20 A	HAND DRYER	56
57	HAND DRYER	20 A	1			1200...	1200...			1	20 A	HAND DRYER	58
59	HAND DRYER	20 A	1					1200...	1200...	1	20 A	HAND DRYER	60
61	HAND DRYER	20 A	1	1200...	1200...					1	20 A	HAND DRYER	62
63	HAND DRYER	20 A	1			1200...	1200...			1	20 A	HAND DRYER	64
65	HAND DRYER	20 A	1					1200...	180 VA	1	20 A	STEREO SYSTEM	66
67	HAND DRYER	20 A	1	1200...	0 VA					1	20 A	SPARE	68
69	FF3 - FORCE FLOW HEATER	30 A	2			2000...	0 VA			1	20 A	SPARE	70
71								2000...					72
73	SPARE	20 A	1	0 VA									74
75	SPARE	20 A	1			0 VA							76
77													78
79													80
81													82
83													84
		Total Load:		27862 VA		27160 VA		28995 VA					
		Total Amps:		233 A		226 A		243 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	2957 VA	100.00%	2957 VA		
Other	118 VA	100.00%	118 VA	**Total Conn. Load:**	84018 VA
Receptacle	7200 VA	25.00%	1800 VA	**Total Est. Demand:**	78618 VA
Spare	400 VA	100.00%	400 VA	**Total Conn.:**	233 A
Mechanical	73343 VA	100.00%	73343 VA	**Total Est. Demand:**	218 A

Notes:

LUMINAIRE SCHEDULE

TAGS	DESCRIPTION	MOUNTING	LOAD	LAMP	COLOR TEMP	MANUFACTURER
01	EXTERIOR WALL PACK	WALL +8FT	60W/120VAC	60W LED	5000K	STANPRO MODEL NO: WPS-LC31-50K
02	WALL SCONCE	WALL +8FT	8W/120VAC	8W LED	3000K	EUREKA LIGHTING MODEL NO: 3430-LED.8-30-120V-DM1-WH
03	PENDANT LIGHTS	SUSPENDED	4W/120VAC	4W LED	3000K	EUREKA LIGHTING MODEL NO: 4064-LED.4-30-17-120V-DV-S6-36-RC-SCA-WH-CHR-BLKA-BLKA
04	2x4 LUMINAIRE	RECESSED	27W/120VAC	27W LED	3000K	PHILIPS LIGHTING MODEL NO: 2FXP-30L-840-DF-UNV
05a	LED STRIP LUMINAIRE	SUSPENDED	15W/120VAC	15W LED	3000K	LITHONIA LIGHTING MODEL NO: ZL1N-L24-1500LM-MVOLT-30K C/W ZACVH
05b	LED STRIP LUMINAIRE	SURFACE	15W/120VAC	15W LED	3000K	LITHONIA LIGHTING MODEL NO: ZL1N-L24-1500LM-MVOLT-30K
06	DOWNLIGHT LUMINAIRE	RECESSED	12.8W/120VAC	12.8W LED	3000K	LITHONIA LIGHTING MODEL NO: LDN6-30/10-L06-WR-LS-MVOLT
BP1	EMERGENCY LIGHTING BATTERY PACK C/W DOUBLE LAMP AND 120VAC INPUT	WALL 84iN/2134mm	144W/120VAC	144W LED	-	STANPRO MODEL NO: SLC-12-144-2M-4LR-WH
EH1	GREEN RUNNING MAN EXIT SIGN C/W REMOTE HEADS	CEILING/WALL 84iN/2134mm	0.9W/120VAC 1.9W/12VDC	2X4W LED	-	STANPRO MODEL NO: PRMS-1236-2N4LJ
EH2	EDGELIT EXIT SIGN	CEILING/WALL 84iN/2134mm	2W/120VAC	-	-	STANPRO MODEL NO: RMEA-0-WH-UDC. SEE FLOOR PLAN FOR EXIT SIGN DIRECTION.
RH1	REMOTE HEAD	6" BELOW CEILING	8W/120VAC	2X4W LED	-	STANPRO MODEL NO: M-2-06-24-4W-LA-WH
S1	EXTERIOR POLE LUMINAIRE	MATCH EXISTING POLE LUMINAIRE HEIGHTS.	129W/120VAC	129W LED	4000K	EATON LIGHTING GLEON GALLEON MODEL NO: GLEON-AF-02-E1-6MQ-BK-1200. COORDINATE EXACT FINISH, MOUNTING HEIGHT AND SPECIFICATION WITH PARKS CANADA DEPARTMENTAL REPRESENTITIVE PRIOR TO ORDER.

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Canada

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Services gouvernementaux
Canada

PROJECT DELIVERY SERVICES WEST
Strategic Policy and Investment Directorate
EXÉCUTION DE PROJETS DE L'OUEST
Direction générale des Politiques stratégiques
et d'investissement

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7	**ISSUED FOR TENDER**	**18-12-13**
6	**99% REVIEW**	**18-10-26**
5	**99% REVIEW**	**18-10-19**
4	**99% REVIEW**	**18-10-03**
3	**90% REVIEW**	**18 08 17**
2	**60% REVIEW**	**18 06 08**
1	**30% REVIEW**	**18 03 23**
Revision / Revision	Description / Description	Date / Date

Client / client

Parks Canada Parcs Canada

Project title/Titre du projet

ROGERS PASS WASHROOM FACILITY AND DAY USE AREA

Approved by/Approuve par
MB

Designed by/Concept par
DK

Drawn by/Dessine par
FT

Project Manager/Administrateur de Projets

Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie

Client / client
Parks Canada

Drawing title / Titre du dessin

ELECTRICAL SCHEDULES

Project No. / No. du project	Sheet / Feuille	Revision no. / La Révision no.
CAI 752	E3	

PWGSC - A1 - 841 X 594

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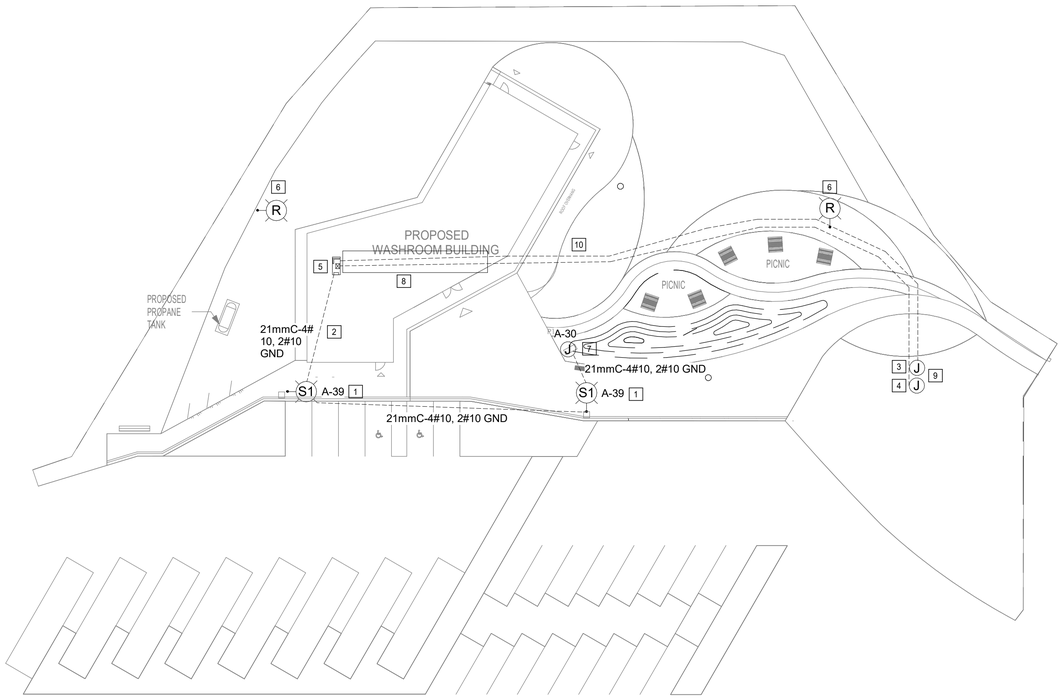
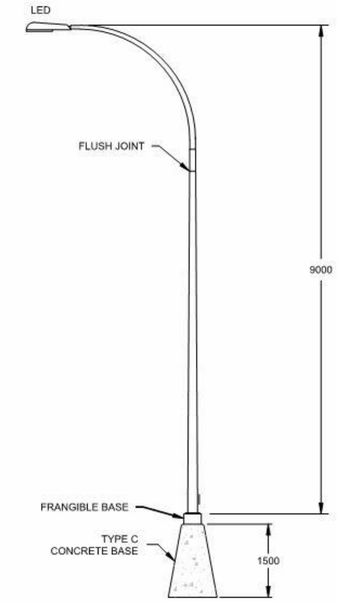


1 ELECTRICAL SITE PLAN
E0S1 1 : 300

NOTES

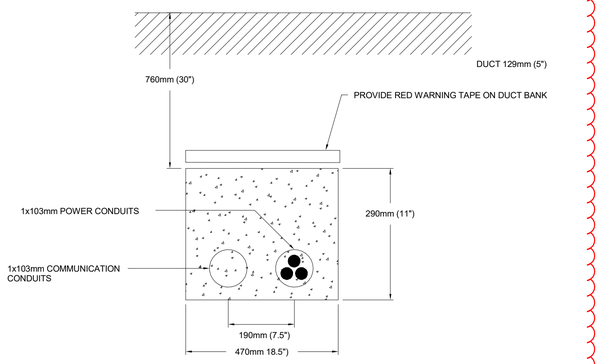
1. SEE DETAIL 02/E0S1 AND 03/E0S1 FOR POLE AND POLE BASE DETAILS. LUMINAIRE SPECIFICATION AND MOUNTING HEIGHT TO BE CONFIRMED BY PCA DEPARTMENTAL REPRESENTITIVE. LUMINAIRES TO BE CONTROLLED BY EXTERIOR PHOTOCELL/TIMECLOCK. SEE DETAIL 01/E4.
2. CONDUIT TO RUN UNDERGROUND TO ELECTRICAL ROOM.
3. PCA PROVIDED POWER PULLBOX LOCATION. UTILIZE EXISTING 103mmC CONDUIT. PROVIDE 4#3 RW90XL CU WIRING FROM PULLBOX TO TRANSFORMER IN ELECTRICAL ROOM. COORDINATE EXACT PULLBOX LOCATION.
4. PCA PROVIDED COMMUNICATIONS PULLBOX LOCATION. UTILIZE EXISTING 78mmc CONDUIT TO TELEPHONE TERMINAL BOARD IN ELECTRICAL ROOM. COORDINATE EXACT PULLBOX LOCATION.
5. ELECTRICAL ROOM LOCATION.
6. EXISTING LIGHTING STANDARD TO BE REMOVED AND DISPOSED OF. REMOVE UNDERGROUND UNUSED CONDUIT/WIRING, DISPOSE AND MAKE INSTALLATION SAFE. COORDINATE WITH PCA DEPARTMENTAL REPRESENTITIVE.
7. PROVIDE JUNCTION BOX FOR FUTURE SIGNAGE LOCATION. PROVIDE 21mmC-2#10 CU CONDUIT FROM JUNCTION BOX TO WASHROOM BUILDING.
8. PROVIDE CONCRETE ENCASEMENT FOR CONDUIT UNDER BUILDING. SEE DETAIL 04/E0S1.
9. EXISTING POWER & COMMUNICATION CONDUIT TO PULLBOXES TO REMAIN. COORDINATE WITH CIVIL DRAWINGS.
10. CONTRACTOR TO CONFIRM BURIAL DEPTH OF POWER LINE AND COMMUNICATIONS TRENCH WITH AUTHORITY HAVING JURISDICTION.



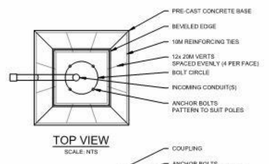
2 SINGLE POLE ELEVATION
E0S1 1 : 100

GENERAL NOTES

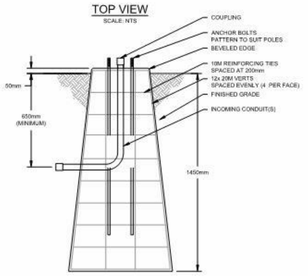
1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. WHERE DISCREPANCIES ARE FOUND, THEY SHOULD BE BROUGHT FORWARD PRIOR TO TENDER CLOSE.
2. CONDUCTOR SIZES INDICATED IS MINIMUM REQUIRED. INCREASE CONDUCTOR SIZE (AND CONDUIT SIZE WHERE APPLICABLE) TO ACCOMMODATE VOLTAGE DROP PER CEC REQUIREMENTS.
3. ASHRAE 2010, BC BUILDING CODE 2012, CANADIAN ELECTRICAL CODE 2015, NATIONAL BUILDING CODE 2015 AND ALL APPLICABLE CODES APPLY.



4 DUCT BANK DETAIL
E0S1 NTS



TOP VIEW
SCALE: NTS



ELEVATION
SCALE: NTS

NOTES:
1. ANCHOR BOLTS ARE TO BE GALVANIZED AISI/SAE 4140
2. ANCHOR BOLTS ARE TO BE EMBEDDED 30" (760mm) MINIMUM AND 36" (900mm) MAXIMUM.
3. CHAMFER ALL EXPOSED EDGES OF CONCRETE 1" (25mm).

3 POLE BASE DETAIL
E0S1 1 : 100

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Services gouvernementaux
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ELECTRICAL SITE PLAN

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CAI 752	E0S1	

PWGSC - A1 - 841 X 594

0 10 20 30 40 50 60 70 80 90 100mm