

## **Part 1 GENERAL**

### **1.1 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM):
  - .1 ASTM F1913-04(2012), Standard Specification for Vinyl Sheet Floor Covering Without Backing
- .2 American National Standards Institute (ANSI)/ American Society of Heating, Refrigerating and Air-Conditioning Engineers
  - .1 ANSI/ASHRAE 62.1 – 2010 Standard, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings (ANSI/ASHRAE Approved)
- .3 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB 12.3-M91, Flat, Clear Float Glass
  - .2 CAN/CGSB 12.8-97 AMEND, Insulating Glass Units
  - .3 CAN/CGSB 79.1-M91, Insect Screens
- .4 Canadian Standards Association (CSA):
  - .1 CSA A440-08, NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights, Includes Update No. 1 (2008), Update No. 3 (2009)
  - .2 Canadian Electrical Code, 2012
- .5 Carpet and Rug Institute (CRI):
  - .1 Standard for Installation Specification of Commercial Carpet - CRI 104
  - .2 IAQ Carpet Testing Program
- .6 South Coast Air Quality Management District (SCAQMD)
  - .1 Standard for Architectural Coatings, Adhesives and Sealants
- .7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .8 National Fire Protection Association (NFPA)
  - .1 NFPA 10, Standard for Portable Fire Extinguisher, 2010 Edition
  - .2 NFPA 13, Standard for the Installation of Sprinkler Systems, 2013 Edition
  - .3 NFPA 90A, Installation of Air Conditioning and Ventilating Systems, 2012 Edition
  - .4 NFPA 90B, Standard for the Installation of Warm Air Heating and Air-Conditioning Systems, 2012 Edition
- .9 National Research Council (NRC)/Institute for Research in Construction (IRC)
  - .1 National Building Code of Canada 2010 (NBC)
  - .2 National Fire Code of Canada 2010 (NFC)
  - .3 National Plumbing Code of Canada 2010 (NPC)
  - .4 National Energy Code of Canada for Buildings 2011 (NECB)
- .10 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
  - .2 CAN/ULC S114-05, Standard Method of Test for Determination of Non-Combustibility in Building Materials.

- .3 CAN/ULC-S702-09 AM-1, Standard for Mineral Fibre Insulation
- .4 CAN/ULC S702.2-10, Mineral Fibre Thermal Insulation for Buildings, Part 2: Application Guidelines

## 1.2 DESCRIPTION

- .1 Factory fabricated multiple modular double units meeting the following minimum requirements:
  - .1 Size: to fit in area indicated on drawings.
  - .2 Age: new or less than five years old.
  - .3 Exterior and interior finishes and colours must match throughout.
- .2 Building occupancy as defined by National Building Code of Canada Part 3.
- .3 Generally, building is intended to enclose habitable spaces including Holding Room and Screening Room. The Overflow Shelter is intended to enclose habitable space as a waiting area.
- .4 Temporary Holding Room occupancy load = 90 (based on 80 travellers, plus staff).
- .5 Overflow Shelter occupancy load = 30.

## 1.3 DESIGN REQUIREMENTS

- .1 Design assemblies separating heated space from exterior or unheated spaces to meet NECB 2011.
- .2 Design building to allow for thermal movement of component materials caused by ambient temperature range of 80 degrees C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.
- .3 Ensure total absence of condensation on interior surfaces under following minimum condition.
  - .1 Interior: 22 degrees C 55% RH, still air.
  - .2 Exterior: -20 degrees C 50 km/h wind.
- .4 Building envelope: watertight construction & maximum 3.5 ACH.
- .5 Provide continuous vapour retarder on warm side of insulated assemblies to provide water vapour permeance of maximum 15 (Ng/Pa.s.m2).
- .6 Design for hourly velocity pressure of in accordance with values describe in NBC Climatic Data for geographic location of this project.
  - .1 In addition to uniform live load, design foundation for uplift due to wind and seismic loading.
- .7 Design members to withstand, within acceptable deflection limitations:
  - .1 Snow load:  $S_g$  and  $S_r$  for Penticton, BC.
  - .2 Floor live load: 4.8 kN/m<sup>2</sup> (100 psf).
  - .3 Seismic load as per NBC 2010 for Penticton, BC
  - .4 Soil Class is to be verified/determined by Contractor.
  - .5 Soil bearing value is to be determined by Contractor.
- .8 Design building enclosure elements to accommodate by means of expansion joints, movement in wall structural movements without permanent distortion, damage to infill, racking of joints, breakage of seals, water penetration or glass breakage.
- .9 The positioning of buildings, canopy, and connection corridors are to be within the restraints of the Limiting Distance requirements which is shown on the plans.

- .10 Completed building: exterior to interior sound attenuation not less than STC 50.
- .11 Interior partition type to sound attenuation not less than STC 30.
- .12 Conceal, piping, conduit and related components within floor, ceiling, and wall assemblies.
- .13 Outdoor air temperatures per NBC 2010:
  - .1 Summer Dry Bulb / Wet Bulb (July @ 2.5%) 33°C / 20°C
  - .2 Winter (January @ 1.0%) -18°C
- .14 Interior space layout:
  - .1 Hold Room:
    - .1 Security Screening Area to be separated from Seating Area by an interior partition wall.
    - .2 Podium Area to have a clear view of the Seating Area. Columns or obstructions may have a maximum 300mm cross sectional dimension in plan view taken at 90 degrees to podium area.
    - .3 Security Screening Area to be open space with no obstructions to give clear viewing.
    - .4 See drawings for quantity and size of seating and equipment.
  - .2 Overflow Area:
    - .1 To be open space with no obstructions to give clear viewing.
    - .2 See drawings for quantity and size of seating.
- .15 Space Conditions System Performance: HVAC systems shall be designed and implemented to meet or exceed comfort conditions for acceptable Indoor Air Quality as specified in ASHRAE document 62.1-2010. HVAC systems shall be designed to comply with NECB 2011. Specifically the systems shall satisfy space set points for temperature within the following parameters unless noted otherwise:
  - .1 Summer Indoor Temperature: 23.3°C (74°F)
  - .2 Winter Indoor Temperature: 22.2°C (72°F)
  - .3 Provide  $\pm 1^{\circ}\text{C}$  set point adjustment for both summer and winter operations.
- .16 Building lighting: Refer to specifications for electrical (sub-clauses of 2.1.12 & 2.2.11).
- .17 Thermal performance of window units: to meet NECB 2011.
- .18 Contractor to calculate and confirm the Limiting Distance and set back the building from the Air Terminal Building as required. Fire Rating for Exterior Wall and Roof assemblies to meet the requirements of the Limiting Distance.
- .19 Rain water drainage from the roof to be lead to the east side of the building onto grade a minimum one meter away from the building.
- .20 Design building and other related work such as landing, stairs, ramps, guard rails, and hand rails to CSA B651-12 Accessible design for the built environment.

#### **1.4 SUBMITTALS AND PERMITS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

- .2 All shop drawings for different disciplines specifically Architectural, Structural, Civil, Electrical and Mechanical to be signed and sealed by a professional Architect or Engineer registered in Province of British Columbia. The shop drawings in addition to showing all the systems for each discipline in the Hold Room and Overflow Shelter must also show all the systems for the interconnection with the existing building.
- .3 Indicate plans, elevations, sections and details (windows, roof wall junctions).
- .4 Indicate detailed description of mechanical, electrical and other systems in Work.
- .5 Manufacturer's Field Reports: submit to Departmental Representative manufacturer's written report, within 3 days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.
- .6 Contractor is responsible to submit for building permit to local authorities and pay all the required fees and allow for all the inspections by authorities.
- .7 The professional Architects and Engineers must submit their signed and sealed Schedules A, B & C along with a copy of final inspection by the local authorities to Department Representative. They shall perform all the required inspection including the rough-ins and substantial and completion inspections and submit a copy of their field review with separate certification that the work complies with the contract requirements including all approved shop drawings. The reports are to be accompanied with photos and are to show the progress of the work to Department Representative.
- .1 Where the phrase "provide letter of assurance" is used elsewhere in this section it is to be understood as meaning "provide assurance of conformance of design and construction to the contract documents including shop drawings" as well as the meaning ascribed in the NBC.

## **1.5 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: manufacturer shall have a minimum of 10 years experience in production, assembly, delivery and installation of portable structures similar to those specified for this project.

## **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Waste Management and Disposal:
  - .1 Separate waste materials for recycling.
  - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

## **1.7 WARRANTY**

- .1 Provide a manufacturer's one year warranty dated from Substantial Performance covering defective workmanship and materials on the portable building.
- .2 Individual products within building such as windows, roofing, floor finishes, electrical and plumbing fixtures shall be covered under the warranty specific to the manufacturer of those products.

## **Part 2 PRODUCTS**

### **2.1 MATERIAL FOR HOLD ROOM**

- .1 Lumber and Panel materials: Refer to Section 06 10 00 for Rough Carpentry.

- .2 Floor, Exterior Wall, and Roof Assemblies:
  - .1 Structurally able to meet or exceed the requirements as noted in "1.3 Design Requirements" of this section.
  - .2 Meet or exceed moisture, vapour, and air penetration requirements as per the NBC 2010.
  - .3 Fire Rating to meet or exceed the requirements as noted in "1.3 Design Requirements" of this section.
  - .4 Thermal performance to meet or exceed the requirements as noted in "1.3 Design Requirements" of this section.
  - .5 Insulation: Rigid Insulation to CAN/ULC-S701-11 and Batt Insulation to CAN/ULC-S702 meeting thermal performance requirements listed in 1.3 Design Requirements.
- .3 Exterior Wall Below Grade
  - .1 If wood is used for the building perimeter foundation, the exterior wall is required to be insulated and waterproof:
  - .2 Extend polystyrene insulation board to bottom of grade beam or to top of footing and apply adhesive to the perimeter wall.
- .4 Foundation
  - .1 If concrete is used- follow section 03 30 00 Cast-in-Place Concrete.
  - .2 If reinforcement is used- follow section 03 20 00 Concrete Reinforcing .
  - .3 If timber is used – follow section 06 10 11.01 Rough Carpentry
  - .4 All metal connectors for anchoring and connection – follow section 05 50 00 Metal fabrication.
  - .5 Foundation is required to be designed to prevent uplift from the building.
  - .6 Refer to Exterior Wall Below Grade for insulation and waterproofing around the perimeter.
- .5 Finishes:
  - .1 Floor:
    - .1 New Carpet: 28 oz., commercial grade, compliance with CRI/CCI Green Label Indoor Air Quality Program, CRI/CCI IAQ requirements for maximum total volatile chemicals released into air. Label carpet product with CRI/CCI IAQ label.
  - .2 Exterior of Perimeter Wall:
    - .1 Same material and colour on all surfaces.
  - .3 Interior of Perimeter Wall and Interior Partition:
    - .1 Same material and colour on all surfaces
  - .4 Interior Base:
    - .1 Same or complementing colour of interior walls.
- .6 Colour Selection for New Finishes:
  - .1 By Departmental Representative.
  - .2 Supply Departmental Representative with manufacturer's standard colour range.

- .7 Exterior Doors:
  - .1 Keying: To be determined on site
  - .2 Number of Keys: Two keys per lockset
  - .3 Thermal Enhancement: Insulated panel with weather stripping and bottom seal.
  - .4 Fire Rating: To match the rating of the wall that it will be attached to.
  - .5 Hardware:
    - .1 Lockset and Deadbolt:
      - .1 Heavy Duty for commercial /industrial use.
      - .2 Function to match the existing Hold Room exterior door.
      - .3 Cylinder and keyway to match the existing Hold Room exterior door.
    - .2 Handle: Lever to meet accessible standards.
    - .3 Closer: To meet accessible standards.
    - .4 Door Stop.
    - .5 Hinges: To have non-removable pins.
- .8 Windows:
  - .1 Meet or exceed requirements of CSA A440, and the following performance requirements:
    - .1 Air Tightness Rating, Fixed Windows: B7.
    - .2 Air Tightness Rating, Operable Windows: A3.
    - .3 Water Tightness Rating: B5.
    - .4 Energy Rating (ER): Minimum 25
    - .5 Wind Load Resistance Rating: C3.
    - .6 Forced Entry: F2, pass test for resistance to forced entry.
    - .7 Insect Screens: S2, to operable windows.
  - .2 Glazing:
    - .1 Insulating glass units in doors and windows: to CAN/CGSB 12.8, double glazed unit, 19 mm overall thickness.
      - .1 Glass as follows:
        - .1 Float glass: to CAN/CGSB 12.3-M91, clear quality.
        - .2 Class B-float to CAN/CGSB 12.3-M91, tempered to CAN/CGSB 12.1-M90, to meet minimum requirements of British Columbia Building Code.
      - .2 Glass thickness: as determined by window manufacturer's Engineer and as necessary to meet wind loading for the geographical area of this project.
      - .3 Air space: argon filled.
      - .4 Inter-cavity space thickness: 13 mm or as necessary to meet glass thickness requirements, between inner and outer lights with low conductivity spacers.
      - .5 Glass coating: low-E<sup>3</sup> soft coat.

.9 H.V.A.C.:

.1 General:

- .1 Provide complete design, installation, balancing, testing and commissioning of HVAC systems.
- .2 Mechanical systems shall be designed and installed in accordance with building codes (NBC, BCBC, NEBC, NFC) and industry standards including but not limited to ASHRAE, SMACNA, CSA and NFPA.
- .3 Heating/cooling load calculation shall be performed using load analysis software (TRACE, Carrier HAP or similar), and shall be used for equipment sizing. Departmental Representative may request calculations for review. Design criteria as follows:
  - .1 Outdoor air temperatures: See Clause 1.3.
  - .2 Space temperatures: See Clause 1.3.
  - .3 Lighting density: See Clause 1.3.
  - .4 Occupant load: See Clause 1.2.
- .4 Equipment shall be installed in accordance to manufacturer's instructions.
- .5 Where materials are specified by trade name refer to the "Instructions to Tenderers" for procedures to be followed in applying for approval of alternatives.
- .6 Contractor shall submit shop drawings and proposed mechanical systems layout (e.g. ductwork, equipment) to Departmental Representative for review and approval.

.2 Packaged Gas/Electric Rooftop Unit:

- .1 High efficiency gas/electric rooftop unit shall have DX cooling with staged, scroll compressor(s) using R-410A refrigerant, TXV, and 2-stage gas heating. Unit shall have full perimeter base rail with rigging capability, crankcase heater, low leak economizer with differential dry bulb sensors, barometric relief damper, packaged controls, 7-day programmable thermostat with tamper proof cover, unit-mounted CO2 sensor, 350mm high pre-fabricated roof curb, 50mm filter. 80% AFUE, 13 EER.
- .2 Acceptable materials or alternative approved by addendum during tendering: Carrier, Lennox, York, Trane.
- .3 Service: Holding Room and Screening Room
- .4 Location: on roof or ground; contractor to determine. Unit mounted on ground shall be provided with a concrete pad.
- .5 Standards: CSA / cUL listed, Energy Star.
- .6 Provide air distribution ductwork, gas piping, condensate trap.
- .7 Unit shall be suitable for providing adequate ventilation and outdoor air to meet the design occupant load.

- .3 Gas-Fired Overhead Tube Patio Heater:
  - .1 Outdoor use, high output, radiant tube gas heater, unvented style, nickel plated burner with aluminized steel combustion chamber and radiant tube, fully automatic ignition and controls, 2 stage heat, forced draft motor with thermal overload switch, balanced air rotor, gas shut off cock, aluminum reflector for the length of the heater. High output: 29.3 kW (100 MBH); low output: 22 kw (75 MBH).
  - .2 Acceptable materials or alternative approved by addendum during tendering: IR Energy ETO-100, Calcana
  - .3 Service: Walkway between Screening Room and Terminal Building.
  - .4 Standards: CSA / cUL listed.
  - .5 Provide gas piping. Maintain clearance from combustible materials per manufacturer's instructions and applicable codes.
  - .6 Provide push button programmable timer switch and high-low toggle switch located in the Terminal Building.
- .4 Electric Wall Heaters:
  - .1 Electric wall heaters shall be pre-wired, with 80/20 nickel-chromium heating element, motor, designed for wall mounting (surface or recessed), or ceiling mounting, backbox and heater assembly in heavy gauge construction. The fan motor shall be impedance protected, permanently lubricated and with totally enclosed motor. Thermal cutout shall be bi-metallic, snapaction type designed to shut off heat in the event of overheating. The thermostat shall be single pole type on all models, wall-mounted with tamper proof cover.
  - .2 Acceptable materials or alternative approved by addendum during tendering: QMark, Ouellet.
  - .3 Service: Exterior door entrances, wall-mounted or ceiling mounted.
  - .4 Capacity: estimated 4kW each, and shall be confirmed by Contractor.
  - .5 Standards: CSA / cUL listed.
- .5 Provide air distribution ductwork including air outlets/inlets for the rooftop unit(s).
  - .1 Ductwork shall be constructed, installed, supported and restrained to SMACNA standards. Galvanized steel to ASTM A653, Z90 zinc coating, constructed to 500 Pa Class. Round duct shall have spiral seams, joined with a RT1 slip joint, screw fastened and sealed with no visible duct sealant to interfere with finish painting. Duct insulation and adhesive shall be non-toxic as defined by WorkSafeBC regulations.
  - .2 Air distribution system shall be sized to ASHRAE standard and industry practice, and to maintain sound level of NC 35 maximum.
  - .3 Minimum first 3m of ductwork from air handling equipment supply/return shall have duct liner, 25mm thick if ductwork is located indoor and 50mm thick if ductwork is located outdoor. Duct liner shall be fibrous glass duct liner with FSK facing on airstream side. Flame spread rating 25 and smoke developed rating 50 to CAN/ULC-S102.
    - .1 Rigid: use on flat surface, 36 kg/m<sup>3</sup> density, RSI-0.76 [R-4.3] for 25mm [1"], RSI-1.53 [R-8.7] 50mm [2"].

- .2 Flexible: use on round surface, 24 kg/m<sup>3</sup> density, RSI-0.74 [R-4.2] for 25mm [1"], RSI-1.47 [R-8.3] 50mm [2"].
- .3 Acoustically lined round ducts shall have perforated inner metal liner.
- .4 Ductwork exposed to weather shall have watertight seams, with 50mm thick thermal insulation and aluminum jacket. Internally lined duct does not require thermal insulation.
  - .1 Mineral fibre blanket to ASTM C553 with factory applied vapour retarder jacket to CGSB 51-GP-52Ma.
    - .1 Flame spread rating 25 and smoke developed rating 50 to CAN/ULC-S102.
    - .2 Maximum "k" factor to ASTM C553.
  - .2 Aluminum: jacket to ASTM B 209.
    - .1 Thickness: 0.50 mm sheet.
    - .2 Finish: Stucco embossed.
    - .3 Jacket banding and mechanical seals: 19 mm wide, 0.5 mm thick stainless steel.
- .5 Provide volume dampers for air balancing. The use of opposed blade dampers supplied with diffusers/grilles will not be acceptable.
- .6 The use of plastic duct tape is not permitted.
- .7 Provide flexible duct connectors between ductwork and equipment except where fan outlet has a flexible duct connector. Flexible duct connector exposed to weather shall be suitable for outdoor use and shall have a sheet metal shield for additional UV protection.
- .8 All ductwork exposed indoor shall be prime coated and painted.
- .9 Maintain minimum 2,438mm (8'-0") headroom below ductwork and air outlets/inlets. Coordinate layout with other ceiling elements such as lighting, speakers, etc.
- .6 Coordinated power requirements and disconnect switch for mechanical equipment with Electrical.
- .7 Low-voltage and line-voltage control wiring shall be installed in conduits. Installation shall comply with Canadian Electrical Code 2012.
- .8 Provide letter of assurance of the HVAC system signed and sealed by a Professional Engineer licensed in the Province of British Columbia.
- .9 Provide letter of assurance of the seismic restraints signed and sealed by a Professional Engineer licensed in the Province of British Columbia.
- .10 Plumbing:
  - .1 Designed and installed to NBC 2010 Plumbing Code.
  - .2 Provide gas piping to mechanical equipment per CSC B149.1.
    - .1 Above grade: to ASTM A53/A53M, schedule 40, Class 150 screwed fitting up to NPS 2.

- .2 Underground: high density polyethylene piping to CSA B137.4, joined by heat fusion, electrofusion or mechanical methods to CSA Z662. Install underground gas piping strictly in accordance with manufacturer's instructions. Provide warning tape (plain tape only) buried directly above gas pipe, 300mm below finished grade. The installation of plastic pipe underground shall include installation of a tracer wire and tracer wire shall terminate above ground at riser locations. Provide dielectric fittings and a lubricated plug valve where the underground pipe is connected to the pipe entering the building.
- .3 Install valves at branch take-offs to isolate pieces of equipment.
- .4 Connect new gas piping to existing service. Verify existing pipe sizes and capacity, and upsize existing piping as required.
- .3 Provide roof drains and exterior rain water leaders (aluminum) discharging to concrete splash pads or French drains. Support rain water leaders from exterior walls.
- .4 Provide letter of assurance of the plumbing system signed and sealed by a Professional Engineer licensed in the Province of British Columbia.
- .5 Provide letter of assurance of the seismic restraints signed and sealed by a Professional Engineer licensed in the Province of British Columbia.
- .11 Fire Protection:
  - .1 Provide Type ABC Fire Extinguisher as per NFPA 10 and NBC.
- .12 Electrical: Comply with the Latest edition of CSA Canadian Electrical Code (CEC) and all the local by-laws in affect at the time of Tender.
  - .1 Distribution and Service:
    - .1 Panel:
      - .1 225A rated panel c/w main breaker.
      - .2 120/208 Three Phase – 4 wire.
      - .3 Nipple outback with LB.
      - .4 Panel location to be in secure side area
      - .5 Provide 100A-3P breaker in the existing CDP Normal Power panel inside existing Electrical Room (RM 138) to feed this panel via conduit and wires per CEC. Available fault level at existing CDP Panel is 18kA. The existing CDP panel is manufactured by Square D.
      - .6 Provide 2 spare 15A-1P breakers and four spaces in the Panel.
  - .2 Wiring:
    - .1 General wiring: Copper AWG/MCM with insulation of chemically cross-link thermosetting polyethylene material.
    - .2 Concealed, non-metallic sheathed, min. #12 AWG for lighting, receptacle and motor circuit, unless noted otherwise.
    - .3 Electrical interconnection to be hardwired/junction boxes as required.
  - .3 Devices:
    - .1 Switches: Specification grade, 125V, 15A
    - .2 Single pole and three-way
    - .3 Colour white c/w matching face plate

- .4 PVC back box (c/w vapour barrier box for boxes located in exterior walls)
- .5 Receptacles:
  - .1 Specification grade, single circuit, GFI and WP, 15A and 20A T-slot as required.
  - .2 Colour white c/w matching face plate.
  - .3 PVC back box (c/w vapour barrier box for boxes located on exterior wall).
  - .4 For outlet in Security Screening Room, allow every duplex receptacle to be on a dedicated circuit. For other receptacles, allow one circuit for every two duplex receptacles.
- .6 Recessed mounted floor box to be flush with the finished floor. Separate box for power, data, PA.
- .4 Lighting:
  - .1 Fluorescent fixtures: 300 mm x 1220 mm.
  - .2 Recessed ceiling mounted, electronic ballast, acrylic lens c/w seismic clips, 2 each T8 Cool White lamps. The light level to be Minimum 300 Lux at 750mm above finish floor with ratio of Maximum to minimum of 3:1. Lamp color temperature to be 4100K (cool white).
  - .3 Exterior lighting to be compact fluorescent or LED downlight fixtures suitable for Apron (no glare). At least one above each exterior door as well as the walkway connecting Hold Room to the existing building must be lit.
  - .4 Provide light switch control for all the light fixtures located in Security Screening Area.
  - .5 Emergency lights: wall-mounted, twin head LED, battery back-up to meet code requirements.
  - .6 Exit lights: illuminated LED "running man" exit light, located at each exit c/w batteries to meet code requirements.
- .5 Voice / Data:
  - .1 Wall and floor mounted combination voice / data outlets.
  - .2 Rough in plaster ring c/w double gang box for wall mounted outlets.
  - .3 27 mm conduit from each voice / data outlet to a communication junction box in Security Screening Area of Temporary Hold Room. Provide one 53mm conduit from the communication junction box in Temporary Hold Room to Data / LAN room 127 in existing building. Terminate in a junction box and label. The exact location to be coordinated on site.
  - .4 Voice / data cables / wires by others.
  - .5 Terminations and faceplates by others.
  - .6 Provide and install two (2) floor outlets for voice/data at each Podium. Each outlet to be completed with one 27mm conduit. Connect one outlet to Air Canada IT Rack in Room 112 and the other to West Jet IT Rack in Room 122.
  - .7 All conduits to be completed with bushings at both ends and pull wires.

.6 PA System:

- .1 Provide Junction boxes (J.B.) completed with 21mm conduits for PA speakers in the ceiling. Allow for at least six (6) PA speaker junction boxes. The exact location junction boxes to be determined by client. These conduits must be terminated in a PA J.B. in the ceiling of Security Screening Area. From PA J.B. in the security screening area, provide one 27mm conduit to the location of existing PA speaker in Baggage Room (Room 151) and terminate in a J.B.
- .2 Provide one floor box for microphone outlet at each podium location in the space and install one 21mm conduit to the PA J.B in Security Screening Area.

.7 Mechanical:

- .1 Provide power, disconnect switches, relays, starters, etc. to all the mechanical equipment as specified. Refer to Mechanical section of the specifications.
- .2 Provide power to electric wall heaters.

.8 Closed Circuit TV (CCTV):

- .1 Provide one junction box for CCTV in the ceiling and install one 27mm conduit from that J.B. to Baggage Room (Room 151) and terminate in a J.B. Coordinate the exact location of all J.B.'s with the client.

.9 Fire Alarm System:

- .1 Provide Pull stations, smoke detectors, Bells, etc. for Hold Room and connect to the existing fire alarm panel located in the Front Lobby (RM 125). The existing fire alarm panel is Edwards 6616.
- .2 All fire alarm devices to be bi-lingual.
- .3 Allow to modify the exiting fire alarm annunciator to reflect the addition of new building.
- .4 Allow for full verification of the fire alarm system.
- .5 All wirings to be installed in conduit.

## **2.2 MATERIALS FOR OVERFLOW SHELTER**

- .1 Lumber and Panel materials: Refer to Section 06 10 00 for Rough Carpentry.
- .2 Floor, Exterior Wall, and Roof Assemblies:
  - .1 Structurally able to meet or exceed the requirements as noted in "1.3 Design Requirements" of this section.
  - .2 Meet or exceed moisture, vapour, and air penetration requirements as per the NBC 2010.
  - .3 Fire Rating to meet or exceed the requirements as noted in "1.3 Design Requirements" of this section.
  - .4 Thermal performance to meet or exceed the requirements as noted in "1.3 Design Requirements" of this section.
  - .5 Insulation: Rigid Insulation to CAN/ULC-S701-11 and Batt Insulation to CAN/ULC-S702 meeting thermal performance requirements listed in 1.3 Design Requirements.

- .3 Exterior Wall Below Grade
  - .1 If wood is used for the building perimeter foundation, no insulation and waterproofing are required.
- .4 Foundation
  - .1 If concrete is used – follow section 03 30 00 Cast-in-Place Concrete.
  - .2 If reinforcement is used – follow section 03 20 00 Concrete Reinforcing .
  - .3 If timber is used – follow section 06 10 11.01 Rough Carpentry
  - .4 All metal connectors for anchoring and connection – follow section 05 50 00 Metal fabrication.
  - .5 Foundation is required to be designed to prevent uplift from the building.
- .5 Finishes:
  - .1 Floor:
    - .1 New Carpet: 28 oz., commercial grade, compliance with CRI/CCI Green Label Indoor Air Quality Program, CRI/CCI IAQ requirements for maximum total volatile chemicals released into air. Label carpet product with CRI/CCI IAQ label.
  - .2 Exterior of Perimeter Wall:
    - .1 Same material and colour on all surfaces.
  - .3 Interior of Perimeter Wall and Interior Partition:
    - .1 Same material and colour on all surfaces
  - .4 Interior Base:
    - .1 Same or complementing colour of interior walls.
- .6 Colour Selection for New Finishes:
  - .1 By Departmental Representative.
  - .2 Supply Departmental Representative with manufacturer's standard colour range.
- .7 Exterior Doors:
  - .1 Keying: To be determined on site
  - .2 Number of Keys: Two keys per lockset
  - .3 Thermal Enhancement: Insulated panel with weather stripping and bottom seal.
  - .4 Fire Rating: To match the rating of the wall that it will be attached to.
  - .5 Hardware:
    - .1 Lockset and Deadbolt:
      - .1 Heavy Duty for commercial /industrial use.
      - .2 Function to match the existing Hold Room exterior door.
      - .3 Cylinder and keyway to match the existing Hold Room exterior door.
    - .2 Handle: Lever to meet accessible standards.
    - .3 Closer: To meet accessible standards.
    - .4 Door Stop.
    - .5 Hinges: To have non-removable pins

.8 H.V.A.C.:

.1 General:

- .1 Provide complete design, installation, testing and commissioning of heating system.
- .2 Mechanical systems shall be designed and installed in accordance with building codes (NBC, BCBC, NEBC, NFC) and industry standards including but not limited to ASHRAE, SMACNA, CSA and NFPA.
- .3 Provide heating and ventilation system (electric or gas furnace) for the Overflow Shelter to meet the following design criteria:
  - .1 Outdoor air temperatures: See Clause 1.3.
  - .2 Space temperature: See Clause 1.3.
  - .3 Occupant load: See Clause 1.2.
- .4 The Overflow Shelter is intended for use from October 26, 2014 to February 15, 2015, and during this period mechanical cooling will not be required. The furnace shall provide free-cooling to maintain space temperature during the period of operation.
- .5 Provide heating system for the Interconnecting Corridor to meet the following design criteria:
  - .1 Outdoor air temperatures: See Clause 1.3.
  - .2 Space temperature: 15°C (heating only).
  - .3 Occupant load: nil (assuming corridor is for transient use).
- .6 Equipment shall be installed in accordance to manufacturer's instructions.
- .7 Equipment shall be provided with 7-day programmable thermostats.
- .2 Coordinated power requirements for mechanical equipment with Electrical.
- .3 Low-voltage and line-voltage control wiring shall be installed in conduits. Installation shall comply with Canadian Electrical Code 2012.
- .4 Air distribution ductwork shall comply with Clause 2.1.9.5.
- .5 Provide letter of assurance of the HVAC system signed and sealed by a Professional Engineer licensed in the Province of British Columbia.
- .6 Provide letter of assurance of the seismic restraints signed and sealed by a Professional Engineer licensed in the Province of British Columbia.

.9 Plumbing:

- .1 Designed and installed to NBC 2010 Plumbing Code.
- .2 Gas piping where required shall comply with Clause 2.1.10.
- .3 Provide roof drains and exterior rain water leaders (aluminum) discharging to concrete splash pads or French drains. Support rain water leaders from exterior walls.
- .4 Provide letter of assurance of the plumbing system signed and sealed by a Professional Engineer licensed in the Province of British Columbia.
- .5 Provide letter of assurance of the seismic restraints signed and sealed by a Professional Engineer licensed in the Province of British Columbia.

.10 Fire Protection:

- .1 Provide Type ABC Fire Extinguisher as per NFPA 10 and NBC.

- .11 Electrical: Comply with the Latest edition of CSA Canadian Electrical Code (CEC) and all the local by-laws in affect at the time of Tender.
  - .1 Distribution and Service:
    - .1 Panel:
      - .1 60A rated panel c/w main breaker.
      - .2 120/208 Three Phase – 4 wire.
      - .3 Nipple outback with LB.
      - .4 Panel location to be on secure side area
      - .5 Provide 60A-3P breaker in the existing CDP Normal Power panel inside existing Electrical Room (RM 138) to feed this panel via conduit and wires per CEC. Available fault level at existing CDP Panel is 18kA.
      - .6 Provide four spaces in the Panel.
  - .2 Wiring:
    - .1 General wiring: Copper AWG/MCM with insulation of chemically cross-link thermosetting polyethylene material.
    - .2 Concealed, non-metallic sheathed, min. #12 AWG for lighting, receptacle and motor circuit, unless noted otherwise.
    - .3 Electrical interconnection to be hardwired/junction boxes as required.
  - .3 Devices:
    - .1 Switches:
      - .1 Specification grade, 125V, 15A
      - .2 Single pole and three-way
      - .3 Colour white c/w matching face plate
      - .4 PVC back box (c/w vapour barrier box for boxes located in exterior walls)
    - .2 Receptacles:
      - .1 Specification grade, single circuit, GFI and WP, 15A and 20A T-slot.
      - .2 Colour white c/w matching face plate.
      - .3 PVC back box (c/w vapour barrier box for boxes located on exterior wall).
      - .4 Provide two duplex receptacles in the room. Locations to be determined by the client.
  - .4 Lighting:
    - .1 Fluorescent fixtures: 300 mm x 1220 mm.
    - .2 Recessed ceiling mounted, electronic ballast, acrylic lens c/w seismic clips, 2 each T8 Cool White lamps. The light level to be Minimum 300 Lux at 750mm above finish floor with ratio of Maximum to minimum of 3:1.
    - .3 Provide light switch control for all the light fixtures located in the area.
    - .4 Emergency lights: wall-mounted, twin head LED, battery back-up to meet code requirements.
    - .5 Exit lights: illuminated LED “running man” exit light, located at each exit c/w batteries to meet code requirements.

- .5 PA System:
  - .1 Provide minimum two (2) junction boxes for PA speakers in the ceiling and install 21mm conduits to the ceiling in adjacent existing Hold Room (Room 108). Coordinate exact location of all junction boxes with the client.
- .6 Mechanical:
  - .1 Provide power, disconnect switches, relays, starters, etc. to all the mechanical equipment as specified.
  - .2 Provide baseboard heaters as required and sized by mechanical contractor. All electrical baseboard heaters to be completed with thermostat. Refer to Mechanical section of the specifications.
- .7 Closed Circuit TV (CCTV):
  - .1 Provide one junction box for CCTV in the ceiling and install one 121mm conduit from that J.B. to CCTV camera in adjacent existing Hold Room (Room 108). Coordinate exact location of all junction boxes with the client.
- .8 Fire Alarm System:
  - .1 Provide Pull stations, smoke detectors, Bells, etc. as required by code for the room and connect to existing fire alarm panel located in the Front Lobby (RM 125). The existing fire alarm panel is Edwards 6616.
  - .2 All fire alarm devices to be bi-lingual.
  - .3 Provide fire alarm controlled hold open devices for the new double door at the Overflow Shelter end of connecting corridor.
  - .4 Allow to modify the fire alarm annunciator to reflect the addition of new building.
  - .5 Allow for full verification of the fire alarm system.

## **2.3 FABRICATION**

- .1 Shop fabricate buildings.
- .2 Maintain air and vapour and thermal barrier throughout building enclosure elements.
- .3 Locate vapour barrier on warm side of thermal insulation.
- .4 Locate air barrier on exterior of sheathing.
- .5 Complete enclosure assembly with exterior skin, glass units, access units doors, etc. inner air/vapour seal membrane, thermal insulation and interior finish.
- .6 Accurately fit and rigidly frame together joints, corners and mitres.
  - .1 Match components carefully to produce continuity of line and design.
  - .2 Make joints and connections toward exterior weather tight.
  - .3 Provide hairline joints for materials in contact.
  - .4 Co-ordinate location of visible joints.

## **Part 3 EXECUTION**

### **3.1 DELIVERY**

- .1 Deliver transportable buildings to site.

### **3.2 INSTALLATION**

- .1 Install transportable buildings together.
- .2 Install level and plumb.

- .3 Install skirting, stairs and ramps.
- .4 Adjust doors and windows for smooth operation.

### **3.3 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Services:
  - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 – SUBMITTALS AND PERMITS.
  - .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, as directed in PART 1 - QUALITY ASSURANCE.

### **3.4 CLEANING**

- .1 Remove excess sealant by moderate use of low VOC mineral spirits or other solvent as directed by sealant manufacturer.
- .2 Clean surfaces.

### **3.5 PROTECTION**

- .1 Provide protection to finished surfaces with strippable coatings, strippable wrappers, plywood or sheet materials as required before acceptance of Work.

**END OF SECTION**