1.0 GENERAL

1.1 Coordination Requirements

.1 Section 07 00 10 Building Envelope – General Requirements

1.2 Performance Standards

.1 Exceed the minimum prescriptive requirements of ASHRAE 90.1-2010 or 2011 NECB per 2012 BCBC.

.2 The maximum overall effective thermal transmittance of building assemblies (or equivalent minimum effective R-value) should be as follows (based on NECB effective prescriptive requirements for climate zone 4):

.1 Above-ground opaque walls: 0.315 W/m²-K (R-18)
.2 Roofs: 0.227 W/m²-K (R-25)
.3 Exposed floors: 0.227 W/m²-K (R-25)
.4 Fenestration and Doors: 2.4 W/m²-K (U-0.42)
.5 Walls in contact with ground: 0.568 W/m²-K (R-10)
.6 Floors in contact with ground: 0.757 W/m²-K for 1.2m (R-7.5). In semi-conditioned or non-conditioned spaces below grade, insulation is not required unless required by the project. For conditioned and habitable spaces above slab-on-grade, provision of foundation wall/perimeter insulation and or under-slab insulation will be needed for occupant comfort.

.3 Thermal bridging effects shall be accounted for when calculating the overall thermal transmittance of assemblies (or equivalent minimum effective R-value) using one of the following techniques:

.1 If the assembly matches one of those available in the online, “Building Envelope Thermal Bridging Guide: Analysis, Applications & Insights” document, then use calculated values in the document. This document is available at https://www.bchydro.com/powersmart/business/programs/new-construction.html#thermal

.2 Use two-dimensional heat transfer modeling performed by a qualified professional for thermal bridges that are continuous along one axis such as studs, exposed slab edges, balconies, z-girts, etc. or

.3 Use three-dimensional heat transfer modeling performed by a qualified professional for intermittent or point thermal bridges including repetitive penetrations such as cladding attachment screws or clips, beam penetrations, multiple canopy penetrations etc. One-off penetrations such as roof drains, louvers, scuppers or single canopy penetrations etc. need not be modeled.

.4 Spray Polyurethane Insulation shall meet the requirements of CAN/CGSB-51.39, Spray Polyurethane Insulation.

.5 Wall assembly thermal insulation is typically located outside the air barrier and inside cladding materials, neither of which are intended to be disturbed for 75 years or more. The performance of the insulation must be sustained during this service life.
.6 Insulation and other thermal separations are to be located so that the interior surface temperature of all building envelope assemblies is maintained above 6°C (above dew point temperature) during 2½% winter design temperature conditions.

1.3 Quality Control and Assurance

.1 Quality Control
   .1 During construction, contractor to arrange for a 3rd party review of Spray Polyurethane insulation installation. Cost of 3rd party review to be paid by contractor.

.2 Commissioning
   .1 Cost of scans to be paid by contractor.

2.0 MATERIALS

2.1 Performance Requirements

.1 None

2.2 Prescriptive Requirements

.1 Materials
   .1 For plastic foam insulations, AN/ULC-S770 Standard shall apply for establishing the required "R" value (known as LTTR "Long Term Thermal Resistance" value in this standard).
   .2 Expanded polystyrene insulation may not be used where in contact with ground, below-ground or wet locations.
   .3 Provide spray-in-place polyurethane insulation at intersecting building assemblies (refer BCBC 5.3.1.3).
   .4 Materials considered to have sufficient service life include:
      .1 For rainscreen walls: semi rigid rock wool and fiberglass.
      .2 For roofs: refer to RCABC’s list of approved products.
      .3 Foams should only be used when protected by concrete or masonry such as in a precast or cast in place sandwich application.
   .5 Fasteners (attachment of cladding, sub-girts, flashings, etc.) located in the exterior wall cavities shall be of stainless steel or PVC.

***END OF SECTION***