



Specification: Foundation Insulation

DISCLAIMER: The information in this specification is organized and presented to assist the designer/specifier working on a Canadian construction project in selecting the appropriate product and to save time in writing the project specific specification section. The designer/specifier is responsible for product selection as well as the use and application of this information, and should contact the manufacturer to ensure that types, finishes, etc are available in Canada and that the associated specification information is valid and correct.

1 GENERAL

1.1 SECTION INCLUDES

SPEC NOTE: List significant generic types of products, work or requirements specified.

- .1 This Section specifies expanded polystyrene rigid insulation board for insulation of walls, cavity walls, foundations and floors above and below grade, and polystyrene rigid insulation board used as compressible fill materials for landscape void applications.

1.2 RELATED SECTIONS

SPEC NOTE: List statements that draw the reader's attention to other specification sections dealing with work directly related to this Section.

- .1 Section 02315 - Excavation and Fill.
- .2 Section 03300 - Cast-in-Place Concrete.
- .3 Section 04210 - Clay Masonry Units.
- .4 Section 07100 - Dampproofing and Waterproofing.
- .5 Section 07120 - Built-up Bituminous Waterproofing.

1.3 REFERENCES

SPEC NOTE: List standards referenced in this Section, complete with full designations, titles and dates. Edit the following lists and delete those standards that are not required for the specific project.

- .1 ASTM International (ASTM)
 - .1 ASTM C 578-01, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - .2 ASTM E 84-01, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

- .2 CGSB 71-GP-24M, Adhesive, Flexible, for Bonding Cellular Polystyrene Insulation.
- .3 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102.2, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials.
 - .2 CAN/ULC-S701, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Cover.

1.4 SYSTEM DESCRIPTION

- .1 Performance requirements: Provide EPS rigid insulation board manufactured and installed to [Plasti-Fab's] [manufacturer's] stated performance criteria, without defects, damage or failure.

1.5 SUBMITTALS

SPEC NOTE: Include requests for relevant data to be furnished by the Contractor, before, during or after construction.

- .1 Product data: Submit [Plasti-Fab's] [manufacturer's] printed product literature, and specifications in accordance with Section 01330 - Submittal Procedures.
- .2 Shop drawings: Submit shop drawings in accordance with Section 01330 - Submittal Procedures.
 - .1 Indicate board orientation, location and adjacent material placement.
- .3 Samples: Submit samples in accordance with Section 01330 - Submittal Procedures.
 - .1 Submit 304.8 mm (12") long pieces of insulation.
- .4 Third party certification: Provide proof of [Plasti-Fab] [manufacturer] participation in recognized third party certification program to assure conformance with specified performance characteristics and physical properties in accordance with Section 01300 - Submittal Procedures.

SPEC NOTE: Specify which test reports are required and identify material to which they are to apply.

- .5 Test reports: Submit certified test reports for [thermal resistance,] [compressive strength,] [flexural strength,] [water vapour permeance].
- .6 Product evaluations: Submit copy of current Canadian Construction Materials Centre (CCMC) evaluation listings for [PlastiSpan Type 1 insulation] [PlastiSpan HD Type 2 insulation] [PlastiSpan Type 3 insulation] [Type [] insulation].

SPEC NOTE: Include standards, limitations and criteria that establish an overall level of quality for products and workmanship for this Section. Co-ordinate with Section 01430 - Quality Assurance.

1.6 QUALITY ASSURANCE

- .1 Installer: Company or person specializing in building insulation installations [with [5]-years [documented] experience] [approved by Plasti-Fab] [manufacturer].
SPEC NOTE: Describe requirements for meetings to co-ordinate materials and techniques, and to sequence related work.

1.7 PRE-INSTALLATION MEETINGS

- .1 Pre-installation meetings: Conduct pre-installation meeting [one week] prior to commencing [work of this Section] [and] [on-site installations] to verify project requirements, conditions and co-ordination with other building subtrades, and to review [Plasti-Fab's] [manufacturer's] installation instructions and warranty requirements. Comply with Section 01310 - Project Management and Co-ordination, Project Meetings.
SPEC NOTE: Specify special and unique packing, shipping or handling instructions, and special measures needed to prevent damage to products prior to application or installation. Co-ordinate with Section 01650 - Product Delivery Requirements or Section 01660 - Product Storage and Handling Requirements.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle in accordance with Section 01610 - Basic Product Requirements.
- .2 Comply with [Plasti-Fab's] [manufacturer's] recommendations for handling, storage and protection.
- .3 Protect insulation from physical damage. Provide adequate protection of materials and work of this trade from damage by weather, traffic and other causes.
- .4 Protect insulation material from prolonged exposure to sunlight (more than 1 week). Store under light-coloured tarpaulins. Secure stored product against movement from wind storms at storage location.

1.9 WASTE MANAGEMENT AND DISPOSAL

SPEC NOTE: Include the following Articles to specify information that will provide direction to the Contractor for the disposal of construction waste materials using environmentally responsible methodology other than landfill resources.

- .1 Deposit packaging materials in designated container on site for recycling or reuse.
SPEC NOTE: The disposal of packaging waste into landfill site demonstrates an inefficient use of natural resources and consumes valuable landfill space.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Dispose of corrugated cardboard, polystyrene and plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.
- .4 Fold up metal and plastic banding, flatten and place in designated area for recycling.

SPEC NOTE: Co-ordinate this Article with CCDC 2 and Section 01780 - Closeout Submittals, Product Warranties. Consult with Plasti-Fab for specific warranty requirements.

1.10 WARRANTY

- .1 Project warranty: Refer to CCDC 2 for project warranty provisions.
- .2 Manufacturer's warranty: Submit, for Owner's acceptance, [Plasti-Fab's] [manufacturer's] standard warranty document executed by authorized company official. [Plasti-Fab's] [Manufacturer's] warranty is in addition to and not intended to limit other rights Owner may have under the Contract Conditions.
SPEC NOTE: Co-ordinate this Article with manufacturer's warranty requirements. Plasti-Fab offers a normal twenty-year insulation warranty from time of purchase. Consult with Plasti-Fab for specific warranty details and provisions.

2 PRODUCTS

SPEC NOTE: For information on PlastiSpan insulation board, its physical, chemical, performance and dimensional attributes, Plasti-Fab's architectural catalogue, or visit the Plasti-Fab Web site at www.plastifab.com where you can view the information on line or download it and read at your convenience.

2.1 MANUFACTURERS

- .1 Plasti-Fab, 3015 - 5 Ave NE, #270, Calgary, AB T2A 6T8; Toll-Free Phone: 888-446-5377, Phone: 403-248-9306; Fax: 403-248-9325; E-mail: mailbox@plastifab.com; Web site: www.plastifab.com.

2.2 MATERIALS

SPEC NOTE: Select insulation type and thickness based upon the thermal resistance and loading requirement for the application. Where special fabrications are required, specify for Recessed Nailer (RN), Diagonal Sheathing (DS) or T-Stud.

SPEC NOTE: Specify expanded polystyrene insulation to CAN/ULC-S701 or ASTM C 578.

- .1 Expanded polystyrene:
SPEC NOTE: Specify insulation type(s) to suit project requirements.
 - .1 Thermal resistance:
 - .1 To CAN/ULC-S701:
 - .1 Type 1: RSI of 0.65 per 25 mm (R-3.75 per inch).
SPEC NOTE: Use the following Article to indicate manufacturer's name, address, product name, model number, style number or other product identifier, as well as means of contacting manufacturer, if not listed elsewhere.
 - .1 Acceptable material: PlastiSpan insulation board, manufactured by Plasti-Fab.
 - .2 Type 2: RSI of 0.70 per 25 mm (R-4.04 per inch).
SPEC NOTE: Use the following Article to indicate manufacturer's name, address, product name, model number, style number or other product identifier, as well as means of contacting manufacturer, if not listed elsewhere.

- .1 Acceptable material: PlastiSpan HD insulation board, manufactured by Plasti-Fab.
- .3 Type 3: RSI of 0.74 per 25 mm (R-4.27 per inch).
SPEC NOTE: Use the following Article to indicate manufacturer's name, address, product name, model number, style number or other product identifier, as well as means of contacting manufacturer, if not listed elsewhere.
 - .1 Acceptable material: PlastiSpan insulation board, manufactured by Plasti-Fab.
 - .2 To ASTM C 578:
 - .1 Type I : RSI of 0.63 per 25 mm (R-3.6 per inch).
 - .2 Type II : RSI 0.70 per 25 mm (R-4.0 per inch).
 - .3 Type VIII : RSI 0.67 per 25 mm (R-3.8 per inch).
 - .4 Type IX : RSI 0.74 per 25 mm (R-4.2 per inch).
SPEC NOTE: Use the following Article to indicate manufacturer's name, address, product name, model number, style number or other product identifier, as well as means of contacting manufacturer, if not listed elsewhere.
 - .5 Acceptable material: PlastiSpan insulation board, manufactured by Plasti-Fab.

Properties:

- .1 Board thickness: [_____ mm (_____ ")] [As indicated].
- .2 CFC free.
- .3 Edges: [Square] [Shiplapped] [Vented].
- .4 Surface burning characteristics for polystyrene insulation to CAN/ULC-S701, tested in accordance with CAN/ULC-S102.2.
- .5 Surface burning characteristics for polystyrene insulation to ASTM C 578, tested in accordance with ASTM E 84.

2.3 ADHESIVES

SPEC NOTE: Any adhesive used in contact with PlastiSpan insulation must be recommended by the manufacturer as suitable for use with foam plastic insulation.

- .1 Adhesive (for polystyrene): To CGSB 71-GP-24M, Type [_____], Class [_____], [low VOC,] compatible with expanded polystyrene (EPS) insulation.
- .2 Recommended by adhesive manufacturer for use with expanded polystyrene (EPS) insulation.

2.4 SHEATHING MEMBRANE

- .1 Exterior wall sheathing membrane: To CAN/CGSB-51.32, [single ply] [laminated] [spunbonded olefin] type, [coated] [impregnated].

2.5 FASTENERS

- .1 Large head, common nails with 25.4 mm (1") pre-punched fibre washers.

3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: Comply with [Plasti-Fab's] [manufacturer's] written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions].

3.2 PREPARATION

SPEC NOTE: Specify preparation of concrete surfaces where applicable to project.

- .1 Remove fins or projections left after stripping concrete forms to ensure concrete surfaces are level, straight and clean.

3.3 WORKMANSHIP

- .1 Install insulation after building substrate materials are dry.
- .2 Ensure masonry surfaces are plumb, level, straight and clean, and have mortar joints struck flush with masonry.
- .3 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .4 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
- .5 Cut and trim insulation neatly to fit spaces.
 - .1 Butt joints tightly, offset vertical joints.
 - .2 Use only insulation boards free from chipped or broken edges.
 - .3 Use largest possible dimensions to reduce number of joints.
- .6 Offset both vertical and horizontal joints in multiple layer applications.
- .7 Do not enclose insulation until it has been inspected and approved by Consultant.

3.4 EXAMINATION

- .1 Examine substrates and immediately inform Consultant of defects in writing.
- .2 Prior to commencement of work, ensure substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

3.5 RIGID INSULATION INSTALLATION

SPEC NOTE: Refer to the application instructions contained in the Plasti-Fab brochures: for Foundation Insulation: Selection, Application and Specification; Exterior and Interior Foundation Walls; Exterior Perimeter Foundation Insulation Systems; Frost Protected Shallow Foundation; Floor Insulation Systems; and GeoDrain Foundation Insulation Board; for Wall Applications: Selection, Application and Specification; Commercial / Industrial Construction; Exterior Insulation Finish Systems; Exterior Insulation Sheathing; Interior Systems; Precast Concrete Wall Panels; and Rain Screen (Cavity) Walls; for Floor Applications: Selection, Application and Specification; Floor Insulation Systems; Insulation for Radiant Floor Heating Systems; and Split Floor Slabs.

SPEC NOTE: Specify one or more of the following Articles required to suit type or types of insulation materials specified.

- .1 Apply Type [_____] adhesive to polystyrene insulation board at rate of [_____] L/m² (_____] gal/ft²) by [notched trowel] in accordance with adhesive manufacturer's recommendations.
SPEC NOTE: Specify Articles 3.5.2, 3.5.3 or 3.5.4 to suit project board insulation installation requirements.
- .2 Imbed insulation boards into vapour barrier type adhesive, applied as specified, prior to skinning of adhesive.
- .3 Place 38.1 mm (1-1/2") spots of adhesive on insulation edges. Press insulation onto wall with slight sliding motion.
- .4 Place 25.4 mm (1") spots of adhesive on insulation at 304.8 mm (12") oc each way. Press insulation into place with slight sliding motion.
SPEC NOTE: Modify the following Article for concrete substrates and specify fastener to suit project requirements.
- .5 Drill pilot hole minimum of 25.4 mm (1") into substrate.
 - .1 Drive concrete fastener with 25.4 mm (1") fibre washer into hole with hammer.
- .6 Leave insulation board joints unbonded over line of expansion and control joints.
 - .1 Bond continuous 152.4 mm (6") wide 0.15 mm (6 mil) polyethylene strip over expansion and control joints using compatible adhesive before application of insulation.

3.6 PERIMETER FOUNDATION INSULATION

SPEC NOTE: Extent of perimeter foundation insulation should be indicated on drawings.

- .1 Interior application: Extend boards [[_____] mm (_____)"] vertically below bottom of finish floor slab [as indicated]; install on inside face of perimeter foundation walls.
- .2 Exterior application: Extend boards [[_____] mm (_____)"] minimum below finish grade [as indicated] [to top of footing]; install on exterior face of perimeter foundation wall with adhesive.
- .3 Under slab application: Extend boards [[_____] mm (_____)"] in from perimeter foundation wall [as indicated]. Lay boards on level compacted fill.
- .4 Perimeter heating duct application: Compact walls of heating duct trench to form solid backing.
 - .1 Attach insulation boards to perimeter foundation wall extending from underside of finish floor to [101.6] mm ([4"]) below bottom of heating duct.
 - .2 Lay insulation boards in bottom of heating duct trench, extend to [[152.4] mm ([6"]) beyond heating duct] [[609.6] mm ([24"]) minimum from inside face of perimeter foundation wall].
 - .3 Secure insulation in place to prevent displacement.

3.7 CAVITY WALL INSTALLATION

SPEC NOTE: Specify the following Article where no vapour barrier is required.

- .1 Install polystyrene insulation boards on outer surface of inner wythe of wall cavity [over impaling clips] [on bed of adhesive].

3.8 FIELD QUALITY CONTROL

SPEC NOTE: Use the following Articles only when manufacturer's field services are desired to verify the quality of the installed

- components. Establish the number and duration of periodic site visits required by Plasti-Fab and specify below. Consult with Plasti-Fab for services required. Delete if field services are not required.
- .1 Have [Plasti-Fab] [manufacturer of products supplied under this Section] review Work involved in handling, installation/application, protection and cleaning of its product[s], and submit written reports, in acceptable format, to verify compliance of work with Contract.
 - .2 Manufacturer's field services: Provide [Plasti-Fab's] [manufacturer's] field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with [Plasti-Fab's] [manufacturer's] instructions.
 - .3 Schedule site visits to review work at stages listed:
 - .1 After delivery and storage of products, and when preparatory work on which the work of this Section depends is complete, but before installation begins.
 - .2 [Twice] during progress of work at [25%] and [60%] complete.
 - .3 Upon completion of the work, after cleaning is carried out.
 - .4 Obtain reports within [three] days of review and submit immediately to Consultant.

3.9 CLEANING

- .1 Remove temporary coverings and protection to adjacent work areas. Repair damage to installed products.
- .2 Remove construction debris from project site and legally dispose of debris.

END OF SECTION BUILDING INSULATION SECTION 07210