

K. Division 7 - Thermal and Moisture Protection1. Damp-proofing

- a. Confirm with soil investigation report the need to use damp proofing
- b. Specify emulsified mineral colloid type, unfilled
- c. Apply to exterior side of foundations against earth when rooms occur below grade

2. Waterproofing (Below Grade)

- a. Confirm with soil investigation report the need to use waterproofing.
- b. Use either rubberized asphalt waterproofing or asphalt emulsion type including primer together with coated glass cloth membrane.
- c. Apply on exterior side of vertical faces of all walls which separate interior of building from earth, from grade, down over footings to bearing level. Use two-ply system for walls to 10 feet below grade; three plies to 20 feet and four plies to 30 feet.
- d. Use insulation as a protection board where feasible.

3. Preformed Metal Cladding

- a. Design Requirements
 - 1) Design cladding to support a positive wind load of 20 psf and a negative wind load of 12 psf at a deflection not to exceed 1/180 of the span.
 - 2) Design wind loads specified in above clause shall apply to surface or part of surface located up to 40 feet above grade. For surface or part of surface located more than 40 feet above grade, these design loads shall be multiplied by appropriate exposure factor, as listed in the current adopted building code.

- b. Use rolled steel
- c. Paint Finish
 - 1) Pre-coated paint finish shall be selected from standard color range.
 - 2) The paint film shall meet the standards for pre-coated galvanized sheet steel based on exterior use.

4. Caulking

a. Materials

Specify materials designed for use on surfaces encountered, and as specified by the compound manufacturer, to assure adhesion of compound and to prevent staining of substrate material.

b. Application

Perform work in accordance with compound manufacturer's specifications, under his supervision, and using pressure guns and other equipment as provided by him. Finish joints so that they are smooth, and free from ridges, wrinkles, air pockets, and embedded foreign materials.

5. Roofs - Class A and Complying With Class 100 Wind Uplift Resistance

Verify minimum slope requirements with laser transit before final roofing coverage. All roofing applications must meet current Energy Star criteria. All roofs shall have walking treads to and around roof equipment for maintenance. These shall be compatible with the roof system.

a. Built-Up Bituminous Roofing

- 1) Conform to manufacturer's details. Material and workmanship warranty for the total system should be for full value for twenty (20) years ND, "No Dollar Limit".
- 2) Minimum construction shall consist of:

- a) Deck sloped minimum 1/4" per foot (1:50) to roof drains.
 - b) Roof drains located at 40 foot on centers maximum
 - c) Vapor barrier
 - d) Minimum insulation value of R20
 - e) Perimeter mechanical fastening of insulation
- b. Modified Bitumen Roofing
- 1. Material and workmanship warranty for the total system should be for full value for twenty (20) years NDL, "No Dollar Limit".
 - 2. Minimum construction shall consist of:
 - a) Deck sloped minimum 1/4" per foot to roof drains
 - b) Roof drains located at 40 foot on centers - maximum
 - c) Vapor barrier
 - d) Minimum insulation value of R20
 - e) A finish coat such as "acrylic coating" or aluminized asphalt coating
- c. Single-ply Roofing
- 1. Material and workmanship warranty for the total system should be for full value for twenty (20) years NDL, "No Dollar Limit".
 - 2. Minimum construction shall consist of
 - a) Deck sloped minimum 1/4" per foot to roof drains
 - b) Roof drains located at maximum 40 foot on centers

- c) An EPDM Roofing System that is fully adhered and non-ballasted. A minimum of a 20-year warranty from time of installation.
 - d) Non-penetrating mechanical attachments
 - e) Membrane thickness .080
 - f) Minimum insulation value of R20
- d. Asphalt/Fiberglass Shingles:
- 1.) Should be installed over an ice and water shield substrate where necessary.
 - 2.) A minimum of a 30-year warranty from time of installation, NDL, "No Dollar Limit".
- e. Insulated TPO System
- 1.) Material and workmanship warranty for the total system should be for full value for twenty(20) years NDL, "No Dollar Limit".
 - 2.) Minimum Construction shall consist of:
 - a) Deck sloped minimum ¼" per foot to roof drains
 - b) Roof drains located at 40 foot centers-maximum
 - c) Vapor barrier
 - d) Manufacturer recommended form of attachment: Mechanical, Cold or Hot applied systems.
 - e) TPO thickness of .080
 - f) Minimum insulation value of R20

6. Insulation

- a. Thermal barriers should be provided by locating service areas such as washrooms, stairs, corridors, etc. along the perimeter, especially the northern one, where possible.
- b. The most efficient orientation of the building and its parts, such as windows and doors should be selected.
- c. The building envelope's thermal insulation shall be as continuous as possible and comply with the City's commercial building Energy Code.
- d. For site work specify insulation, particularly to protect services where necessary or warranted.
- e. Foam insulation should be made without CFC's or formaldehyde components. Molded Expanded Polystyrene (EPS) or cellulose insulation should be considered. Products should have at least a 15-year R-value warranty.

7. Vapor and Air Barriers

- a. Where a building assembly is to be subjected to a temperature differential and a differential in water vapor pressure and will be adversely affected by condensation, the assembly shall be designed to prevent condensation by providing a continuous vapor and air barrier in the assembly on the high vapor pressure side of the material that has the major thermal resistance.
- b. Where a material or combination of materials that have a resistance to water vapor flow equivalent to that of a vapor barrier are used on the low vapor pressure side of the material that has the major thermal resistance in a building assembly:
 - 1) A continuous vapor barrier, for use in above-grade building construction, shall be installed on the high vapor pressure side.
 - 2) An air space ventilated to the outside or other method of equal effectiveness shall be provided for removing the water vapor that may pass from the high vapor pressure side through the material with the major thermal resistance.

8. Walk Treads

All roofs shall have walking treads to equipment on the roof. These shall be compatible with the roof system