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| https://media.licdn.com/mpr/mpr/shrink_100_100/p/3/005/0a9/1de/3fbdb4e.png | Hydrotech Membrane Corporation  10,951 Parkway Boulevard  Anjou, Quebec, H1J 1S1  Web: [www.hydrotechmembrane.ca](http://www.hydrotechmembrane.ca) |

**Hydrotech Spec Note:**

In order to maintain a fair and impartial bidding process, add the following paragraph to the INSTRUCTIONS TO BIDDERS (section 00 21 13 of the National Master Specification (NMS)):

**REQUESTS FOR SUBSTITUTIONS**

When products are mentioned by their trade name or by the manufacturer’s name, those shall form the basis of substitution requests. Requests for substitutions shall only be considered if they are forwarded in writing to the offices of the Consultant no later than ten (10) working days prior to the bid closing date. Such requests must be complete with descriptive data and samples in order to allow proper evaluation and comparison between the proposed substitutions and the specified products.

Where applicable, approval of such substitution requests shall be through the issuance of an addendum amending the bid documents.

Only materials, equipment or products accepted through addenda will be considered as equivalents.

The contractor shall not, at any time, base its bid price on equivalent products that have not been accepted in accordance with the procedures described above.

**Hydrotech Spec Note:**

This section is only provided as a guide to assist a knowledgeable specifier in writing a suitable specification for a hot-applied rubberized asphalt roofing system on concrete decks. The specifier may choose applicable paragraphs among the ones provided or add new ones in accordance with the specific requirements of the project.

**Hydrotech Spec Note:**

Detail drawing Section 07 55 56.14 may be consulted in paper form or on the Web to help write the specifications. Also, technical data for each material and product shown on the Drawings and specified in this Section may be found in the binder produced by Hydrotech Membrane Corporation.

# General

## SUMMARY

**Hydrotech Spec Note:**

The “SUMMARY” Article is a brief summary of the contents covered in this section and is not intended to describe the entire scope of the work.

### Preparation of substrates

### Hot-applied rubberized asphalt membrane

### Polyester fabric reinforcing

### Elastomeric reinforcing

### [Prefabricated expansion joint]

### Protection sheet

### Insulation

### Filter fabric

### Ballast

### Walkways

### Pitch pockets at membrane penetrations

## PRODUCTS INSTALLED, BUT NOT SUPPLIED BY THIS SECTION

**Hydrotech Spec Note:**

In the following article, list sections which specify products required to be installed by this section. For example, prefabricated concrete pavers used as ballast and/or walkways can be supplied by landscaping sections (see Division 32) to be coordinated with the pavers indicated to be installed in Part 3 of this Section).

Also, when products or special equipment is indicated to be installed "by others" or their installation is termed as “Not in Contract”, it is to be understood that such work will be performed by the Owner.

### Section [32 13 13 Precast Concrete Paving [for ballast] [for walkways]]

## RELATED SECTIONS

**Hydrotech Spec Note:**

The “RELATED SECTIONS” Article informs the reader (General Contractor or other) that there may be other sections whose scope may directly affect the work of this section.

Its aim is not to identify specific work specified elsewhere in the project manual excluded from this section but which would "normally" form part of it. Such coordination and division of labour is the responsibility of the General Contractor and not that of the Specifier.

Indicate below, the number and the title of each applicable section.

### Section [03 30 00 - Cast-in-place concrete: sloped towards the drain].

### Section [03 41 00 - Structural precast concrete].

### Section [03 45 00 - Architectural precast concrete].

### Section [04 20 00 - Concrete masonry units (parapets)].

### Section [06 10 00 - Rough carpentry: nailers, parapets and cleats].

### Section [07 14 00 - Hot-applied rubberized asphalt waterproofing system applied to [foundation walls] [parking decks] [paved terraces] [elevated slabs]].

### Section [07 21 00 - Board insulation].

### Section [07 25 00 - Air barriers].

### Section [07 26 00 - Sheet vapour retarders].

### Section [07 62 00 - Flashings and sheet metal: metal flashing and counter-flashings].

### Section [07 92 00 - Joint sealants].

### Section [22 14 26 - Roof drains].

### Section [\_\_\_\_\_\_\_\_\_\_].

## REFERENCE STANDARDS

**Hydrotech Spec Note:**

Indicate below the applicable reference standards that are used in this section. Identify each standard using the name of the standard agency, the standard number and its title. Indicate the publication and revision dates of each standard in accordance with those provided by Hydrotech Membrane Corp.

### CGSB-37-GP-9Ma Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.

### CAN/CGSB-37.50-M89 Hot Applied, Rubberized Asphalt for Roofing and Waterproofing.

### CAN/CGSB-37.51-M90 Application for Hot-Applied Rubberized Asphalt, for Roofing and Waterproofing.

### CGSB-37-GP-52M Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric.

### CAN/ULC-S701-11 Thermal Insulation, Polystyrene, Boards and Pipe Covering.

### CAN-A231.2-M95 Precast concrete paving slabs/Precast concrete pavers.

### CSC TEK-AID 07120 Hot Rubberized Asphalt Waterproofing and Roofing.

### CRCA (Canadian Roofing Contractors’ Association).

### FM (Factory Mutual Engineering Corporation) Roof Assembly Classifications.

### ULC (Underwriters Laboratories of Canada) Fire Hazard Classifications.

### BBA (British Board of Agreement) Agreement Certificate No. 90/2432.

## SYSTEM DESCRIPTION

**Hydrotech Spec Note:**

Use this Article to set the parameters and requirements for the design or performance criteria of the roofing system installation.

### Roofing system consisting of a hot-applied, reinforced, flexible, rubberized asphalt membrane applied to cast-in-place [precast] concrete decks. The membrane shall be protected against the following:

#### Damage resulting from installation and adhesion of the insulation to the membrane, by means of a protection sheet,

#### Ultraviolet light, temperature changes, damages due to pedestrian traffic, wind uplift forces or fire hazards, by means of Type IV rigid polystyrene insulation, a filter cloth and clean stone ballast of sufficient weight to withstand wind loads [in accordance with the requirements of regulatory bodies such as [ULC], [FM] [.. ] and others.

## SUBMITTALS

**Hydrotech Spec Note:**

Use this article only if the roofing system includes specific details such as flashings, insulation or expansion joints or if interfaces with other elements must be clearly illustrated to properly identify the responsibility of each trade.

**Hydrotech Spec Note:**

Indicate the appropriate section reference and edit its number and title.

### Submit shop drawings in accordance with section 01 33 00 - Submittal Procedures [01 10 00 - Summary].

### Show details and locations for [expansion joints] [seismic joints] [plane changes] [and] [penetrations] [site-fabricated joints] [roof plans showing layout of pavers serving as ballast and/or walkways].

### Product Data Sheets: Submit product data sheets for primer, membrane, fabric reinforcing, elastomeric sheet reinforcing, protection sheet, [separation sheet], insulation, [prefabricated expansion joints] [precast concrete pavers].

**Hydrotech Spec Note:**

Include the following paragraph to highlight the importance of interfacing between the work of this section and the existing or new building.

### Clearly indicate specific sealing and tie-in procedures that will be undertaken to ensure the integrity of the building envelope at connections between the hot-applied rubberized asphalt membrane and the wall, deck, air barrier [and] [vapour barrier].

## TESTING AND QUALITY CONTROL CERTIFICATES

### Submit a certificate issued by an independent laboratory competent and demonstrating that the membrane contains 40% post-consumer recycled content.

### Submit a certificate issued by a competent independent testing laboratory demonstrating that the membrane meets the requirements of CAN/CGSB-37.50.

### Provide an environmental product declaration issued by a recognized program operator.

### Provide a product health declaration issued by the membrane manufacturer.

**Hydrotech Spec Note:**

Due to its resistance to acids, Hydrotech Membrane Corp.’s rubberized asphalt membrane distinguishes itself from some other asphaltic materials on the market. Include the following paragraph if the Owner requires acid-resistant characteristics for the membrane.

### Rubberized asphalt membrane shall contain filler agents and rubber screenings in order to provide acid-resistant properties (fertilizers, cleaning products, etc.).

**Hydrotech Spec Note:**

Use the following paragraph in accordance with the requirements of governmental and regulatory agencies.

### Provide a certificate issued and signed by the insulation manufacturer certifying that the extruded polystyrene insulation is CFC-free.

### Upon request from the Consultant, submit satisfactory assurance that, for the duration of their lifetime, all materials used in the waterproofing system will remain compatible with each other and with the products with which they come into contact.

### In order to ensure full compatibility, all products specified in this section must come from a single manufacturer.

## QUALIFICATIONS

**Hydrotech Spec Note:**

Use this article if pre-qualification is required for the manufacturer or installer.

### The membrane manufacturer shall have at least fifteen (15) years successful business experience in the field of hot-applied rubberized asphalt roofing membranes.

### The membrane manufacturer must be ISO 9001-2015 approved and provide a notarized copy of the official certificate.

### Installer shall be approved by the manufacturer and submit proof that it has a successful record of field applications for the past five (5) years to the satisfaction of the Consultant.

### The installer shall submit a list of at least three (3) successful projects of similar nature and complexity to this project, successfully completed within the past five (5) years. Previous experience submittals must match the specific membrane system proposed by the installer.

### The site foreman shall have a minimum of five (5) years of experience and at least one field worker on the team shall also have a minimum of five (5) years of experience.

### The manufacturer shall have a qualified technician to assist the contractor, if necessary, in the application of products and the inspection of the roofing system.

## REGULATORY REQUIREMENTS

**Hydrotech Spec Note:**

a ULC-compliant roofing assembly is required to withstand exposure to a fire from a source located outside of the building. The classification is established depending on whether the degree of fire exposure is severe (class A), medium (class B) or light (class C). This classification is established in accordance with CAN/ULC-S107M, Methods of Fire Tests of Roof Coverings.

### The roofing system provided by this section shall be ULC class A, in accordance with test result no. 360 O18, conducted in accordance to CAN/ULC-S107M and CAN/ULC-S126-M86 test methods.

**Hydrotech Spec Note:**

The following paragraph refers to the requirements of the Factory Mutual (FM) insurance body. Verify if the Owner is insured with this organization before requiring the contractor to comply with these requirements.

### The roofing system provided by this section shall be FM - class [1] [2].

**Hydrotech Spec Note:**

In order to resist wind uplift pressures on the roof, FM data and associate performance criteria can be used to anchor the roof covering system or one of its parts to the structure (even if the Owner is not insured by FM) See for example "Data Sheet I-28" on insulated steel decks covered with lightweight concrete toppings or other approved materials.

### Ballasting requirements vary according to the height of the finished roof surface, the height of the parapets, the wind uplift design and the location of the building. The ballast design must be in accordance with DuPont’s and Hydrotech Membrane Corp.’s requirements and other applicable codes or wind design guides. Contact Hydrotech for recommendations regarding ballast design.

## MOCK-UPS

**Hydrotech Spec Note:**

Use this article to build a portion of the roofing system on site and over a specific area.Such a mock-up will permit review of the membrane installation procedures, coordination with the work of several sections, testing to be conducted on site, training of various trades in specific applications techniques, and monitoring of the installation.

**Hydrotech Spec Note:**

Indicate the appropriate section reference and edit its number and title.

### Build mock-ups in accordance with section [01 33 00 - Submittal Procedures] [01 10 00 - Summary].

### Install the roofing system over an area of at least [10] square metres; include a typical lap joint, [an expansion joint], [an outside corner] [and] [an inside corner]. The waterproofed surface resulting from the construction of the mock-up may become part of the finished work, provided it is approved by the Consultant.

### Wait [24] hours prior to undertaking [roofing] work to allow the Consultant to examine the mock-ups and approve them.

## PREINSTALLATION MEETINGS

**Hydrotech Spec Note:**

Use this section if the Owner intends to include these meetings in its administration of the construction process; define the detailed requirements (for the entire of the project if possible) to which this article refers in the appropriate section of Division 1.

### Hold a pre-installation site meeting [one] [---] week (s) prior to the start of the work of this section, in accordance with the requirements of Section [01 31 00 - Project Management and Coordination] [01 10 00 - Summary].

### Request the attendance of representatives from testing and inspection companies, manufacturer’s representatives, installers and other parties directly affected by the work of this section.

### Review installation conditions and procedures and coordinate with the work of related sections. Adhere to the manufacturer’s requirements and ensure approval of the substrate.

## DELIVERY, STORAGE AND HANDLING

### Deliver materials unopened and in their original packaging, properly labelled with the manufacturer’s name, installation instructions, U.L labels and any other identification numbers.

### Store materials in a clean and safe manner without exceeding the structural capacity of the storage substrates.

### Store absorbent materials off-ground, in a dry place and protected from inclement weather.

### Store rolls upright.

### Only remove from storage area material quantities that can be installed in a day’s work.

### Store insulation away from [sunlight], [inclement weather] and any deleterious substances.

### Store materials in accordance with manufacturer's written instructions.

## SITE CONDITIONS

**Hydrotech Spec Note:**

For the “SITE CONDITIONS” article, refer to the workplace hazardous materials information system (WHMIS) specified in section 01 35 43.13 - Environmental Procedures for Hazardous Materials for all renovation work. Specify below any additional requirements.

### Do not install hot-applied rubberized asphalt membranes when the ambient temperature or the substrate temperature is below -18°C.

### Ensure substrates are dry and free from snow and ice. Use only dry materials, and apply materials only when weather conditions will not promote moisture infiltration into waterproofing layers.

### Perform membrane preparation and application in a well ventilated area.

### Ensure membranes and accessories are installed such that they are not exposed to temperatures exceeding 82°C (i.e. warm ducts, vents and exhaust stacks) throughout their lifetime.

### Note that primers contain petroleum distillates and are extremely flammable; do not breathe these vapors, do not use near open flames or in poorly ventilated areas. Read the container labels and material safety data sheets for additional information.

### Avoid contact between materials such as petroleum, grease, solvents, mineral oil, vegetable oil, animal fat etc. and roofing membrane. If appropriate, inform membrane manufacturer of anticipated exposure to foreign matter or chemical fumes. Manufacturer shall assess the impact of these items on the performance of the roofing system.

**Hydrotech Spec Note:**

For roofing design with more than 17% slope contact Hydrotech Membrane Corp. for more information.

### For typical protected membrane roof systems, roof slopes must not exceed 17% (2:12 or 10°).

**Hydrotech Spec Note:**

The weight of the ballast required to keep the insulation in place varries according to the height of the finished roof surface, the height of the parapets, the wind uplift design and the location of the building.

### The weight and design of the ballast system shall meet the requirements of "Tech Solutions 508.2 - Ballast Design Guide for PMR Systems" by Dow® Chemical Company or other applicable codes.

### In order to protect the work, the general contractor shall ensure that adequate measures are taken to protect the membrane.

## SCHEDULING AND CRITICAL PATH MANAGEMENT

**Hydrotech Spec Note:**

Use this article when a critical path is required for the work of this section to enable partial occupation of the building or the work of another section to proceed.

### Submit a [schedule] [and] [critical path] in accordance with the requirements of section [01 31 00 - Project Management and Coordination] [01 10 00 - Summary].

### Coordinate with work of related sections to allow the installation of materials and work that must precede the application of the roofing membrane.

## WARRANTY

**Hydrotech Spec Note:**

Retain the following paragraph for Federal Government projects. Verify references to General Conditions “C” and edit accordingly.

### For work of this section, the 12 month warranty period indicated in the General Conditions “C” is extended to [24] [60] months.

**Hydrotech Spec Note:**

Retain the following paragraph for private sector projects. Verify and modify references to article GC - 12.3 as necessary.

### Submit a written warranty, signed by the manufacturer and installer and naming the Owner as beneficiary, certifying that the hot-applied rubberized asphalt roofing system will remain in place and will retain its waterproofing properties, in accordance with the requirements of article GC - 12.3 of the General conditions, except the warranty shall be for a period of [24] [60] months.

### Submit to the Owner a two (2) year guarantee issued by the roofing subcontractor issued on the Canadian Roofing Contractor’s Association’s (CRCA) “Standard Form of Warranty” covering defects of workmanship commencing from date of Substantial Performance of *The Work*.

### Correct all workmanship deficiencies during these inspections at no cost to the Owner.

**Hydrotech Spec Note:**

Include this article only when the requested warranty is longer than a year. Hydrotech Membrane Corp. offers a warranty covering the products it supplies provided that the manufacturer’s published installation and maintenance instructions are followed for a period of one year.

### Submit a single-source written warranty from the manufacturer naming the Owner as beneficiary.

#### Materials Warranty (excluding workmanship):

##### Duration: [5] [10] [15] years.

#### Waterproofing warranty (including materials and workmanship):

##### Duration: [5] [10] [15] [20] years.

#### Insulation warranty covering 80% of the initial thermal resistance and wind uplift resistance for up to 110 km/h wind speeds:

##### Duration: [5] [10] [15] [20] years.

# Products

**Hydrotech Spec Note:**

Below is a list of all potential materials that could be used in the installation of a hot-applied rubberized asphalt roofing system. Make sure that only materials necessary for the completion of the current project are specified in this section.

## PRIMER

### Surface conditioner:

#### Acceptable product: “QUICK-SET” by Hydrotech Membrane Corp.

#### Acceptable product: “56170” by Hydrotech Membrane Corp.

## RUBBERIZED ASPHALT

### Hot-applied rubberized asphalt: conforming to CAN/CGSB - 37.50.

#### Acceptable product: Flexible and monolithic waterproof membrane having 40% post consumer recycled content, MM6125® by Hydrotech Membrane Corp.

## FABRIC REINFORCING

### Non-woven polyester fabric reinforcing suitable for use with hot-applied rubberized asphalt membrane.

#### Acceptable product: “Flex-Flash® FH-16” by Hydrotech Membrane Corp.

## ELASTOMERIC REINFORCING

### Reinforcing synthetic rubber sheet manufactured from uncured neoprene having a minimum thickness of 1.6 mm.

#### Acceptable product: “Flex-Flash U.N.®” by Hydrotech Membrane Corp.

## SEPARATION SHEET

### 0.12 mm thick polyethylene separation sheet.

#### Acceptable product: “Poly 500” by Hydrotech Membrane Corp.

## PROTECTION SHEET

### 2 mm thick, elastomeric SBS bitumen protection sheet with sanded/sanded finish and reinforced with a 95 gr/m² fibreglass sheet.

#### Acceptable product: “Hydroflex® 30” by Hydrotech Membrane Corp.

### 3.5 mm thick, elastomeric SBS bitumen protection sheet with sanded/ceramic granular finish and reinforced with a 95 gr/m² fibreglass sheet. For protected membrane roofs requiring a Factory Mutual approval:

#### Acceptable product: “Hydrocap® 90 FR” by Hydrotech Membrane Corp.

## PREFABRICATED EXPANSION JOINTS

**Hydrotech Spec Note:**

These expansion joints are available in different configurations. Specify the proper type according to the peculiarities of the project. Contact Hydrotech’s technical representatives to determine what type of joint is suitable for your project.

### Monolithic, factory-vulcanized elastomeric expansion joint manufactured without joints or splices

#### Joints for horizontal movement up to ±50 mm: “RedLine® 40” by Situra.

#### Joints for horizontal movement up to ±50 mm with a maximum hydraulic head of 41 m “RedLine® 40G” by Situra.

#### Joints for horizontal movement up to ±100 mm: “RedLine® 100” by Situra.

#### Joints for horizontal movement up to ±250 mm: “RedLine® 240” by Situra.

## RIGID INSULATION

**Hydrotech Spec Note:**

Class A roofs in accordance with ULC require a type IV rigid insulation having a minimum thickness of 57 mm.

### Rigid extruded polystyrene insulation for use over the waterproofing membrane: Type IV Insulation, “STYROFOAM ™ brand” as manufactured by DuPont, distributed by Hydrotech Membrane Corp.

#### Insulation to meet CAN / ULC-S701-11 with minimum R-5 LTTR (RSI-0.86) thermal resistance per inch (25 mm) thickness..

#### Minimum compressive strength (ASTM D 1621): 240, 276, 414 or 690 kPa (35, 40, 60 or 100 psi).

#### Maximum water absorption by volume (ASTM D2842): 0.7%.

#### Water vapour permeance for 25 mm (1") thickness (ASTM E96): 35-45 ng /(Pa\*s\*m²) (0.6-0.8 Perm) (max.).

#### The insulation shall have an RSI (R) value per 25.4 mm (1") thickness of RSI 0.88 m2 \* K/W (R 5.0°F \* ft² \* h/Btu) when tested at 23.9 °C (75°F) temperature average according to ASTM C518 and ASTM C177.

#### The insulation shall be CFC and HCFC free.

#### Acceptable products: “STYROFOAM ™”, “ROOFMATE ™”, “HiLoad 40”, “HiLoad 60” and “HiLoad 100”. Consult Hydrotech for recommended products.

## FILTER FABRIC

### 100% woven polypropylene black, UV-resistant fabric designed for installation in a protected membrane roofing system, between the insulation and the [stone] [and] [paving] ballast.

#### Acceptable product: “FABROC® 400” by Hydrotech Membrane Corp.

## PITCH POCKETS

### Pitch pocket for plastic cement: [453 gm (16 oz.) copper] [0.8 mm thick, galvanized steel] [in accordance with requirements of section 07 62 00 - sheet metal flashing and trim].

## PLASTIC CEMENT

### Use membrane specified in Article 2.2 - rubberized asphalt of this specification.

## BALLAST [AND WALKWAYS]

### Stone: crushed, sieved, opaque, non-porous stone with a diameter of 19 to 32 [40] mm, of appropriate size, and washed free of fines, long fragments of ice and snow.

**Hydrotech Spec Note:** Retain paragraph below when it is necessary to increase the weight of the ballast around the perimeter of the roof and/or install a walkway.

Ensure that the concrete pavers (or granite pavers or other types of pavers) scheduled to be installed do not form part of the products supplied by landscaping (see Division 32), are appropriately listed in the article of Part 1 “PRODUCTS INSTALLED, BUT NOT SUPPLIED BY THIS SECTION”.

### Concrete pavers, 610 mm x 610 mm x 45 mm thickness meeting the following physical characteristics in accordance with CSA standard A231.2-06:

|  |  |
| --- | --- |
| **Property** | **Results** |
| Compressive strength | ≥ 60 MPa |
| Flexural Modulus | ≥ 6.5 MPa |
| Water absorption | maximum 5% |
| Freeze/thaw resistance | ≤ 1% for 34 cycles |

# Execution

## PROTECTION

### Protect walls and areas adjacent to the staging or installation areas.

### Post warning signs and install safety barriers around the place of the work. Keep them in good condition until completion of the work.

### Promptly remove asphalt stains from adjacent work.

### Take necessary means to evacuate rain water as far as possible from the building surfaces, until the drains or similar systems are installed and connected.

### Prevent traffic on substrates and protect work of this Section until completion of the Work. Promptly implement protection measures deemed necessary and specified by the Consultant.

### Provide walkways by placing plywood over the membrane to allow traffic of people and equipment without damaging the membrane.

### At the end of each day’s work or when work is interrupted due to inclement weather, protect materials that have been removed from the storage area.

### Provide protection around the roof’s edges and provide ballast.

## SUBSTRATE EXAMINATION

### Examine substrates and immediately inform the Consultant of any defects in writing.

### Before starting work, ensure the following conditions are in place:

#### Substrate is solid, level, uniform, dry and free of snow, ice, frost and any other contaminants; remove dust and debris,

#### Parapet walls are already built,

#### Drains have been installed at the appropriate elevations relative to the finished surface,

#### Sleeves, vents, pipes and other items penetrating the substrate and intended to receive the work of this section are installed correctly and securely,

#### Plywood or lumber nailers have been installed on the walls and parapets in accordance with specified requirements.

## PREPARATION - GENERAL REQUIREMENTS

**Hydrotech Spec Note:** Sand blasting of the substrate may be required to remove existing curing compounds present on the substrate. Coordinate between the finishes applied to concrete surfaces and section 03 30 00 - cast-in-place concrete. All concrete surfaces must be finished to wood trowel requirements at the minimum, and must have cured for at least 14 days. If applicable, notify the general contractor or the construction manager.

### Prior to starting any work, remove from substrates any materials that may adversely affect the bond between the substrate and the roofing membrane. Remove materials including but not limited to the following: curing products, dust, paint, ice, stripping agents and loose particles.

### Heat the rubberized asphalt, using a double-walled, indirect-heat melter fuelled by heat transfer oil having a flashpoint of 315°C (max). The melter must be equipped with thermometers and a direct-drive mechanical agitator. It is strictly forbidden to heat the membrane in a direct-fired heat melter. The temperature of the membrane in the melter must be between 180°C (minimum) and 190ºC (maximum). Never exceed the maximum temperature.

### Bridging cracks and construction joints more than 1.5 mm and less than 6 mm in width: apply a 300 mm wide and 3 mm thick layer of rubberized asphalt centred on the axis of the crack and embed 150 mm wide elastomeric reinforcing sheet in it; ensure the ends of the elastomeric reinforcing sheet overlap and are fully adhered for a length of 150 mm. Avoid air pockets.

### Apply another 3 mm thick layer of rubberized asphalt on the reinforcing sheet so that it is perfectly embedded into the membrane.

**Hydrotech Spec Note:** Consult manufacturer’s catalogue for technical information regarding the expansion joints.

### Expansion joint sizes and elastomeric reinforcing sheet types:

#### Joints 25 mm and less, with total movement of 50%: 1.6 mm thick elastomeric reinforcing.

#### Joints between 25 mm and 50 mm, with total movement of 50%: 1.6 mm thick double elastomeric reinforcement, complete with filler rod

#### Joints 50 mm or more and/or greater than 50% movement: use RedLine® prefabricated expansion joints.

### Elastomeric expansion joints:

#### Bridge joint by spreading a 3 mm thick and 300 mm wide layer of rubberized asphalt over joint.

#### Slip first elastomeric reinforcing sheet folded into a loop into the joint to a depth equal to one and a half the width of the joint; ensure the edges of the sheet extend at least 150 mm past each side of the joint. Insert the backer rod inside the loop formed by the sheet.

#### Coat the elastomeric sheet with a 3 mm thick layer of rubberized asphalt. Extend the coating for at least 150 mm beyond the sheet. Embed a second sheet of elastomeric reinforcing and overlap the first sheet by 75 mm at the edges. Provide a loop above the backer rod.

#### Prepare the expansion joint with a single length of elastomeric sheet; if this is not feasible, the overlap must be at least 150 mm long.

#### Affix the upper edges of the reinforcing sheet to vertical surfaces with a tie bar.

### RedLine® expansion joints:

#### Bridge joint by spreading a 3 mm thick and 300 mm wide layer of rubberized asphalt over joint.

#### While membrane is still very hot, embed expansion joints. Ensure expansion joints are centered on the axis of the joint. Avoid air pockets and apply pressure over the joint.

#### For vertical surfaces, apply a layer of bitumen to both the substrate and the expansion joints to obtain a better bond.

#### Coat the white part of the expansion joint with two layers of 3 mm thick polyester-reinforced rubberized asphalt.

### Metal flashing for mechanical vents and pipes: provide an elastomeric reinforcing sheet and install it around vents and membrane penetrations. Position sheet in location and seal with rubberized asphalt and waterproofing clamp. For substrate penetrations, use prefabricated metal flashing.

### Pitch pockets: position pitch pockets over the membrane. Adhere a sheet of elastomeric reinforcing to the membrane and cover the flange of the pitch pockets. Fill the pitch pockets with rubberized asphalt or putty mastic in order to ensure water drainage.

### Flashing drains: extend the membrane and elastomeric sheet reinforcing (600 x 600 mm) on the upper side of the drain flange and provide a sealed and waterproof assembly between the membrane and the drain. Install clamp and tighten it enough around the membrane to get a watertight connection with the latter. Seal all drains during installation of ballast [and precast concrete pavers] or installation of any other materials that may clog them. Remove sealing materials when work is interrupted or upon completion of the work.

**Hydrotech Spec Note:** Select from the following two articles, the appropriate PREPARATION procedures for the types of SUBSTRATES that apply to the project

## PREPARATION - CONCRETE SUBSTRATES

### Concrete surface to be waterproofed must be at least be wood trowel-finished or better to ensure proper adhesion.

### Plug formwork holes, gaps and superficial cracks with a latex filling product compatible with the waterproofing membrane.

### Ensure concrete has cured for a minimum of 14 days prior to applying the base coat.

### Apply the surface conditioner on dry substrates, in accordance with CAN/CGSB-37.51 at a rate of 1 litre per 4 to 6 m² of area.

### Grind all sharp edges of joints or plane changes and remove any loose aggregate; substrates shall be completely free of all preformed mastic sealing compounds or similar materials for a depth equal to not less than twice the width of the joint. Chamfered edges are preferred for expansion joints.

## PREPARATION - PRECAST CONCRETE SUBSTRATE

### Ensure side seals and end-joints are filled with grout before membrane installation.

### Joints in the longitudinal axis: perform joint bridging using a strip of 150 mm wide reinforcing fabric, embedded between two layers of 3 mm thick rubberized asphalt. Ensure strips overlap at least 50 mm and provide a 75 mm wide rubberized asphalt bleed beyond the edges of the reinforcing strip.

### Joints in the transverse axis: perform joint bridging using a strip of 300 mm wide elastomeric reinforcing sheet, sandwiched between two layers of 3 mm thick rubberized asphalt. Ensure strips overlap at least 150 mm and provide a 75 mm wide rubberized asphalt bleed beyond the edges of the reinforcing strips.

## MEMBRANE

### Hot-apply the rubberized asphalt and form flashings with fabric reinforcement or a reinforced elastomeric sheet as appropriate, in accordance with the minimum requirements of CAN/CGSB - 37.51 and the manufacturer’s instructions. The more stringent requirements shall prevail.

### Apply a base layer of rubberized asphalt continuously over the concrete substrate to an average thickness of 3 mm.

### Completely cover the base layer with 1000 mm wide reinforcing fabric. Be careful to overlap each joint at least 50 mm. Cover the fabric with a 3 mm thick top layer.

### The thickness of the two layers should have an average of 6 mm without readings less than 4 mm.

### Maintain the continuity of the building envelope’s [air] [and] [vapour] barrier with the roof membrane.

## SEPARATION SHEET

### Place separation sheet in bitumen while it is still hot enough to provide an adequate bond without damaging the sheets.

### Start the installation at the low point of the substrate and overlap each sheet by at least 50 mm.

### Bring up separation sheet and adhere them against the walls while the rubberized asphalt is still hot.

## PROTECTION SHEET

### Install the applicable protection sheet while the rubberized asphalt is still tacky.

### Overlap sheets 50 mm to ensure they completely cover the membrane.

### Bring up protection sheet and adhere against the walls while the rubberized asphalt is still hot.

## RIGID INSULATION

### Promptly install insulation boards. Butt insulation boards in order to obtain tight joints in parallel rows, and such that end joints are staggered. Cut the panels and fit them properly to corners and around the perimeter.

### Adhere insulation boards to vertical or inclined surfaces using approved construction adhesive so that insulation boards do not move during subsequent work.

## FILTER FABRIC

### Install filter fabric continuously, without adhesion, over the insulation. Overlap joints at least 300 mm.

### Cut the fabric around drains, vents, and other penetrations. Position fabric against vertical portions of penetrations and cover with flashing.

## STONE BALLAST [AND PRECAST CONCRETE PAVERS]

**Hydrotech Spec Note:**

Please refer to Tech Solution 508.2 "Ballast Design Guide for PMR System.

### Install the stone ballast as soon as possible after the installation [of the fabric] [insulation], at a rate of at least [50] kg/m2.

### Place the stone ballast to obtain a layer of uniform thickness over the entire surface. Cover the base of metal flashings at least 100 mm of stone.

### Spread stone around the perimeter of the surface over a width of 2400 mm and around the penetration over a width of 2400 mm, in order to provide a minimum weight of [98] kg/m2 and a width of 1200 mm around the penetrations.

## WALKWAYS

### Install concrete pavers used as walkways, [in accordance with the manufacturer's instructions] [and] according to the indications provided on the drawings.

## FIELD QUALITY CONTROL

**Hydrotech Spec Note:**

The inspection company must have sufficient experience in testing waterproofing and installation methods applicable to the membranes specified in this section.

### The inspection and testing of hot-applied rubberized asphalt membranes shall be performed by the testing laboratory designated by the [Consultant] [the Owner], in accordance with the requirements of section [01 45 00 - Quality Control] [01 10 00 - Summary].

## TESTING

**Hydrotech Spec Note:**

Several types of tests may be required to ensure that the waterproofing system meets the requirements of the specifications. Specify in the “TESTING” article below, the appropriate test methods as well as the required results.

### [---------].

## FLOOD TEST

**Hydrotech Spec Note:**

Regarding the Article "FLOOD TEST", a field test is generally specified to control the performance of the waterproofing coatings applied on horizontal surfaces where hydrostatic pressure is present and considered an important factor. Ensure substrates can support the dead loads applied by the amount of water required to perform the test and specify the height of the hydraulic head needed to obtain the required hydrostatic pressure.

### Do not conceal the roofing installation until inspection and testing have been successfully completed to the satisfaction of the Consultant.

### Clog drains and build a temporary dam around the horizontal waterproofing test area for the duration of the test. Flood the test area in order to obtain a water head of at least [80] mm.

### Maintain water at the specified level for [24] [48] hours.

### If required, repair leaks and repeat the flood test as necessary.

### Drain water after test is completed.

## CLEANING

### Clean the work in accordance with the requirements of section [01 74 00 - Cleaning and Waste Management].

END OF SECTION