PART 1. GENERAL CONDITIONS

1.01 DESCRIPTION

.1 Scope

To install a mechanically attached Sika Sarnafil roofing membrane with flashings and other components to comprise a roofing system. Mechanical attachment is based upon a RhinoBond Assembly. A S'Fast System can be used in lieu of the RhinoBond Assembly.

.2 Related Work

The work includes but is not necessarily limited to the installation of:

.1 Substrate Preparation
.2 Roof Scuppers
.3 Wood Blocking
.4 Vapour Barrier
.5 Insulation Layers
.6 Utility Board
.7 Roof Membrane
.8 Fasteners
.9 Adhesive for Flashings
.10 Roof Membrane Flashings
.11 Walkways
.12 Metal Flashings
.13 Snow Fence
.14 Sealants

.3 Upon successful completion of work the following warranties may be obtained:

.1 Sika Sarnafil Warranty
.2 Roofing Contractor Warranty

.4 Roof Systems

.1 Roof Type A

- Snow Fence
- 60 mil membrane
- Utility Board
- Existing rigid insulation – 2 layers – 1.5 inches
- Existing Vapour Barrier
- Existing 2.0" Cedar Deck

.2 Roof Type B

- 60 mil membrane
- 2 layers – 2.0 inch rigid insulation
- Vapour Barrier
- Existing 2.0” Cedar Deck

.3 Roof Type C

- Snow Fence
- 60 mil membrane
- Utility Board
- Existing 2.0” Cedar Deck

1.02 QUALITY ASSURANCE

.1 This roofing system shall be applied only by a Roofing Contractor authorized by Sika Sarnafil prior to bid (Sika Sarnafil "Applicator").

.2 Prior to the commencement of the project, the successful roofing contractor shall submit to Sika Sarnafil a completed NOA form. Product will not be released for the project until this form has been submitted and approved by Sika Sarnafil

.3 Sika Sarnafil’s field Technical Representative shall be present for the commencement of the installation of the roofing system. The roofing contractor must give Sika Sarnafil appropriate notification of the start-up date.

.4 During the start-up meeting, the successful roofing contractor will provide Sika Sarnafil’s Technical Representative a list of employees with a Certificate of Technical Proficiency (2 years or newer). These employees will remain on site for the duration of the installation. A minimum of 3 certified employees are required on the job site at all times.

.5 Sika Sarnafil will provide periodic site reviews of the installation. All reports generated by Sika Sarnafil’s Technical Representative will be made available to the specifying authority.

.6 Upon completion of the installation and the delivery to Sika Sarnafil by the Applicator of a certification that all work has been done in strict accordance with the contract specifications and Sika Sarnafil's requirements, an inspection shall be made by a Technical Representative of Sika Sarnafil to review the installed roof system.

.7 Any deficiencies indicated in the final review shall be corrected in a timely matter so that the applicable warranty can be issued by Sika Sarnafil.

.8 There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner, the Owner's Representative and Sika Sarnafil.

1.03 SUBMITTALS

The Roofing Contractor will submit with their bid the following documentation. Failure to do so will result in tender disqualification:

.1 A letter from Sika Sarnafil indicating the roofing contractor has the ability to provide the required warranty provided all work has been inspected and completed in accordance with this specification and the general application guidelines of Sika Sarnafil.

.2 A letter from the membrane supplier(SRP Building Products Inc.) stating that the Contractor will be able to supply the following documents within 5 days of securing this project:

- Stamped Engineering report that indicates that the roof structure has been reviewed by an Engineering firm and that the proposed Sika Sarnafil Roofing System can be applied with no adverse effects on the structural capabilities of the Arena.
- Stamped Engineered drawing indicating the securement of the wood blocking for the purpose of securing the Alpine Snow Guard snow fence system
- Sika Sarnafil Wind Design Review based upon CSA 123 testing for the specific location and building profile in conjunction with pull-out test results.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.

.2 Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.

.3 Membrane rolls shall be stored lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.

.4 All adhesives shall be stored at temperatures between 40º F (5º C) and 80º F (27º C).

.5 All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.

.6 All materials which are determined to be damaged by the Owner's Representative or Sika Sarnafil are to be removed from the job site and replaced at no cost to the Owner.

1.05 JOB CONDITIONS

.1 Sika Sarnafil materials may be installed under certain adverse weather conditions but only after consultation with Sika Sarnafil, as installation time and system integrity may be affected.

.2 Only as much of the new roofing as can be made weather tight each day, including all flashing and detail work, shall be installed. All seams shall be cleaned and heat welded before leaving the job site that day.

.3 All surfaces to receive new insulation, membrane or flashings shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.

.4 Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

.5 The Applicator is cautioned that certain Sika Sarnafil membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with Sika Sarnafil membranes. The Applicator shall consult Sika Sarnafil regarding compatibility, precautions and recommendations.

.6 Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas.

.7 The Applicator shall take precautions that storage and/or application of materials and/or equipment does not overload the roof deck or building structure.

.8 Flammable adhesives shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.

.9 Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner of such condition in writing for correction at the Owner's expense (letter copy to Sika Sarnafil).

1.06 WARRANTIES

.1 Sika Sarnafil System Warranty

Upon successful completion of the work to Sika Sarnafil's satisfaction and receipt of final payment, the Sika Sarnafil standard 20 year - System shall be issued. The warranty encompasses both workmanship as well as all roofing components supplied by Sika Sarnafil to provide a watertight roofing system for 20 years.

.2 Applicator/Roofing Contractor Warranty

The Applicator shall supply the Owner with a separate workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within the Applicator warranty term, defective or otherwise not in accordance with the Contract Documents, the Applicator shall repair that defect at no cost to the Owner. The Applicator's warranty obligation shall run directly to the Owner, and a copy shall be sent to Sika Sarnafil.

.3 Owner Responsibility

Owner shall notify both Sika Sarnafil and the Applicator of any leaks as they occur during the time period when both warranties are in effect.

1.07 SUSTAINABILITY

.1 The Roofing Membrane Manufacturer agrees to take back the roofing membrane once it has completed its service life. The cost to remove the membrane, package and ship it back to the manufacturer’s facility is not the responsibility of Sika Sarnafil

PART 2. PRODUCTS

2.01 GENERAL

.1 The components of the Sika Sarnafil mechanically-attached roof system are to be products of Sika Sarnafil as indicated on the Detail Drawings and specified in the Contract Documents.

.2 Components to be used that are other than those supplied or manufactured by Sika Sarnafil may be submitted for review and acceptance by Sika Sarnafil. Sika Sarnafil’s acceptance of any other product is only for a determination of compatibility with Sarnafil products and not for inclusion in the Sika Sarnafil warranty. The specifications, installation instructions, limitations, and/or restrictions of the respective manufacturers must be reviewed by the Owner’s Representative for acceptability for the intended use with Sika Sarnafil products.

2.02 MEMBRANE - Roof Type A & B & C

.1 Sarnafil® polyester reinforced membrane with a lacquer coating.

.2 Membrane shall conform to ASTM D4434-96 (or latest revision), “Standard for Polyvinyl Chloride Sheet Roofing,” Classification: Type III.

.1 Sarnafil S327-15, 60 mil (1.5 mm), thermoplastic membrane with polyester reinforcement

.3 Color of Membrane

.1 EnergySmart (**Reflective Grey**), initial reflectivity of 0.89, initial emissivity 0.88, solar reflective index (SRI) of 80.

.4 Typical Physical Properties

Parameters	ASTM Test Method	Minimum ASTM Requirement	Sarnafil Typical Physical Properties
Reinforcing Material	-		Polyester
Overall Thickness, min., inches (mils)	D751 +/- 10%	0.045” (45 mils)	**0.060**(60mils)
Breaking Strength, min., lbf/in. (KN/m)	D751	200 (35.0)	230 (40.0)
Elongation at Break, min.	D751	15%	20%
Seam strength*, min. (% of breaking strength)	D751	75	85
Retention of Properties After Heat Aging	D3045	-	-
Breaking Strength, min., (% of original)	D751	90	95
Elongation, min., (% of original)	D751	90	90
Tearing Strength, min., lbf (N)	D1004	45.0 (200)	50 (220)
Low Temperature Bend, -40°F (-40°C)	D2136	Pass	Pass
Accelerated Weathering Test (Xenson Arc)	D2565	5,000 Hours	10,000 Hours
Cracking (7x magnification)	-	None	None
Discoloration (by observation)	-	Negligible	Negligible
Crazing (7 x magnification)	-	None	None
Linear Dimensional Change	D1204	0.5% max.	0.1%
Weight Change After Immersion in Water	D570	± 3.0% max.	2.5%
Static Puncture Resistance, 33 lbf (15 kg)	D5602	Pass	Pass
Dynamic Puncture Resistance, 14.7 ft-lbf (20 J)	D5635	Pass	Pass

2.03 FLASHING MATERIALS - Roof Type A & B & C

.1 Wall/Curb Flashing

Sarnafil G Membrane

A fibreglass reinforced membrane adhered to approved substrate using Sarnacol adhesive. Colour, reflective grey, to match roof membrane colour. Consult Product Data Sheets for adhesive options and additional information.

.2 Perimeter Edge Flashing

.1 SarnaClad

A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. SarnaClad is a 25 gauge, G90 galvanized metal sheet with a 20 mil (1 mm) unsupported Sarnafil membrane laminated on one side. The dimensions of SarnaClad are 4 ft x 8 ft (1.2 m x 2.4 m) or 4 ft x 10 ft (1.2 m x 3.0m). Colour: reflective grey. Consult Product Data Sheet for additional information.

.2 Pre-finished, galvanized sheet metal, 24 ga. to ASTM A526-80, coating designation G90 commercial, colour selected by owner, with 22 ga. Metal clips

.3 Miscellaneous Flashing

.1 Pre-fab Scupper

PVC-coated, heavy-duty aluminum scupper that inserts into drainpipe. Flange has a PVC membrane skirt, that can be welded to base membrane or SarnaClad metal.

.2 Sarnacol 2170 Adhesive

A solvent-based reactivating-type adhesive used to attach membrane to flashing substrate. Consult Product Data Sheets for additional information.

.3 SarnaCorner

A 60 mil (1.5 mm) thick prefabricated corner. SarnaCorners come designated as either outside or inside corners. SarnaCorners are heat welded in place with a hand-held hot-air welder and roller. No caulking or sealants are necessary. Consult Product Data Sheet for additional information. Colour: Reflective Grey

.4 SarnaStack

A 60 mil (1.5mm) thick prefabricated stack/pipe boot. Available in one size which accommodates stack/pipe penetrations from ¾" – 8" (19mm- 203mm) in diameter. SarnaStack is heat-welded in place, becoming an integral part of the Sika Sarnafil Roofing System. Consult Product Data Sheet for additional information.

Colour: Reflective Grey

2.04 INSULATION BOARD - Roof Type A & B & C

.1 SarnaTherm III Insulation

A rigid isocyanurate foam insulation with glass facers. (SarnaTherm is available in 4 ft x 4 ft (1.2 m x 1.2 m) or 4 ft x 8 ft (1.2 m x 2.4 m) sizes. Consult Product Data Sheet for additional information.

Compliance:	CAN/CGSB-51.26-M86 CAN/ULC-S704 Insulation Type: 2 Class: 3
Board Dimensions:	1220 x 2440 mm (48 x 96 in.)
Compressive Strength ASTM D1621:	140kPa (20.0 psi) nominal
Tensile Strength ASTM D1623:	> 730 psf (35 kPa)
Water Vapour Permeance ASTM E96:	<1.0 perms (85 ng/Pa.S.m^2)
Dimensional Stability ASTM D2126:	< 2%
Water Absorption ASTM D2842:	< 1.0%, <3.5%
Thermal Resistance to:	CAN/ULC-S770
Roof Type A	**** 2 layers**
Total R.S.I. Value:	3.03 m^2.Deg. C/W
R value:	8.6 $ft.^2$.h.Deg. F/BTU per layer
Thickness:	38 mm (1.5 inches.) per layer ****allow 5% for replacement**
Roof Type B	**** 2 layers**
Total R.S.I. Value:	4.02 m^2.Deg. C/W
R value:	11.4 $ft.^2$.h.Deg. F/BTU per layer
Thickness:	50.0 mm (2.0 inches.) per layer

.2 SarnaTherm Roof Board A-III - **Roof Type A & C**

A rigid isocyanurate foam insulation with glass facers. (SarnaTherm is available in 4 ft x 4 ft (1.2 m x 1.2 m) or 4 ft x 8 ft (1.2 m x 2.4 m) sizes. Consult Product Data Sheet for additional information.

Compliance:	CAN/CGSB-51.26-M86 CAN/ULC-S704 Insulation Type: 2 Class: 3
Board Dimensions:	1220 x 2440 mm (48 x 96 in.)
Compressive Strength ASTM D1621:	550kPa (80.0 psi) nominal
Thickness:	13 mm (0.5 inches)

2.05 ATTACHMENT COMPONENTS - Roof Type A & B & C

.1 SarnaFastener-XP

A #15, heavy-duty, corrosion-resistant fastener used with Sarnaplate to attach insulation or Sarnadisc, Sarnadisc-XPN and SarnaBar to attach Sarnafil roof membrane to steel or wood roof decks. SarnaFastener-XP has a shank diameter of approximately 0.21 inch (5.3 mm) and the thread diameter is approximately 0.26 inch (6.6 mm). The driving head has a diameter of approximately 0.435 inch (11 mm) with a #3 Phillips recess for positive engagement. Consult Product Data Sheet for additional information.

.2 RhinoBond Plate

Sarnadisc RhinoBond is a specially designed, polymer coated plate used with Sarnafasteners to attach insulation or cover boards directly to the roof deck or structural purlins prior to the installation of the Sika Sarnafil membrane. The membrane will be welded to the Sarnadisc RhinoBond by induction welding.

.3 Sarnadisc I-Hook

A 2-3/8” dia. high strength plate used with a SarnaFastener XP to attach the roof membrane to the substrate. The Sarnadisc is a 20 ga. galvalume coated steel plate that meets the Factory Mutual 4470 criteria for corrosion resistance.

.4 SarnaPlate

Sarnaplate by Sika Sarnafil, corrosion-resistant 3” square metal plate for attaching insulation, overlay boards.

2.06 WALKWAY PROTECTION - Roof Type B

.1 SarnaTred

SarnaTred is a thermoplastic rolled-out, heat welded walkway used to protect the Sarnafil® roof membrane and provide a path for foot traffic and external abuse. Consult Product Data Sheet for additional information.

2.07 SARNAVAP 10 - Roof Type B

10 mil (0.25 mm) thick polyethylene vapor retarder/air retarder. SarnaVap- 10 is supplied in a folded panel that is rolled onto a core. The core width is 5 feet (1.5 m). When unrolled off the core and unfolded, the sheet dimensions are 20 feet (6.9 m) wide by 100 feet (33 m) long. Consult Product Data Sheet for additional information.

2.08 MISCELLANEOUS ACCESSORIES Roof Type A & B & C

.1 Aluminum Tape

A 2 inch (50 mm) wide pressure-sensitive aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as a bond-breaker under the coverstrip at SarnaClad joints.

.2 SarnaTape

A high-performance sealant tape with used with metal flashings as a preventive measure against air and windblown moisture entry.

.3 Sikaflex 1a

Sikaflex® 1a is a premium-grade, high performance, moisture-cured, one-component, polyurethane based, non-sag elastomeric sealant used at flashing terminations.

2.09 RELATED MATERIALS - Roof Type A & B & C

.1 Plywood

When bonding directly to plywood, a minimum ½ inch (12 mm) CDX (C side out), smooth-surfaced exterior grade plywood with exterior grade glue shall be used. Plywood shall have a maximum moisture content of 19% by weight on a dry weight basis.

.2 Wood blocking

Wood blocking shall be installed at chevron locations and under snow fence brackets as specified on Project Drawings. Thickness of nailers must match the insulation thickness to achieve a smooth transition. Creosote or asphalt-treated wood is not acceptable. Wood nailers shall conform to Factory Mutual Loss Prevention Data Sheet 1-49. All wood shall have a maximum moisture content of 19% by weight on a dry-weight basis.

2.10 SNOW FENCE - Roof Type A & C

.1 Snow fence shall consist of a stainless-steel base plate, 3-hole stainless steel bracket and 1 inch diameter aluminum tubing.

.2 Snow fence shall be exterior powder coated match colour of roofing membrane

.3 Snow fence shall be secured to wood blocking as per detail.

.4 Wood blocking to be installed as per stamped engineering drawing.

.5 Bases of design is Alpine Snowguard as supplied by SRP Building Products Inc.

2.11 HEAT TRACE CABLE (Option- separate from base bid)

.1 Heat Trace system shall be self-regulating/ conductive polymer coated.

.2 It shall run on 110-120 volts

.3 It shall have a rating of between 5 to 10 w/ft based upon recommendation of manufacturer.

.4 Bases of Design: Heat-line Freeze Protection System or equivalent

PART 3. EXECUTION

3.01 PRE-CONSTRUCTION CONFERENCE

.1 The Applicator, Owner's Representative/Designer and Manufacturer(s) shall attend a pre-construction conference.

.2 The meeting shall discuss all aspects of the project including but not limited to:

.1 Safety
.2 Set up
.3 Construction schedule
.4 Contract conditions
.5 Coordination of the work

3.02 SUBSTRATE CONDITION / INSPECTION

.1 Applicator shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.

.2 Applicator shall verify that the work done under related sections meets the following conditions:

.1 Roof curbs, nailers, equipment supports, vents and other roof penetrations are properly secured and prepared to receive new roofing materials.
.2 All surfaces are smooth and free of dirt, debris and incompatible materials.
.3 All roof surfaces shall be free of water, ice and snow.
.4 Sarnafil shall be applied over compatible and accepted substrates only.

3.03 SUBSTRATE PREPARATION

The roof deck and existing roof construction must be structurally sound to provide support for the new roof system. The Applicator shall load materials on the rooftop in such a manner as to eliminate risk of deck overload due to concentrated weight.

.1 Reroofing with removal of existing membrane - **Roof Type A**

All existing roofing membrane and coverboard, base/cap flashing, deteriorated wood blocking and metal flashings shall be removed. Remove only that amount of roofing and flashing which can be made weather tight with new materials during a one-day period or before the onset of inclement weather.

Note: The intention is to remove membrane and cover board and expose existing insulation which it to remain in place. Allow for 5% removal for damaged or wet existing insulation.

Note: Six existing roof top vents (see roof plan) are to be removed. Co-ordinate with the Owners representative for the removal of the six existing roof top vents. Over opening in roof deck, install 22 ga flat stock metal. Metal must extend 6 inches beyond the side of deck opening. Secure metal with #15 SarnaFasteners at 4 inches o.c. around entire opening to pin metal to existing deck.

.2 Reroofing with Removal of Existing Roofing – **Roof Type B**

All existing roofing, base flashing, deteriorated wood blocking, deteriorated metal flashings shall be removed. Remove only that amount of roofing and flashing which can be made weather tight with new materials during a one-day period or before the onset of inclement weather.

Note: Roof Type B has existing conduit running on the cedar deck. Care must be taken with removal to not cut or damage existing conduit. Damage or cut conduit will be the responsibility of roofing contractor

.3 Reroofing with removal of Existing membrane - **Roof Type C**

All existing roofing membrane/shingles, deteriorated wood blocking and metal flashings shall be removed. Remove only that amount of roofing and flashing which can be made weather tight with new materials during a one-day period or before the onset of inclement weather.

3.04 VAPOR BARRIER INSTALLATION – Roof Type B

.1 SarnaVap 10

.1 Wood Deck:

SarnaVap is loose-laid over substrate. Overlap all edges 4 inches (100 mm) and seal with butyl tape. Extend SarnaVap to perimeter and deck penetrations and seal to provide continuity of the building's air/vapor envelope. SarnaVap must be sealed on the vertical surfaces and at roof penetrations.

3.05 INSULATION INSTALLATION - Roof Type A & B & C

General Criteria:

.1 Insulation shall be installed according to insulation manufacturer's instructions.

.2 Insulation shall be neatly cut to fit around penetrations and projections.

.3 Do not install more insulation board that can be covered with Sarnafil membrane by the end of the day or the onset of inclement weather.

.4 Use at least 2 layers of insulation when the total insulation thickness exceeds 2-1/2 inches (64 mm). Stagger joints at least 12 inches (0.3 m) between layers.

.5 Mechanical Attachment:

.1 Insulation shall be mechanically fastened to the structural deck with approved Sarnafasteners and Sarnadisc RhinoBond according to the insulation manufacturer's and Sika Sarnafil's recommendations for fastening rates and patterns. The quantity and locations of the fasteners and plates shall also cause the insulation boards to rest evenly on the roof deck/substrate. Each insulation board shall be installed tightly against the adjacent boards on all sides.

.2 Fasten the insulation so the Sarnadisc RhinoBond and SarnaFastener XP in a 2 by 2 foot (0.6 by 0.6 m) or 2 by 3 foot (0.6 by 0.9 m) grid pattern according to Sika Sarnafil’s and the wind design requirements. Fasteners must be tight enough that the Sarnadisc does not turn, but not so tight as to deform the Sarnadisc.

.3 Fasteners are to be installed consistently in accordance with fastener manufacturer's recommendations. Fasteners are to have minimum penetration of 1.0”(25 mm) in wood deck and a maximum of 1.0” (25mm) through the structural steel deck. All fastening to be conducted through top flute of steel deck.

.4 Use fastener tools with a depth locator and torque-limiting attachment as recommended or supplied by fastener manufacturer to ensure proper installation.

Note:

Roof Type A: install 0.5 inch rigid insulation as specified over existing dry and undamaged insulation

Roof Type B: install 2 layers of 2.0” ridged insulation as specified

Roof Type C: install 0.5 inch rigid insulation as specified

3.06 SNOW FENCE WOOD BLOCKING – Roof Type A & C

.1 Based upon the snow fence locations, cut and remove the existing insulation to deck to allow for wood blocking to be installed for the future securement of the snow fence brackets. Existing insulation to fit tightly around the wood blocking without gaps.

.2 Wood blocking to be secured to roof deck as described in detail

.3 All base plates are 24 inches o.c. on roof A and 36 inches o.c on roof C

3.07 MEMBRANE ATTACHMENT- Roof Type A & B & C

Note: Sika Sarnafil S’Fast assembly can be used in lieu of RhinoBond Assembly. Installation as per manufacturers recommendation

.1 The surface of the insulation or substrate shall be inspected prior to installation of the Sarnafil roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.

.2 General

.1 Sarnafil S 327.60 full width rolls shall be placed over the installed boards. Membrane overlaps shall be shingled with the flow of water where possible. Seam overlaps may be placed over Sarnadisc RhinoBond plate. Welding of the plate will not be affected.

.2 Tack welding of the membrane for purposes of temporary restraint during installation is not permitted and may result in voiding of Sika Sarnafil warranty. Consult Sika Sarnafil’s Technical Department for further information.

.3 Field, Perimeter and Corner Areas

.1 Over the properly prepared, installed and attached substrate surface following either the 2 by 2 foot (0.6 by 0.6 m) or 2 by 3 foot (0.6 by 0.9 m) grid pattern, Sarnafil S 327.60 full-width rolls are to be installed so as to properly shed water. See Detail Drawings for fastener layouts. Refer to Wind Designed Review supplied by Sika Sarnafil based upon CSA 123 Dynamic loading.

.4 Securement Around Rooftop Penetrations

.1 Around all perimeters, at the base of walls, drains, curbs, vent pipes, or any other roof penetrations, Sarnafasteners and Sarnadisc RhinoBond, SarnaDisc or Sarnabars shall be installed according to perimeter rate of attachment. Fasteners shall be installed according to the manufacturer’s instructions. Fasteners shall be installed using the fastener manufacturer’s recommended torque-sensitive fastening tools with depth locators.

.5 Sarnafil membrane flashings shall extend 2-1/2 inches (63 mm) past Sarnadisc and be hot-air welded to the Sarnafil deck membrane.

.6 The surface of the insulation or substrate shall be inspected prior to installation of the Sarnafil roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.

3.08 RHINOBOND INDUCTION WELDING - Roof Type A & B & C

.1 General

.1 Welding equipment shall be provided by or approved by Sika Sarnafil. All mechanics intending to use the equipment shall have successfully completed a training course provided by a Sika Sarnafil Technical Service Representative prior to welding.

.2 All membrane to be welded shall be clean and dry.

.2 Induction Welding

.1 Activate the weld between membrane and plate using approved portable induction device. The induction coil must be positioned over the center of the Sarnadisc RhinoBond, +/- 1 inch (25 mm) Portable induction device must elevate the temperature of the Sarnadisc RhinoBond from ambient to 400 – 500 degree F (204 – 260 degree C). Cycle time will be affected by available power, use a heavy gauge power cord, at a minimum 12 gauge by 100 feet.

.2 When the induction welding cycle is complete, immediately place a Cool & Clamp magnetic weight on the welded assembly. This device must be left in place for at least 60 seconds.

.3 Quality Control of Induction Welding

.1 The Applicator shall check all induction welds each day. Check welds by using an ordinary plunger centered over the welded plate and pull straight up. Correct welds shall have no separation between the plate and membrane.

3.09 HOT-AIR WELDING OF SEAM OVERLAPS- Roof Type A & B & C

.1 General

.1 All seams shall be hot-air welded. Seam overlaps should be 5-1/2 inches (140 mm) wide for Sarnadisc and Sarnadisc-XPN, when automatic machine-welding and 4 inches (100 mm) wide when hand-welding, except for certain details.

.2 Welding equipment shall be provided by or approved by Sika Sarnafil. All mechanics intending to use the equipment shall have successfully completed a training course provided by a Sika Sarnafil Technical Representative prior to welding.

.3 All membrane to be welded shall be clean and dry.

.2 Hand-Welding

Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.

.1 The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.

.2 The nozzle shall be inserted into the seam at a 45 degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow," the hand roller is positioned perpendicular to the nozzle and rolled lightly. For straight seams, the 1-1/2 inch (40 mm) wide nozzle is recommended for use. For corners and compound connections, the 3/4 inch (20 mm) wide nozzle

shall be used.

.3 Machine Welding

.1 Machine welded seams are achieved by the use of Sika Sarnafil's automatic welding equipment. When using this equipment, Sika Sarnafil's instructions shall be followed and local codes for electric supply, grounding and over current protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated simultaneously off the generator.

.2 Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.

.4 Quality Control of Welded Seams

.1 The Applicator shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark grey material from the underside of the top membrane. On-site evaluation of welded seams shall be made daily by the Applicator at locations as directed by the Owner's Representative or Sika Sarnafil's representative. One inch (25 mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.

3.10 MEMBRANE FLASHINGS - Roof Type A & B & C

All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and Sika Sarnafil. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Applicator's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.

.1 Sarnacol Adhesive for Membrane Flashings

.1 Over the properly installed and prepared flashing substrate, Sarnacol adhesive shall be applied according to instructions found on the Product Data Sheet. The Sarnacol adhesive shall be applied in smooth, even coats with no gaps, globs or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be flashed. The bonded sheet shall be pressed firmly in place with a hand roller.

.2 No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels as required by welding techniques.

.2 Sika Sarnafil's requirements and recommendations and the specifications shall be followed. All material submittals shall have been accepted by Sika Sarnafil prior to installation.

.3 All flashings shall extend a minimum of 8 inches (0.2 m) above roofing level unless otherwise accepted in writing by the Owner's Representative and Sika Sarnafil Technical Department.

.4 All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place. No bitumen shall be in contact with the Sarnafil membrane.

.5 All flashing membranes shall be mechanically fastened along the counter-flashed top edge with Sarnastop at 6-8 inches (0.15-0.20 m) on center.

3.11 METAL FLASHINGS - Roof Type A & B & C

.1 Metal details, fabrication practices and installation methods shall conform to the applicable requirements of the following:

.1 Factory Mutual Loss Prevention Data Sheet 1-49 (latest issue).

.2 Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - latest issue.

.2 Metal, other than that provided by Sika Sarnafil, is not covered under the Sika Sarnafil warranty.

.3 Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily.

.4 Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.

.5 Metal joints shall be watertight.

.6 Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate the wood nailer a minimum of 1 inch (25 mm).

.7 Airtight and continuous metal hook strips are required behind metal fascia. Hook strips are to be fastened 12 inches (0.3 m) on center into the wood nailer or masonry wall.

.8 Counter flashings shall overlap base flashings at least 4 inches (100 mm).

.9 Hook strips shall extend past wood nailers over wall surfaces by 1½ inch (38 mm) minimum and shall be securely sealed from air entry.

3.12 SARNACLAD METAL BASE FLASHINGS/EDGE METAL - Roof Type A & B & C

All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and Sika Sarnafil. Acceptance shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing due to incomplete flashings, the affected area shall be removed and replaced at the Applicator's expense.

.1 SarnaClad metal flashings shall be formed and installed per the Detail Drawings.

.1 All metal flashings shall be fastened into solid wood nailers with two rows of post galvanized flat head annular ring nails, 4 inches (100 mm) on center staggered. Fasteners shall penetrate the nailer a minimum of 1 inch (25 mm).

.2 Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction.

.2 Adjacent sheets of SarnaClad shall be spaced ¼ inch (6 mm) apart. The joint shall be covered with 2 inch (50 mm) wide aluminum tape. A 4 inch minimum (100 mm) wide strip of Sarnafil flashing membrane shall be hot-air welded over the joint. Exercise caution at perimeter of roof. Workers shall follow OSHA safety procedures.

3.13 WALKWAY INSTALLATION – Roof Type B

.1 SarnaTred

Roofing membrane to receive SarnaTred Walkway shall be clean and dry. Place chalk lines on deck sheet to indicate location of Walkway. Apply a continuous coat of Sarnacol 2170 adhesive to the deck sheet and the back of Walkway in accordance with Sika Sarnafil's technical requirements and press Walkway into place with a water-

filled, foam-covered lawn roller. Clean the deck membrane in areas to be welded. Hot-air weld the entire perimeter of the Walkway to the Sarnafil deck sheet. Check all welds with a rounded screwdriver. Re-weld any inconsistencies. Important: Check all existing deck membrane seams that are to be covered by Walkway with rounded screwdriver and re-weld any inconsistencies before Walkway installation.

3.14 SNOW FENCE - Roof Type A & C

.1 Install Base Plate on top of wood blocking. Ensure plate is centered to allow 2 inches of wood blocking surface area to extend beyond Base Plate. All base plates are 24 inches o.c.

.2 Install target patch of membrane over base plate and weld to roof membrane

.3 Cut two tightly fitted holes in target patch to allow base plate bolts to be exposed

.4 Place a bead of SikaFlex caulking on the underside of the bracket and secure to base plate

.5 Use a nut and washers to secure and bracket to base plate

.6 Install 1.0 inch diameter tubing into holes of bracket as per manufacturer instructions. Connect tubes with couplings and install end caps.

3.15 HEAT TRACE – Optional Price

.1 The City of Temiskaming Shores will supply power to the exterior of the building. A demarcation point will be indicated at the mandatory site meeting.

.2 The contractor shall install the heat trace cable from the demarcation point in a continuous fashion such that the cable transverses the gutter and then proceeds down each downpipe. The cable will return up the downpipe and continue along the gutter. This process will continue the entire length of the gutter.

.3 The heat trace cable will be secured inside the gutter every 4 feet with a strip of membrane hot air welded to gutter

.4 The hook-up of the Heat-Trace system to the demarcation point will be conducted by a certified electrician supplied by the roofing contractor.

3.16 TEMPORARY CUT-OFF

All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100% watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the waterstop. The waterstop shall be sealed to the deck and/or substrate so that water will not be allowed to travel under the new or existing roofing. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of offsite. None of these materials shall be used in the new work.

If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Applicator's expense.

3.17 COMPLETION

Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of Sika Sarnafil shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the

Owner's Representative and Sika Sarnafil prior to demobilization.

All Warranties referenced in this Specification shall have been submitted and have been accepted at time of contract award.