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1. GENERAL

1.1 GENERAL INSTRUCTIONS

.1 Read and conform to:

.1 The General Conditions of the Contract [CCDC 2, 2008] [CCDC ??, YEAR].

.2 Comply with Division 1 requirements and documents referred to herein.

1.2 SUMMARY

.1 Section Includes: Provide modified bituminous deck waterproofing system including but not limited to:

.1 surface preparation including:

.1 Cleaning of substrate.

.2 Deck Primer

.3 Deck Detail Membrane

.4 Deck Waterproofing Membrane

.5 Flashing Membrane

.6 Sealant

.7 Protection Board

.2 Products installed but not supplied under this Section:

.1 Tack Coat

.2 Expansion Joints

.3 Related Sections: Following description of work is included for reference only and not presumed complete:

.1 [Stripping of existing deck membrane system] [and/or] [cutting of existing deck slabs]: Section 02 41 00, Demolition and Salvage.

.2 [Patching and Making Good of existing slab or deck] [and/or] [Concrete deck finish]: Section 03 30 00, Cast-in-Place Concrete.

.3 Provision of tack coat: Section 07 95 00, Expansion Control.

.4 Provision of expansion joints: Section 07 95 00, Expansion Control.

.5 Sealants other than those required for system: Section 07 18 00, Traffic Coatings.

1.3 REFERENCES

.1 Abbreviations and Acronyms:

.1 CRCA: Canadian Roofing Contractors' Association; www.roofingcanada.com.

.2 IRCI: International Concrete Repair Institute; www.icri.org

.3 MSDS: Material Safety Data Sheets.

.4 SBS: Styrene-Butadiene-Styrene.

.5 ULC: Underwriters Laboratories of Canada; www.ulc.ca.

.2 Reference Standards:

.1	ASTM D6164	- Standard Specification for styrene Butadiene Styrene (SBS) Modified Bituminous Materials using Polyester Reinforcements
.2	ASTM D4586	- Standard Specification for Asphalt Cement, Asbestos Free
.3	ASTM D3409	- Standard Test method for adhesion of asphalt-roof cement to damp, wet, or underwater surfaces
.4	Federal SS-C-153c	- Cement, bituminous, plastic
.5	CGSB 37-GP-9Ma	- Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing
.6	CGSB 37-GP-56M	- Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing
.7	CSA A123.4-04(08)	- Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 Prior to start-up and during work, review conditions of space below to ensure conflicts and/or altercations are kept to a minimum.

.2 Work deemed disruptive to overall Project shall be cleared by Contractor and Owner in advance.

.2 Preinstallation Meetings:

.1 Arrange preinstallation meeting 1 week prior to commencing work with parties associated with trade as designated in Contract Documents or as requested by Consultant. Presided over by Contractor, include Consultant who may attend, Subcontractor performing work of this trade, Owner's representative, manufacturer's representative, testing company's representative and consultants of applicable discipline. Contact Consultant and involved parties minimum 2 weeks prior to preinstallation meeting to confirm details of meeting.

.2 Record discussions of conference, decisions, agreements or conflicts reached and furnish a copy to involved parties. Review preparations and installation procedures and coordinate scheduling required for work of this Section.

.3 Review methods and procedures related to deck waterproofing including following:

.1 Tour, inspect and discuss conditions and coordination of substrate, deck drains, locations of deck drains, curbs, penetrations and other work performed by trades impacting this Section.
.2 Examine deck substrate conditions and finishes for compliance. Review structural loading limits of deck and inspect deck for loss of flatness and for required repair.
.3 Review methods and procedures related to deck waterproofing installation, including manufacturer's written instructions.
.4 Review deck waterproofing system requirements (Drawings, Specifications and other documents).
.5 Review required submittals.
.6 Review and finalize construction schedules related to deck waterproofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
.7 Review required inspections, testing, certifying and material usage accounting procedures.
.8 Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions.
.9 Review structural loading limitations of deck for stocking materials.
.10 Review flashing details, deck drainage and other conditions that will affect deck waterproofing systems.
.11 Review temporary protection requirements for deck waterproofing system during and after installation.
.12 Review deck observation and repair procedures after deck waterproofing installation.

.3 Scheduling:

.1 Co-operate with adjoining subtrades and promptly proceed with work as soon as site conditions permit.

.2 Ensure items to be incorporated into work of this Section and items required for incorporation by other subtrades are supplied in a timely manner. Proceed with work of this Section after built-in items are installed and deck substrates are completed.

1.5 SUBMITTALS

.1 Provide 2 copies of each submittal unless otherwise noted in Specifications.

.2 Product Data: Submit Product data on components of deck waterproofing system including but not limited to:

.1 Each Product to be used, composition of material and method of installation.

.2 MSDS.

.3 Certification of compliance with applicable standards and authorities having jurisdiction.

.4 Warranty.

.3 Shop Drawings: Submit Shop Drawings as required showing method of installation and layout of each layer, deck edge condition details, deck penetration flashing details, control and expansion joint details, standard deck sections, and other details required for proper deck waterproofing system installation not specified in, or are different from Specifications and Drawings.

.4 Samples: Provide the following samples of manufacturer's deck waterproofing system components prior to commencement of work in this Section:

.1 Detail membrane 300mm x 300mm (12"x12") square

.2 Waterproofing membrane 300 mm x 300 mm (12" x 12") square.

.3 Flashing material 300 mm (12") long.

.5 Test and Evaluation Reports:

.1 If requested, provide proof of product test report based on evaluation of comprehensive test performed by manufacturer and witnessed by a qualified independent testing agency for components for deck waterproofing system.

.2 Indicate components of deck waterproofing system comply with requirements of manufacturer and these Specifications including quantity, statistical and descriptive data for each Product and other data pertaining to date, time and temperature for each load of bulk asphalt.

.6 Manufacturer's Instructions: Submit manufacturer's installation instructions prior to installation of deck waterproofing system for use during installation.

.7 Qualification Statements:

.1 Provide a certificate or letter of authorization issued by waterproofing system manufacturer stating Contractor is registered, approved, authorized or licensed by deck waterproofing system manufacturer to apply their Products and furnish manufacturer's warranties if required.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Supply necessary maintenance data and repair instructions for binding into maintenance manuals. Data includes: Project name, location, dated and executed copy of manufacturer's warranty, described herein and name address and phone number of nearest manufacturer's representative. Include recommendations for periodic inspections, care and maintenance. Identify common causes of damage with instructions for temporary patching until permanent repair can be made.

1.7 QUALITY ASSURANCE

.1 Qualifications:

.1 Manufacturers: Company to be recognized by membrane manufacturer as being qualified to install their deck waterproofing systems.

.2 Installers:

.1 Waterproofing work shall be exclusively performed by skilled applicators having a minimum of 5 years' experience. The applicators employer shall furnish all adequate and necessary equipment in order to perform the work in accordance with the manufacturer's recommendations and recognized standards.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

.1 Deliver materials in manufacturer's original, unopened containers with manufacturer's labels intact and legible.

.2 Carefully unload in a manner to prevent damage.

.3 Refer to Product MSDS for precautionary measures during storage and handling.

.4 Keep pail goods and membrane materials dry, stored in rolls standing on end, selvage edge up, elevated from contact with moisture, at temperatures not less than 4 deg C (40°F) or more than 49°C (120°F) and pre-conditioned before installation. Handle rolls with care to avoid crushing, puncturing or other damage. Ensure selvage edge is not damaged during handling and banding strips are removed before application of membrane. Do not use wet or damp membrane or flattened rolls.

.5 Protect materials from damage by elements, weather and other activities on raised platforms and covered with breathable tarpaulins.

.6 Ensure pail-goods have tight fitting lids when not in use. Store on end in up-right position.

.7 Store combustible materials away from heat and open flames. Protect and store materials in dry, ventilated area away from elements or harmful substances.

.8 Store adhesive, emulsion based waterproofing mastics, sealants and primers between 15°C and 26°C or restore to temperature before use.

1.9 SITE CONDITIONS

.2 Ambient Conditions:

.1 Do not apply waterproofing membrane system during inclement conditions of snow or rain.

1.10 WARRANTY

.1 IKO Limited Labour and Membrane Warranty:

.1 Warrant work of this Section for a period of 5 years against leaks as a result of material defects in accordance with the General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of consultant and at no expense to Owner.

2. PRODUCTS

2.1 MANUFACTURERS

.1 Manufacturer List: Products of the following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 IKO Industries Ltd.; https://www.iko.com/comm/

2.2 SYSTEMS

.1 Description:

.1 Design waterproofing membrane system and base flashings to be watertight, does not permit passage of water through finished system and resists exposure to weather without failure.

.2 Performance/Design Criteria:

.1 Material Compatibility: Ensure components of waterproofing system are compatible with adjoining materials under application and service as demonstrated by manufacturer and based on testing and field experience.

.2 Concrete Deck Waterproofing System: including but not limited to following:

.1 Surface preparation
.2 Primer over concrete deck.
.3 Deck detail membrane
.4 Deck waterproofing membrane.
.5 Flashing membrane
.6 Protection Board (optional & temporary)
.7 Tack coat
.8 Asphalt wearing course

.3 Materials:

.1 SBS Modified Bitumen Deck Detail Flashing: SBS modified asphalt base sheet meeting CGSB 37-GP-56M, Type 2 Grade 2 Class P, polyester reinforced, hot melt film on top surface and bottom surface. Provide “TorchFlex TP-180-FF-Base” by IKO Industries Ltd.

.2 SBS Modified Bitumen Cap: SBS modified asphalt cap sheet meeting CGSB 37-GP- 56M, Type 2, Grade 2, Class G, 180 g/m² (0.6 oz/sq ft) polyester reinforced, hot melt film on bottom surface and granulated top surface. Provide “ArmourBridge” by IKO Industries Ltd.

.3 SBS Modified Bitumen Cap Flashing: SBS modified asphalt cap sheet meeting CGSB 37-GP-56M, Type 2, Grade 2, Class G, 180 g/m² (0.6 oz/sq ft) polyester reinforced, hot melt film on bottom surface and granulated top surface. Provide “ArmourBridge” by IKO Industries Ltd.

.4 Mineral Fortified Core Protection Board; Mineral fortified asphaltic core reinforced on both faces with a glass fiber mat. Used to **temporarily** protect the waterproofing membrane from damage prior to surface paving and subsequent resurfacing operations. Minimum board size shall be 4'x8' at a thickness of 1/8". Provide "ProtectoBoard" by IKO Industries Ltd.

.5 Bituminous Materials:

.1 Asphalt Primer: Unfilled asphalt conforming to CGSB 37-GP-9Ma. Provide "Mod-Bit Primer" by IKO Industries Ltd.

.2 Rubberized Asphalt Sealing Compound: Modified asphalt sealant for use in sealing terminations, around penetrations and waterproofing membrane edges. Provide "Aquabarrier Mastic" by IKO Industries Ltd.

3. EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions:

.1 Verify concrete has cured a minimum of [] days per local authorities [an adhesion test is recommended before membrane application]

.2 Verify that no snow or rain conditions are expected

.3 Verify substrate is clean dry and smooth and suitable to receive bituminous sheet membrane via heat fusion.

3.2 PREPARATION

.1 Protection of In-Place Conditions:

.1 The deck should be free of moisture, ridges, hollows and sharp objects

.2 The deck must be clean, dry and free of all contaminants including but not limited to concrete treatment products, lubricating oils, diesel fuels, grease, and old waterproofing products. Any contaminants must be removed by abrasive blast.

.3 The deck must be prepared to minimum surface roughness of CSP between 3 & 5 per IRCI Technical Guideline No. 310.2R-2013. Abrasive blasting is recommended on all surfaces the waterproofing membrane will be applied

.4 Patches to the bridge deck should be well adhered, stable, and able to withstand the designed loads and compatible with bituminous materials. Mortar must be cured per manufacturer's recommendations.

3.3 APPLICATION

.1 Safety Precautions: Refer to Product MSDS sheets for any safety requirements when applying components.

.2 Install waterproofing membranes to properly prepared surfaces in accordance with manufacturer's instructions

.3 Adjoining surfaces shall be protected against any damage that could result from the waterproofing installation

.4 Remove all adhesive identification tapes on rolls of membrane

.5 Primer application to concrete deck:

.1 Surfaces where heat welded membranes will be applied must receive a primer coating at the rate required by the manufacturer.

.2 Primer must be dry before application of the membrane

.6 Drain, expansion joint, and penetration flashings:

.1 Where drain, expansion joint or penetrations exist they must be addressed with a detail membrane prior to installing the waterproofing membrane and flashing membrane.

.2 Heat weld detail membrane in accordance with manufacturer's instructions

.3 Detail membrane must extend a minimum of 100mm on vertical surface

.4 Detail must extend a minimum of 150mm on the horizontal surface

.5 After installation of the detail membrane check all lap seams

.6 Follow flashing details as recommended by manufacturer

.7 Waterproofing membrane installation:

.1 The waterproofing membrane shall be installed parallel to the traffic flow

.2 Starting at the lowest point of the bridge surface, unroll and dry fit membrane and allow to relax

.3 Heat weld waterproofing membrane in accordance with manufacturer's instructions

.4 Side laps for waterproofing membrane shall be a minimum of 90mm

.5 End laps for waterproofing membrane shall be a minimum of 150mm. Prepare end laps by embedding granule surface of membrane to be overlapped 150mm.

.6 Continue application across deck until entire surface is covered with waterproofing membrane. Ensure end laps are staggered from each other a minimum of 609mm

.7 Make sure the membrane is properly welded providing a smooth application free of wrinkles, fish mouths, buckles, voids or seams bucking natural flow of water.

.8 After installation of waterproofing membrane check all lap seams

.9 Apply minimum 12.5mm wide bead of sealant along edge of waterproofing membrane where it meets a curb, drain, penetration or expansion joint

.8 Membrane flashing detail

.1 Install membrane flashing in 1m wide strips to the vertical surface

.2 The flashing shall extend up the vertical surface to a maximum of 6mm from the top of the wearing course surface

.3 Flashing shall extend a minimum of 200mm onto the field of the waterproofing membrane

.4 Terminate flashing membrane on vertical surface in prepared chase

.5 Side laps shall be a minimum of 90mm

.6 End laps shall be a minimum of 150mm. Prepare end laps by embedding granule surface of membrane to be overlapped 150mm.

.7 Apply minimum 12.5mm wide bead of sealant along edge of flashing membrane

.9 Sealant application

.1 Apply sealant at the edge of upturns, expansion joints and drain perimeters after the waterproofing membrane has been installed

.2 Sealant should be installed using a trowel, extruder or pump.

.10 Waterproofing for various details

.1 Install detail membrane, waterproofing membrane and flashing membrane in conformance with various details as indicated on the construction plans and illustrated in the manufacturer's specifications

.11 Temporary installation of Protection Board. (optional)

.1 The protection board shall serve as protection of the waterproofing membrane from heavy machinery traffic

.2 If the protection board is not used as intended. A visual inspection of the membrane is recommended. Certain machinery present on these projects have wheels that lock in place when performing turns, and can create friction and abrasion that can displace membrane bitumen, or create tears in the membrane.

.3 If damage is observed, repairs should be made by torching additional Armourbridge membrane ensuring that the patch exceeds 150mm in all directions from the damaged area.

.12 Wearing course application

.1 Asphalt wearing course to be applied as soon as possible within72 hours of waterproofing membrane installation\only vehicles operating at slow speeds with rubber tires or the caterpillar tracks of the road surfacing machine are permitted on the incomplete system without approval from the project manager.

.2 Paving asphalt to be installed at the minimum temperature of 140°C

.3 Minimum thickness of asphalt paving after compaction is 60mm

END OF SECTION