

DEMOLITION FOR MINOR WORKS

1. GENERAL

1.1 References

- .1 Canadian Standards Association (CSA)
 - .1 CSA Z783, Deconstruction of Buildings and Their Related Parts

1.2 Action And Informational Submittals

- .1 Submit in accordance with the City of Winnipeg Standard Construction Specifications, CW 1110.

1.3 Site Conditions

- .1 Review "Preliminary Design for the Tache Booster Pumping Station and Surge Tower Upgrades, RFP No. 85-2016" and take precautions for flammable substances.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Contract Administrator immediately.
 - .1 Proceed only after receipt of written instructions have been received from Contract Administrator.
- .3 Notify Contract Administrator before disrupting building access or services.

2. EXECUTION

2.1 Examination

- .1 Inspect existing roof with Contract Administrator and verify extent and location of items designated for removal, disposal, and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
 - .1 Immediately notify Contract Administrator and utility company concerned in case of damage to any utility or service, designated to remain in place.
 - .2 Immediately notify the Contract Administrator should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

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2.2 Preparation

- .1 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.
 - .2 Keep noise, dust, and inconvenience to local residences to minimum.
 - .3 Protect building systems, services and equipment.
 - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
 - .5 Maintain a safe access for City of Winnipeg Operators to the building throughout demolition.
- .2 Demolition/Removal:
 - .1 Remove items as indicated.
 - .2 Remove parts of existing building to permit new construction.

END OF SECTION

ROUGH CARPENTRY FOR MINOR WORKS

1. GENERAL

1.1 References

- .1 ASTM International (ASTM)
 - .1 ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - .2 ASTM F1667, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples
 - .3 ASTM F2329/F2329M, Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners
- .2 Canadian Standards Association (CSA)
 - .1 CSA O121, Douglas Fir Plywood.
 - .2 CSA O141, Softwood Lumber.
 - .3 CSA O151, Canadian Softwood Plywood.
 - .4 CSA O325, Construction Sheathing.
 - .5 CSA Z809, Sustainable Forest Management.
- .3 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber.

1.2 Action And Informational Submittals

- .1 Submit in accordance with City of Winnipeg Standard Construction Specifications, CW 1100.

1.3 Quality Assurance

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.
 - .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809.

ROUGH CARPENTRY FOR MINOR WORKS

1.4 Delivery, Storage And Handling

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

2. PRODUCTS

2.1 Materials

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
 - .1 CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
 - .3 CSA-Z809
- .2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
 - .1 Board sizes: "Standard" or better grade.
 - .2 Dimension sizes: "Standard" light framing or better grade.
 - .3 Post and timbers sizes: "Standard" or better grade.
- .3 Panel Materials:
 - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
 - .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
 - .3 Plywood, OSB and wood based composite panels: to CSA O325.
- .4 Wood Preservative:
 - .1 Surface-applied wood preservative: coloured, or 5% pentachlorophenol solution, water repellent preservative.
 - .2 Pentachlorophenol use is restricted to building components that are in ground contact and subject to decay or insect attack only. Where used, pentachlorophenol-treated wood must be covered with two coats of an appropriate sealer.

ROUGH CARPENTRY FOR MINOR WORKS

- .3 Structures built with wood treated with pentachlorophenol and inorganic arsenicals must not be used for storing food nor should the wood come in contact with drinking water.
- .5 Primers, Paints and Coatings: in accordance with manufacturer's recommendations for surface conditions.

2.2 Accessories

- .1 Fasteners: to ASTM F2329/F2329M, for exterior work treated lumber.
- .2 Nails, spikes and staples: to ASTM F2329/F2329M.
- .3 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

3. EXECUTION

3.1 Examination

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Contract Administrator.
 - .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied to proceed from Contract Administrator.

3.2 Preparation

- .1 Treat surfaces of material with wood preservative, before installation.
- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3-minute soak on lumber and 1 minute soak on plywood.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.3 Installation

- .1 Comply with requirements of NBC, supplemented by the following paragraphs.
- .2 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .3 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.
- .4 Install wood backing, dressed, tapered and recessed slightly below top surface of roof insulation for roof hopper.

ROUGH CARPENTRY FOR MINOR WORKS

- .5 Install sleepers as indicated.
- .6 Use caution when working with particle board. Use dust collectors and high quality respirator masks.
- .7 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .8 Countersink bolts where necessary to provide clearance for other work.

END OF SECTION

BOARD INSULATION

1. GENERAL

1.1 Related Requirements

- .1 Section 075200 Modified Bituminous Membrane Roofing.

1.2 References

- .1 Canadian Standards Association (CSA)
 - .1 CSA B149.1, Natural Gas and Propane Installation Code.
 - .2 CSA B149.2, Propane Storage and Handling Code.
- .2 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S604, Standard for Factory-built Type A Chimneys.
 - .2 CAN/ULC-S701.1, Standard for Thermal Insulation, Polystyrene Boards.
 - .3 CAN/ULC-S702.1, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification.
 - .4 ULC-S702.2, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 2: Installation.
 - .5 CAN/ULC-S704.1, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
- .3 The Workplace Health and Safety Act (Manitoba), Workplace Health and Safety Regulation.
 - .1 Safety Data Sheets (SDS).

1.3 Action And Informational Submittals

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with CW1110.
 - .2 Submit two copies of SDS - Safety Data Sheets in accordance with City of Winnipeg Standard Construction Specifications, CW 1110. Indicate VOC's insulation products and adhesives.
- .2 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.

BOARD INSULATION

1.4 Quality Assurance

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Convene pre-installation meeting one week prior to beginning work of this Section.
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordinate with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

2. PRODUCTS

2.1 Insulation

- .1 Extruded polystyrene XPS: to CAN/ULC-S701.
- .2 Type: 4.
- .3 Compressive strength: 25 psi.
- .4 Thickness: as indicated.
- .5 Size: 610 X 2440mm.
- .6 Edges: shiplapped.

2.2 Adhesive

- .1 Adhesive (for polystyrene): to CGSB 71-GP-24.
- .2 Type: 2.

2.3 Accessories

- .1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self-locking type.

BOARD INSULATION

3. EXECUTION

3.1 Manufacturer's Instructions

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 Workmanship

- .1 Install insulation after building substrate materials are dry.
- .2 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
- .4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN4-S604 type A chimneys and CAN/CSA-B149.1 and CAN/CSA-B149.2 type B and L vents.
- .5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .6 Offset both vertical and horizontal joints in multiple layer applications.
- .7 Do not enclose insulation until it has been inspected and approved by Contract Administrator.

3.3 Examination

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

3.4 Rigid Insulation Installation

- .1 Imbed insulation boards into vapour barrier type adhesive, applied as specified, prior to skinning of adhesive.

3.5 Roof Installation

- .1 Section 07 52 00 Modified Bituminous Membrane Roofing.

3.6 Cleaning

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

SPRAYED INSULATION – POLYURETHANE FOAM

1. GENERAL

1.1 References

- .1 The Workplace Health and Safety Act (Manitoba), Workplace Health and Safety Regulation.
 - .1 Safety Data Sheets (SDS).
- .2 Underwriters' Laboratories of Canada (ULC)
- .3 CAN/ULC-S101, Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- .4 CAN/ULC-S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .5 CAN/ULC-S705.1, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Material Specification.
- .6 CAN/ULC-S705.2, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Application.

1.2 Action And Informational Submittals

- .1 Provide submittals in accordance with City of Winnipeg Standard Construction Specifications, CW 1110.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies SDS - Safety Data Sheets.

1.3 Quality Assurance

- .1 Applicators to conform to Canadian Urethane Foam Contractors Association (CUFCA) Quality Assurance Program.
- .2 Qualifications:
 - .1 Installer: person specializing in sprayed insulation installations with 5 years documented experience approved by manufacturer.
 - .2 Manufacturer: company with minimum 5 years experience in producing of material used for work required for this project, with sufficient production capacity to produce and deliver required units without causing delay in work.
- .3 Health and Safety Requirements: worker protection:

SPRAYED INSULATION – POLYURETHANE FOAM

- .1 Protect workers as recommended by CAN/ULC-S705.2 and manufacturer's recommendations.
- .2 Workers must wear gloves, respirators, long sleeved clothing, eye protection, and protective clothing when applying foam insulation.
- .3 Workers must not eat, drink or smoke while applying foam insulation.

1.4 Delivery, Storage And Handling

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.5 Site Conditions

- .1 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and for 24 hours after application to maintain non-toxic, unpolluted, safe working conditions.
- .2 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.
- .3 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.
- .4 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

2. PRODUCTS

2.1 Materials

- .1 Insulation: spray polyurethane to CAN/ULC-S705.1.
- .2 Primers: in accordance with manufacturer's recommendations for surface conditions.

3. EXECUTION

3.1 Manufacturer's Instructions

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

SPRAYED INSULATION – POLYURETHANE FOAM

3.2 Application

- .1 Apply insulation to clean surfaces in accordance with CAN/ULC-S705.2 and manufacturer's printed instructions.
- .2 Use primer where recommended by manufacturer.
- .3 Apply sprayed foam insulation in thickness as required.

END OF SECTION

MODIFIED BITUMINOUS MEMBRANE ROOFING

1. GENERAL

1.1 References

- .1 Canadian Roofing Contractors Association (CRCA)
 - .1 CRCA Roofing Specifications Manual.
- .2 Canadian Standards Association (CSA)
 - .1 CSA A123.21, Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane-Roofing Systems .
 - .2 CSA A123.3, Asphalt Saturated Organic Roofing Felt.
 - .3 CSA A123.4, Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems.
 - .4 CSA A231.1/A231.2, Precast Concrete Paving Slabs/Precast Concrete Pavers.
 - .5 CSA O121, Douglas Fir Plywood.
 - .6 CSA O151, Canadian Softwood Plywood.
- .3 The Workplace Health and Safety Act (Manitoba), Workplace Health and Safety Regulation.
 - .1 Safety Data Sheets (SDS).
- .4 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S701.1, Standard for Thermal Insulation, Polystyrene, Boards.
 - .2 CAN/ULC-S702.1, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification.
 - .3 CAN/ULC-S702.2, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 2: Installation.
 - .4 CAN/ULC-S704.1, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
 - .5 CAN/ULC-S706.1, Standard for Wood Fibre Insulating Boards for Buildings.

1.2 Administrative Requirements

- .1 Convene pre-installation meeting one week prior to beginning waterproofing Work, with roofing contractor's representative and Contract Administrator.
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.

MODIFIED BITUMINOUS MEMBRANE ROOFING

- .3 Co-ordination with other building subtrades.
- .4 Review installation instructions and warranty requirements.

1.3 Action And Informational Submittals

- .1 Provide submittals in accordance with City of Winnipeg Standard Construction Specification, CW 1110.
- .2 Product Data:
 - .1 Provide two copies of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Provide shop drawings:
 - .1 Indicate flashing details.
 - .2 Provide layout for tapered insulation.
- .4 Manufacturer's Certificate: certify that products meet or exceed specified requirements.
- .5 Test and Evaluation Reports: submit laboratory test reports certifying compliance of bitumens and roofing felts and membrane with specification requirements.
- .6 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.

1.4 Quality Assurance

- .1 Installer qualifications: company or person specializing in application of modified bituminous roofing systems with 5 years documented experience approved by manufacturer.

1.5 Fire Protection

- .1 Fire Extinguishers:
 - .1 Maintain one cartridge operated type or stored pressure rechargeable type with hose and shut-off nozzle,
 - .2 ULC labelled for A, B and C class protection.
 - .3 Size 9kg on roof per torch applicator, within 6 m of torch applicator.
- .2 Maintain fire watch for 1 hour after each day's roofing operations cease.

1.6 Delivery, Storage, And Handling

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and Handling Requirements:

MODIFIED BITUMINOUS MEMBRANE ROOFING

- .1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.
- .2 Provide and maintain dry, off-ground weatherproof storage.
- .3 Store rolls of felt and membrane in upright position. Store membrane rolls with salvage edge up.
- .4 Remove only in quantities required for same day use.
- .5 Place plywood runways over completed Work to enable movement of material and other traffic.
- .6 Store sealants at +5 degrees C minimum.
- .7 Store insulation protected from daylight and weather and deleterious materials.

1.7 Site Conditions

- .1 Ambient Conditions
 - .1 Do not install roofing when temperature remains below -18 degrees C for torch application, or -5 degrees C to manufacturers' recommendations for mop application.
 - .2 Minimum temperature for solvent-based adhesive is -5 degrees C.
- .2 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.8 Warranty

- .1 For Work of this Section 07 52 00 - Modified Bituminous Membrane Roofing, 12 months warranty period is extended to 24 months except as stipulated in CW Supplemental Conditions D21.

2. PRODUCTS

2.1 Performance Criteria

- .1 Compatibility between components of roofing system is essential. Provide written declaration to Contract Administrator stating that materials and components, as assembled in system, meet this requirement.
- .2 Roofing System: to CSA A123.21 for wind uplift resistance.

2.2 Deck Covering

- .1 Glass Mat, Gypsum Board: to ASTM C 1177 12.7mm thick.

MODIFIED BITUMINOUS MEMBRANE ROOFING

2.3 Deck Primer

- .1 Asphalt primer: to manufacturer's recommendations.

2.4 Vapour Retarder

- .1 Base sheet vapour retarder: Styrene-Butadiene-Styrene (SBS) elastomeric polymer glass reinforcement, weighing 180 g/m².

2.5 Membrane

- .1 Base sheet:
 - .1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, glass reinforcement, having nominal weight of 180g/m².
 - .2 Type 2.
 - .3 Class C - plain surfaced.
 - .4 Grade heavy duty service.
 - .5 Top and bottom surfaces:
 - .1 sanded/polyethylene.
 - .6 Base sheet membrane properties:
 - .1 Strain energy (longitudinal/transversal): 8.1/8.8 kN/m.
 - .2 Breaking strength (longitudinal/transversal): 17.0/12.5 N/5 cm.
 - .3 Ultimate elongation (longitudinal/transversal): 60/65 %.
 - .4 Tear resistance: 60 N.
 - .5 Cold bending at -30 degrees C: no cracking.
 - .6 Softening point: 110 degrees C.
 - .7 Static puncture resistance: > 300.
 - .8 Dimensional Stability: -0.3 / 0.3 %.
- .2 Cap sheet membrane:
 - .1 Styrene-Butadiene-Styrene(SBS) elastomeric polymer, prefabricated sheet, glass reinforcement, having nominal weight of 250g/m².
 - .2 Type 2.
 - .3 Class A-granule surfaced.

MODIFIED BITUMINOUS MEMBRANE ROOFING

- .1 Colour for granular surface: gray.
- .4 Grade heavy duty service.
- .5 Bottom surface polyethylene.
- .6 Cap sheet membrane properties:
 - .1 Strain energy (longitudinal/transversal): 11.0/11.4 kN/m.
 - .2 Breaking strength (longitudinal/transversal): 25.0/16.0 kN/m.
 - .3 Ultimate elongation (longitudinal/transversal): 60/65 %.
 - .4 Tear resistance: 80 N.
 - .5 Cold bending at -30 degrees C: No cracking.
 - .6 Softening point: \leq 110 degrees C.
 - .7 Static puncture resistance: $>$ 370.
 - .8 Dimensional Stability: -0.2 / 0.2 %.

2.6 Adhesive

- .1 Adhesive for securing overlay board and insulation: asphalt extended vulcanized adhesive, two component unit, consisting of two liquids mixed on site to produce pourable adhesive.

2.7 Overlay Board

- .1 Overlay Board: 12.7mm to ASTM C 1177M.
- .2 Install over insulation to provide torch safe surface.

2.8 Bitumen

- .1 Asphalt: to CAN/CSA-A123.4, Type 2.

2.9 Polystyrene Insulation

- .1 Extruded polystyrene (XPS) insulation to CAN/ULC-S701.1, Type 4, thickness as indicated, ship lapped edges.

2.10 Sealers

- .1 Plastic cement: asphalt.
- .2 Sealing compound: rubber asphalt type.

MODIFIED BITUMINOUS MEMBRANE ROOFING

2.11 Carpentry

- .1 Refer to Section 06 08 99 - Rough Carpentry for Minor Works.

2.12 Fasteners

- .1 Insulation to deck: coated insulation fasteners and galvanized plates must meet FM Approval for wind uplift and corrosion resistance, as recommended by insulation manufacturer.

2.13 Filter Fabric

- .1 UV resistant, black woven water pervious polyolefin fabric for installation between insulation and stone ballast in protected membrane system. Fabric to meet approval of insulation manufacturer.
- .2 Product weight 77.9 gm/m².

3. EXECUTION

3.1 Quality Of Work

- .1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual, particularly for fire safety precautions. Do priming in accordance with manufacturers written recommendations.
- .2 The interface of the walls and roof assemblies will be fitted with durable rigid material plywood providing connection point for continuity of air barrier.
- .3 Assembly, component and material connections will be made in consideration of appropriate design loads.

3.2 Examination Of Roof Decks

- .1 Verification of Conditions:
 - .1 Inspect with Contract Administrator deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.
 - .2 Prior to beginning of work ensure:
 - .1 Review deck conditions with contract administrator. Curbs have been built.
 - .2 Roof drains have been installed at proper elevations relative to finished roof surface.
 - .3 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.
- .3 Do not install roofing materials during rain or snowfall.

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3.3 Protection Of In-Place Conditions

- .1 Cover walls, walks, sloped roofs and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.
- .5 Protect roof from traffic and damage. Comply with precautions deemed necessary by Contract Administrator.
- .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
- .7 Metal connectors and decking will be treated with rust proofing or galvanization.

3.4 Priming Deck

- .1 Apply deck primer to concrete roofing substrate at the rate recommended by manufacturer.

3.5 Vapour Retarder (Concrete Deck)

- .1 Embed two ply of felts glass in hot bitumen spread at rate of 1.2 kg/m² for glass asphalt.
- .2 Modified bituminous vapour retarder sheet.

3.6 (Exposed) Conventional Membrane Roofing (CMR) Application

- .1 Fully adhered, adhesive application:
 - .1 Adhere insulation to laminated vapour barrier using solvent-based adhesive.
 - .2 Place boards in parallel rows with ends staggered, and in firm contact with one another.
 - .3 Cut end pieces to suit.
 - .4 Apply adhesive in continuous ribbons at 300 mm on centre.
 - .5 Separate the membrane and insulation with a drainage layer or slip-sheet.
- .2 Tapered insulation application:
 - .1 Mop insulation to vapour retarder and top layer of insulation to bottom layer with hot asphalt at rate of 1 kg/m².
 - .2 Install tapered insulation as second insulation layer, in accordance with shop drawings. Stagger joints between layers 150 mm minimum.
- .3 Overlay Board: adhesive application:

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- .1 Adhere overlay board to insulation with vulcanized adhesive at the rate of one litre per m².
- .2 Place boards in parallel rows with end joints staggered. Cap joints approximately 25 mm.
- .3 Cut ends to suit and apply adhesive in continuous ribbons at 300 mm on centre.
- .4 Base sheet application:
 - .1 Starting at low point of roof, perpendicular to slope, unroll base sheet, align and reroll from both ends.
 - .2 Unroll and torch base sheet onto substrate taking care not to burn membrane or its reinforcement or substrate.
 - .3 Lap sheets 75 mm minimum for side and 150 mm minimum for end laps.
 - .4 Application to be free of blisters, wrinkles and fish mouths.
- .5 Cap sheet application:
 - .1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.
 - .2 Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.
 - .3 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.
 - .4 Application to be free of blisters, fish mouths and wrinkles.
 - .5 Do membrane application in accordance with manufacturer's recommendations.
- .6 Flashings:
 - .1 Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.
 - .2 Torch base and cap sheet onto substrate in 1 metre wide strips.
 - .3 Lap flashing base sheet to membrane base sheet minimum 150 mm and seal by mopping or torch welding.
 - .4 Lap flashing cap sheet to membrane cap sheet 250 mm minimum and torch weld.
 - .5 Provide 75 mm minimum side lap and seal.
 - .6 Properly secure flashings to their support, without sags, blisters, fish mouths or wrinkles.

MODIFIED BITUMINOUS MEMBRANE ROOFING

.7 Do work in accordance with Section 07 62 00 - Sheet Metal Flashing and Trim.

.7 Roof penetrations:

.1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with manufacturer's recommendations and details.

3.7 Field Quality Control

.1 Inspection agency must be fully experienced with membrane and installation procedures.

.2 Inspection and testing of roofing application will be carried out by testing laboratory designated by Contract Administrator. Costs of tests will be paid under cash allowance of \$5000.

3.8 Cleaning

.1 Remove bituminous markings from finished surfaces.

.2 In areas where finished surfaces are soiled caused by work of this Section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.

.3 Repair or replace defaced or disfigured finishes caused by work of this Section.

END OF SECTION

SHEET METAL FLASHING AND TRIM

1. GENERAL

1.1 References

- .1 ASTM International (ASTM)
 - .1 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM F1667, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .2 Canadian Roofing Contractors Association (CRCA)
 - .1 Roofing Specifications Manual.
- .3 Canadian Standards Association (CSA)
 - .1 CSA A123.3, Asphalt Saturated Organic Roofing Felt.
 - .2 AAMA/WDMA/CSA 101/I.S.2/A440, North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

1.2 The Workplace Health and Safety Act (Manitoba), Workplace Health and Safety Regulation

- .1 Safety Data Sheets (SDS).

1.3 Action And Informational Submittals

- .1 Provide submittals in accordance with City of Winnipeg Standard Construction Specifications, CW 1110.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies SDS - Safety Data Sheets.
- .3 Samples:
 - .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.

1.4 Quality Assurance

- .1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative and Contract Administrator in accordance with CW 1110
 - .1 Review installation and substrate conditions.

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- .2 Co-ordination with other building subtrades.
- .3 Review manufacturer's installation instructions and warranty requirements.

1.5 Delivery, Storage And Handling

- .1 Deliver, store and handle materials in accordance with manufacturer's instructions.

2. PRODUCTS

2.1 Sheet Metal Materials

- .1 Zinc coated steel sheet: 0.607 mm thickness, commercial quality to ASTM A 653/A 653M, with Z275 designation zinc coating.
- .2 Electrolytic zinc coated, chromate treated, steel sheet: to ASTM A 591/A 591M, commercial quality, Grade 1.25, Type d, with proprietary coating comprised of 31.1 kg/m² zinc total mass both sides, painted finish.

2.2 Prefinished Steel Sheet

- .1 Prefinished steel with factory applied silicone modified polyester.
 - .1 Class F1S.
 - .2 Pre-Finished colour Contract Administrator from manufacturer's standard range.
 - .3 Specular gloss: 30 units +/- 5 in accordance with ASTM D 523.
 - .4 Coating thickness: not less than 25 micrometres.
 - .5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D 822 as follows:
 - .1 Outdoor exposure period 1000 hours.
 - .2 Humidity resistance exposure period 1000 hours.

2.3 Accessories

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to manufacturer's recommendations.
- .3 Underlay for metal flashing: to ASTM D4586.
- .4 Sealants: to ASTM C920, Class 35.
- .5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

SHEET METAL FLASHING AND TRIM

- .6 Fasteners: of same material as sheet metal, to ASTM F1667, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.
- .7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .8 Touch-up paint: as recommended by prefinished material manufacturer.

2.4 Fabrication

- .1 Fabricate metal flashings and other sheet metal work as indicated.
- .2 Form pieces in 2400 mm maximum lengths.
 - .1 Make allowance for expansion at joints.
- .3 Hem exposed edges on underside 12 mm.
 - .1 Mitre and seal corners with sealant.
- .4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
 - .1 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.5 Metal Flashings

- .1 Form flashings, copings and fascias to profiles indicated of 0.607 mm thick prefinished steel.

2.6 Reglets And Cap Flashings

- .1 Form recessed reglets metal cap flashing of 0.607 mm thick sheet metal to be built-in masonry work for base flashings as detailed.
 - .1 Provide slotted fixing holes and steel/plastic washer fasteners.
 - .2 Cover face and ends with plastic tape.

2.7 Eaves Troughs And Downpipes

- .1 Form eaves troughs and downpipes from 0.607 mm thick prefinished steel sheet metal.
- .2 Sizes and profiles as indicated.
- .3 Provide goosenecks, outlets, strainer baskets and necessary fastenings.

2.8 Scuppers

- .1 Form scuppers from 0.912 mm thick prefinished steel sheet metal.
- .2 Sizes and profiles as indicated.
- .3 Provide necessary fastenings.

SHEET METAL FLASHING AND TRIM

3. EXECUTION

3.1 Manufacturer's Instructions

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Installation

- .1 Install sheet metal work as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal.
 - .1 Secure in place and lap joints 100 mm.
- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
 - .1 Flash joints using S-lock forming tight fit over hook strips.
- .5 Lock end joints and caulk with sealant.
- .6 Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm. Lead wedge flashing securely into joint.
- .7 Caulk flashing at reglet and cap flashing with sealant.
- .8 Install pans, where shown around items projecting through roof membrane.

3.3 Eaves Troughs And Downpipes

- .1 Install eaves troughs and secure to building at 600 mm on centre with eaves trough spikes through spacer ferrules.
 - .1 Slope eaves troughs to downpipes as indicated.
 - .2 Seal joints watertight.
- .2 Install downpipes and provide goosenecks back to wall.
 - .1 Secure downpipes to wall with straps at 1800 mm on centre; minimum two straps per downpipe.
 - .2 Downpipe straps to be anchored into the mortar joint, not the brick units.
 - .3 Connect downpipes to drainage system and seal joint with plastic cement.
- .3 Install splash pans as indicated.

SHEET METAL FLASHING AND TRIM

3.4 Scuppers

- .1 Install scuppers as indicated.

3.5 Field Quality Control

- .1 Manufacturer's Field Services:
- .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.6 Cleaning

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

PLUMBING FIXTURES

1. GENERAL

1.1 Summary

- .1 Section Includes: Materials and installation for plumbing specialties and accessories.

1.2 References

- .1 ASTM International (ASTM).
 - .1 ASTM A 126, Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
 - .2 ASTM B 62, Specification for Composition Bronze or Ounce Metal Castings.
- .2 Canadian Standards Association (CSA).
 - .1 CSA-B64 Series, Backflow Preventers and Vacuum Breakers.
 - .2 CSA-B79, Floor, Area and Shower Drains, and Cleanouts for Residential Construction.
- .3 The Workplace Health and Safety Act (Manitoba), Workplace Health and Safety Regulation.
 - .1 Safety Data Sheets (SDS).
- .4 Plumbing and Drainage Institute (PDI).
 - .1 PDI-WH201, Water Hammer Arresters Standard.

1.3 Action And Informational Submittals

- .1 Submittals in accordance with City of Winnipeg Standard Construction Specifications, Section CW 1110.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet for fixtures and equipment.
 - .2 Indicate dimensions, construction details and materials for specified items.
- .3 Shop Drawings:
 - .1 Submit shop drawings to indicate materials, finishes, method of anchorage, number of anchors, dimensions construction and assembly details.
- .4 Certificates:
 - .1 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Instructions:

PLUMBING FIXTURES

- .1 Submit manufacturer's installation instructions.
 - .6 Manufacturers' Field Reports:
 - .1 Submit manufacturers' field reports specified.
 - .7 Closeout submittals:
 - .1 Submit maintenance and engineering data for incorporation into manual, include:
 - .1 Description of plumbing specialties and accessories, giving manufacturers name, type, model, year and capacity.
 - .2 Details of operation, servicing and maintenance.
 - .3 Recommended spare parts list.
- 1.4 Quality Assurance**
- .1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations.
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
- 2. PRODUCTS**
- 2.1 Roof Drains**
- .1 Type 2: standard roof drain with cast iron body with cast iron dome, under-deck clamp to suit roof construction, flashing clamp ring with integral gravel stop.
- 2.2 Cleanouts**
- .1 Cleanout Plugs: heavy cast iron male ferrule with brass screws and threaded brass or bronze plug. Sealing-caulked lead seat or neoprene gasket.
- 3. EXECUTION**
- 3.1 Manufacturer's Instructions**
- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

PLUMBING FIXTURES

3.2 Installation

- .1 Install in accordance with National Plumbing Code of Canada provincial codes, and local authority having jurisdiction
- .2 Install in accordance with manufacturer's instructions and as specified.

3.3 Cleanouts

- .1 Install cleanouts at base of soil and waste stacks, and rainwater leaders, at locations required by code, and as indicated.

3.4 Testing And Adjusting

- .1 Timing: after certificate of completion has been issued by authority having jurisdiction.
- .2 Adjustments:
 - .1 Leak Test new RWL with water.
- .3 Roof drains:
 - .1 Check location at low points in roof.
 - .2 Check security, removability of dome.
 - .3 Adjust weirs to suit actual roof slopes, meet requirements of design.
 - .4 Clean out sumps.
 - .5 Verify provisions for movement of roof systems.
- .4 Cleanouts:
 - .1 Verify covers are gas-tight, secure, yet readily removable.

END OF SECTION