SECTION 07 16 00

CEMENTITIOUS WATERPROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Comply with Division 1, General Requirements.

1.2 SUBMITTALS

A. Submit three copies of waterproofing material manufacturer's preparation and application instructions.

1.3 QUALITY ASSURANCE

A. Qualification: Applicators to be trained in mixing and application procedures and approved by waterproofing manufacturer.

B. Perform work of this Section by an applicator of recognized standing having not less than five years proven experience on work of similar size and scope.

C. Arrange for manufacturer's review of preparation for and application of waterproofing system.

D. Pre-Installation Meeting:
1. Arrange a site visit prior to commencement of waterproofing to review with Contractor and Contract Administrator, installation procedures to be adopted, conditions under which work will be carried out, and inspect surfaces requiring waterproofing.
2. Review weather conditions under which work will be done, substrate conditions, preparation of existing surfaces, applicable procedures and protection of completed work.

1.4 SITE CONDITIONS

A. Comply with manufacturer's requirements regarding surface and ambient temperatures before, during and 48 hours after application.

B. Protect surrounding surfaces from damage.

1.5 WARRANTY

A. Submit a two year warranty for the work of this Section against defects in materials and workmanship, including but not limited to bond failure, deterioration and leakage, except as the result of structural failure of the concrete substrate. Cracks up to 1.6 mm wide

arising from normal shrinkage and expansion of concrete will not be considered as structural failure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Gemite Products Inc.

2.2 MATERIALS

A. Waterproofing system: Cem-Kote Flex ST.

B. Reinforced fabric HD– supplied in rolls 240mm wide for crack treatment and 1220mm wide for application over entire surface.

C. Cem-Kote Flex PLUS – supplied as kit comprising of dry component A plus Liquid Component B.

D. Gem-Plast TC-thin set concrete restoration mortar.

E. Fibre–Patch OV (ST) –restoration mortar for coving of corners, thin to thick repairs, OV (overhead, vertical) and ST (Horizontal).

PART 3 EXECUTION

3.1 EXAMINATION

A. Quality of concrete substrate: Minimum 28 days old, clean, free of excessive dampness and extraneous substances, with expansion joints sharply formed.

B. Examine areas to be waterproofed and report conditions which would adversely affect waterproofing.

C. Commence application after unsatisfactory conditions are corrected.

D. Starting work under this section means acceptance of the surface and previously prepared work.

3.2 PREPARATION

A. Surface preparation: High pressure wash, or wet or dry sandblast to thoroughly clean surface and remove soft concrete surface and any bond inhibiting material. Wash thoroughly with water prior to application and allow to dry to achieve Saturated Surface Dry (SSD) condition. Perform bond test to assure proper surface preparation.

B. Surface repair: Use Gem–Plast TC Premix to patch honeycombing and air pockets. Use Fibre–Patch Premix, OV (overhead and vertical) and ST (horizontal) for deeper patching. Uneven concrete to be chipped and surface patched smooth. Build corner coves 50mm by 50mm minimum, using Fibre-Patch OV.

C. Treatment of existing cracks, joints and interfaces with other materials: Apply one layer of 250 mm wide and 1-1.5mm thick by trowel or squeegee. Embed reinforcing fabric HD over entire area of Cem-Kote Flex ST or Plus. Work into Cem-Kote Flex St or Plus using trowel until Reinforced Fabric HD is totally covered. Apply additional coat of Cem-Kote flex as required to achieve total thickness of 3 mm over entire area. In applications where temperature will be below freezing point or larger crack movement is expected – use Cem-Kote Flex Plus. For other conditions use Cem-Kote Flex ST.

D. Protruding elements and corners: Form 50mm by 50mm cove using Fibre-Patch OV in the corners using Cem-Kote Barrier Coat 100 as bonding agent. Following day clean surface with steel brush and pressure wash and apply two coats of Cem-Kote Flex Plus or ST.

E. Entire surface application: In new construction apply Reinforcing Fabric HD over entire surface

3.3 APPLICATION - GENERAL

A. Apply waterproofing system in accordance with manufacturer's printed instructions and as specified.

B. Ensure continuity of waterproofing at junctions of existing and new work.

C. Repair waterproofing on surfaces damaged during construction.

D. Finishes: Smooth surface closed with steel trowel.

E. Apply cementitious waterproofing on interior surfaces of walls and slabs where shown on drawings.

3.4 APPLICATION - WATERPROOFING

A. Brush or spray apply first coat of Cem-Kote Flex ST in thickness of 0.8mm. Apply second coat in 0.8mm thickness. Total thickness min 1.6mm. Protect surface against rapid evaporation.

B. Curing: Air-Dry Cure Cem-Kote Flex ST for 48 hours.

C. Hot weather application: Protect surface against rapid evaporation of water between finishing and final set time. Use water misting, or apply surface evaporation retarder.

D. Cold Weather Application: Apply in temperatures above freezing point and protect materials against freezing for a minimum 48 hours. Use electrical heaters to avoid carbonation and carbonation cracking.

3.5 CLEANING

A. Clean and make good to the Engineer's acceptance surfaces soiled or otherwise damaged in connection with the work of this Section. Pay the cost of replacing any finishes or materials that cannot be satisfactorily cleaned.

END OF SECTION

SECTION 07 42 10

PREFORMED METAL PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Comply with Division 1, General Requirements.

B. Products supplied but not installed under the Work of this Section:
   1. Metal coping flashings for roof parapets contiguous with metal wall panels.

1.2 REFERENCES

A. National Building Code (NBC).

B. Comply with the latest edition of the following statutes codes and standards and all amendments thereto.
   1. ASTM-A643/A653M, General Requirements for Steel Sheet Zinc Coated (Galvanized) by the Hot Dip Process.
   2. ASTM D1187, Bituminous Coating.
   3. CAN/ULC S702, Standard for Thermal Insulation, Mineral Fibre for Buildings.
   4. CAN/CSA-G40.21-M, Structural Quality Steels.
   5. CSA/G164-M, Hot Dip Galvanizing of Irregularly Shaped Articles.
   6. CAN/CSA S16.01-M, Limit States Design of Steel Structures.

1.3 DESIGN REQUIREMENTS

A. Design metal panels, anchors, fastenings and secondary support system to withstand applicable loads established by the National Building Code of Canada and applicable local regulations for the locality. Deflection of profile sheets: Maximum 1/180th of span at this loading. Reference velocity pressure: Based on hourly wind pressures for the locality.

B. Design work of this Section, which will support other items or will be required to support structural loads of any nature, by a professional engineer licensed in the Province of Manitoba. Affix professional seal and signature to shop drawings for such items.

C. Design system to comply with CAN/CSA S16.1.

D. Design panel system to allow for thermal movement of components caused by ambient temperature range without causing deterioration of system.

E. Design metal panel system using concealed fastening details.

F. Design panel system to achieve curved cladding shown with uniform radius.

G. Design components to resist vibration when subjected to the effects of wind.

H. Provide for positive drainage of condensation occurring within wall construction and water entering at joints, to exterior face of wall.

I. Design wall system to accommodate erection tolerances of structure.

1.4 SUBMITTALS

A. Shop Drawings
1. Submit shop drawings indicating type of metal wall panels, thicknesses of metal components, size, spacing and location of supports and girts, connections, type and locations of fastenings, sealing, finish and colour.
2. Indicate design loads and spans, sheet lengths and lap locations.
3. Indicate provision for structural and thermal movement between metal cladding and adjacent materials.
4. At time of shop drawing submittals, Submit written certification from professional engineer licensed in the Province of Manitoba stating that support system, anchorage and equipment have been designed according to requirements of the NBC, Division B, Part 4, article 4.1.8.17 for post-disaster structures.
5. Show joint location where panels are not one piece full height.

B. Submit two 300 mm long samples of profiles specified, showing material, thickness, finish and colour.

C. Submit metal finishers certificate that coating system provided meets the specifications.

D. Submit manufacturer's instructions for installation of materials as required.

1.5 QUALITY ASSURANCE

A. Qualifications: Membership in good standing of the Canadian Sheet Steel Building Institute and the Canadian Institute of Steel Construction.

B. Minimum five years proven acceptable experience installing preformed metal panel work on projects of comparable size and scope.
1. Prior to commencement of metal panel construction, submit list of project names, Owners, contacts, dates completed and construction costs.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces from damage.

1.7 WARRANTY

A. Submit a two-year warranty for the work of this Section against defects in materials and workmanship.

PART 2 PRODUCTS

2.1 MATERIALS

A. Steel Sheet (Exterior Walls): Commercial quality 0.76 mm, minimum, zinc coated (galvanized) to ASTM A653/A653M coating class Z275.

B. Miscellaneous Shapes: CAN/CSA-G40.21-M; galvanized steel, galvanized to CAN/CSA A164-M, hot-dip galvanizing of 610 g/m² zinc coating.

C. Coping counterflashing, flashing closures of same material and finish as metal panels. Supply coil stock material to Section 07 62 00, Sheet Metal Flashing.
1. Counterflashing, flashing, closure: 0.61 mm galvanized steel sheet.
2. Coping: 0.8 mm galvanized steel sheet.

D. Girts, Angles, Clips and Other Auxiliary Supports: Fabricated from minimum 1.22 mm thick galvanized steel sheet.

E. Concealed Fasteners: Stainless steel for aluminum wall panels, galvanized carbon steel for steel wall panels.

F. Exposed Fasteners: Stainless steel for wall panels, with colour matching nylon heads, Colourmate by Northwest Screw Products Ltd., Prisma by Construction Fasteners Inc.

G. Air and Vapour Barrier

H. Insulation: CAN/ULC S702; 1250 mm thick minimum, glass fibre AF 110 by Owens Corning Canada Inc.
1. Factory applied air and vapour barrier of glass reinforced vinyl VRP-3 by A.C. Wild Inc. Lamolite 8144 by Multiglass Insulation Ltd. Colour: White.

I. Insulation Adhesive: CGSB 71-GP-24M, Bakor 230-21 and primer by Bakor Inc.

J. Isolation Coating: ASTM D1187 Bituminous Coating.

K. Touch-up Primer: Sealtight Galvafroid Zinc Rich Coating by W.R. Meadows of Canada Ltd.

L. Flexible Seals: 1.0 mm thick EPDM or Neoprene sheet and adhesive.

M. Shop Applied Sealant: One part elastomer, TRS 600 by Tremco (Canada) Ltd.

N. Sealant for On-site Sealing: Dymeric 240 by Tremco (Canada) Ltd. Primer: As recommended by sealant manufacturer. Colour of sealant: Of colour similar to predominant material to which sealant is applied and subject to review by the [Contract Administrator].

O. Joint backing: Closed cell, polyethylene, compatible with sealant minimum 25 percent oversized.

2.2 FABRICATION

A. Metal Panel Types:
1. Provide wall panel type 1 and 2 from one manufacturer
2. Metal Wall Panel (Type 1):
a. Vicwest Supervic profile, nominal 762 mm panel width.
b. Agway 6-150 NF wall panel profile, nominal 762 mm panel width.
3. Metal Wall Panel (Type 2):
a. Vicwest FD, HB, CL 306 Corrigated profile, nominal 609 mm panel width.
b. Agway 4-300 Corrigated profile, nominal 600 mm panel width.

B. Start fabrication of metal panels from accepted shop drawings and site measurements.

C. Take site measurements to ensure that fabrications fit structure, surrounding construction, around obstructions and projections in place and to suit locations of service.

D. Form metal panels to profiles indicated and in accordance with manufacturer's directions without face damage or distortion.

E. Fabricate panels one piece full height. Fabricate corners brake formed to required angle.

F. Fabricate securement members required for anchorage and attachment of panels to structural framing members for support of panel system.

G. Fabricate trim and closures at doors, windows, louvres and similar openings to match panels finish.

2.3 FINISHES

A. Metal Coating System (Type 1): Coil-coated, baked-on, silicone modified polyester, dry film thickness of 25 micron plus or minus 5 micron 5000 Series by Stelco Inc. or Dofasco Inc. on exposed surfaces. Pretreat and prime surfaces prior to application of coating. Prime and wash coat finish unexposed surfaces.

B. Metal Coating System (Type 2): Coil-coated, baked-on, 70 percent Kynar 500 polyvinylidene fluoride, dry film thickness of 22.5 micron plus or minus 5 micron 10000 Series by Stelco Inc. or Dofasco Inc. on exposed surfaces. Pretreat and prime surfaces prior to application of coating. Prime and wash coat finish unexposed surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine structural frame and structure and report unacceptable site conditions.

B. Commencement of work implies acceptance of site conditions.

3.2 PREPARATION

A. Coat metal surfaces in contact with concrete, masonry, or dissimilar metals other cementitious materials with one coat of 1 mm thick DFT minimum, isolation coating.

B. Touch up field welds in galvanized steel with two coats zinc chromate primer. 50 micron thick DFT, minimum.

C. Provide auxiliary supports and framing as required by substrate conditions.

3.3 INSTALLATION

A. Install steel girts and auxiliary supports required. Secure to structural building frame.

B. Commence installation of preformed metal panels after building frame is completed and permanent bracing and roof and floor diaphragms are in place; and concrete structure has acquired minimum 75 percent of design strength.

C. Install metal wall panels in accordance with manufacturer's instructions and as specified.

D. Provide clip angle anchors at 600 mm o.c. maximum. Lock fasteners after setting.

E. Install metal closures, trim, and flashings required to maintain wind and rain tightness of metal wall panels.

F. Supply and erect members required for support and anchorage of wall panel system. Install panels level, flat, plumb and true to line.

G. Provide jointing in accordance with accepted shop drawings.

H. Provide trim, and closures and flashing as required.

I. Install metal panels with concealed [exposed] fastening system.

3.4 INSTALLATION - TOLERANCES

A. Allow for structural building frame deviations and erect systems, plumb, level, and true in correct relation to work of other Sections. Erection tolerances for assemblies are related to structural frame of building and apply to each individual assembly.
   1. Vertical position; plus or minus 3 mm.
   2. Horizontal position; plus or minus 3 mm.
   3. Deviation from plumb; 3 mm maximum each plane.
   4. Racking of face; 6 mm maximum.
   5. Racking in elevation; nil.

3.5 INSTALLATION - AIR AND VAPOUR BARRIER AND INSULATION

A. To be installed as per manufacturer’s recommendations.

3.6 INSTALLATION - SEALANTS

A. Install flexible seals, tapes and gaskets at locations required to provide water, air and vapour tight system. Seal at end joints between lengths of material.

B. Seal joints between metal wall panels and adjacent surfaces.

C. Before application of sealant, clean and dry joints surfaces to be free from extraneous matter which may affect bond. Prime surfaces.

D. Apply sealant in accordance with manufacturer's printed instructions.

E. Pack joints over 6 mm wide with joint backing. Maintain 2:1 sealant bead width to depth ratio. Mask surfaces where required. Fill joints and tool to concave profile. Clean adjacent materials which have been soiled.

3.7 CLEANING

A. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable by sealant manufacturer and metal fabricator.

B. Where accumulation of dirt does not respond to cleaning required, refer condition to Contract Administrator, with recommendations as to remedial action required; do not undertake any cleaning procedure without written acceptance.

3.8 ALTERATIONS AND MAKING GOOD

A. Do cutting and fitting required to connect to existing work and where alterations have to be made to existing metal panels and insulation.

B. Install reclaimed components in extent and in locations indicated.

C. Provide new clips and fasteners for reclaimed metal panels as required.

D. Reinforce perimeter of cut-outs.

E. Cut out openings for connections indicated and to accommodate extension of structures. Provide new closures as required.

F. Make good existing metal wall panels disturbed by alterations.

END OF SECTION

SECTION 07 52 16

SBS-MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Comply with Division 1, General Requirements.

1.2 REFERENCES

A. Comply with the latest edition of the following statutes codes and standards and all amendments thereto.
   1. ASTM A167 Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
   2. ASTM B209-M Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
   3. CGSB-37GP-9 Ma Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.
   4. CAN/ULC S704 Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
   5. CAN/CGSB-51.31-M Thermal Insulation, Mineral Fibre Board for Above Roof Decks.
   6. CSA HA Series-M CSA Standards for Aluminum and Aluminum Alloys.
   7. CSA A123.4-M Bitumen for Use in Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing Systems.
   8. Canadian Roofing Contractor’s Association (CRCA).

1.3 SUBMITTALS

A. Shop Drawings:
   1. Project-specific details of roof edges and penetrations.
   2. Layout drawings for tapered insulation, showing slopes and thicknesses.
   3. List of materials proposed for use including roofing materials, insulation, composition flashing, and fasteners.
   4. Description of complete system, from deck up, proposed for use.

B. Quality Control Submittals:
   1. Manufacturer’s installation instructions.
   2. A letter from roofing materials manufacturer stating roofer is approved by manufacturer to apply roof.
   3. Sample copy of special warranty to be provided.
   4. Record of Pre-roofing Conference.

1.4 QUALITY ASSURANCE

A. Qualification: Membership in good standing of Canadian Roofing Contractor's Association and approved by membrane manufacturer.

B. Perform work of this Section by a roofing applicator of recognized standing approved by membrane manufacturer, having not less than five years proven experience on work of similar size and scope.

C. Arrange for membrane manufacturer's review of preparation for and application of roofing system.

D. All components used in a roofing system shall be furnished by, or approved by, manufacturer whose roofing system is selected for use.

E. Pre-roofing Conference:
1. Attendees: Conduct pre-roofing conference with Contract Administrator, roof deck installer, roofing system materials manufacturer’s representative, roofer and Contractor.
2. Arrange a site visit prior to commencement of roofing to review with installer and Contract Administrator, installation procedures to be adopted, conditions under which work will be carried out, and inspect surfaces requiring roofing.
3. Review weather conditions under which work will be done, substrate conditions, preparation of existing surfaces, applicable procedures, protection of completed work, and sample of sealed seam to determine acceptable workmanship.
4. Record: Discussions and agreements and furnish copy to each participant and entity invited.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers and rolls with labels intact and legible. Labels on bitumen shall show composition.

B. Store materials in heated location to minimum 10 degrees C during winter.

C. Protect materials against direct sunlight, wetting, moisture absorption, mud, dust, sand, oil, grease, dirt, and construction traffic.

D. Store material rolls on end with selvage edges up.

E. Avoid stockpiling of materials on roof.

1.6 SITE CONDITIONS

A. Protect adjacent surfaces which are not to be roofed from soiling in connection with the work of this Section.

B. Protect roofed areas.

C. Do not expose insulation longer than recommended by manufacturer.

D. Ambient and surface temperatures: at least 10 degrees C for a period of 48 hours before, during and after membrane application.

1.7 WARRANTY

A. Submit a 25 year warranty for the work of this Section against defects in materials and workmanship, including but not limited to bond failure, deterioration, seam failure, leakage for entire roofing system except as the result of structural failure of the concrete substrate.

B. Cracks up to 1.6 mm wide arising from normal shrinkage and expansion of concrete will not be considered as structural failure.

PART 2 PRODUCTS

2.1 MATERIALS

A. Primer: Approved by membrane manufacturer.

B. Asphalt: CSA A123.4M Type 2.

C. Securement Bar: ASTM B209-M aluminum or ASTM A167, 304 alloy stainless steel 3 mm thick by 25 mm wide, galvanized concrete fasteners, 25 mm diameter galvanized washers.

D. Joint Backing: Closed cell, heat resistant, crosslinked polyolefin foam filler as recommended by manufacturer of sealant. Minimum 25 percent oversized. Bond breaker strip as recommended by manufacturer.

E. Cant: Asphalt impregnated, compatible, standard roofing cant.

F. Vapour Retardant: Minimum 2.0 mm thick, elastomeric asphalt with glass fibre mat reinforcement 95 g/m², sanded both sides. Elastophene by Soprema Waterproofing Inc., Vedaflex G100 S/S by Monsey Bakor Inc.

G. Base Sheet and Base Sheet Flashing: Minimum 2.0 mm thick, thermo-fusible elastomeric asphalt with glass fibre mat reinforcement 95 g/m². Elastophene PS by Soprema Waterproofing Inc., Vedaflex G100 P/S by Monsey Bakor Inc.

H. Reinforcing Sheet: 3.0 mm thermo-fusible elastomeric asphalt with non-woven polyester reinforcement faced with 0.025 mm clear polyethylene or polypropylene both sides. Sopralene Flam 180 by Soprema Waterproofing Inc., Vedaflex NP180 P/P by Monsey Bakor Inc.

I. Cap Sheet and Cap Sheet Flashing: 4.0 mm thermo-fusible elastomeric asphalt with non-woven polyester reinforcement faced with 0.025 mm clear polyethylene or polypropylene on one side and mineral, coloured granules on other side 250 g/m². Sopralene Flam 250 GR by Soprema Waterproofing Inc. or Vedaflex NP250G T4 by Monsey Bakor Inc. Colour to later selection.

J. Parapet Wall Insulation.

K. Roof Insulation:
1. Rigid Roof Insulation: Polyisocyanurate Foam Board: CAN/ULC S704, Type II, with minimum size 610 mm by 1220 mm. Thickness as shown on drawings.
2. Tapered Insulation: Polyisocyanurate Foam Board with torchable facing, Atlas Roofing Corp., AC Foam II. .
3. Manufacturers:
   a. Atlas Roofing Corp.; AC Foam II.
   b. GAF; Energy Guard.
   c. Johns Manville; E'NRG'Y 2.

L. Metal Flashing: As specified in Specification Section 07 62 00, Sheet Metal Flashing and Trim.

M. Mechanical Fasteners: As recommended by manufacturer.

N. Flexible Flashing: 2 layers of polyester reinforced sheet.

O. Sealant: As recommended by membrane manufacturer.

P. Fall Arrest Anchors: As shown on the Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive membrane roofing. Report defects which would impair performance of roofing. Do not proceed until substrate is acceptable. Check that concrete moisture content is less than 15 percent.

B. Ensure that substrates have cured at least 28 days.

C. Verify elevation of roof drains, do not commence work until unacceptable conditions have been corrected. Make insulation thickness at drain 25 mm minimum. Slope insulation uniformly to drain.

3.2 PREPARATION

A. Refer to Division 3 for removal of existing roofing and preparation of concrete deck.

B. Check that completed roof deck for proper levels and slope before roofing is commended.

C. Do not apply membrane in inclement weather.

D. Free surfaces from materials detrimental to the bond of the membrane materials. Employ light sand blasting or steam cleaning where necessary to remove form oil.

E. Grind edges and corners bullnose with minimum radius of 38 mm. Fill inside corners with fillets or cants compatible with membrane.

3.3 INSTALLATION – MANUFACTURED UNITS AND ROOFING ACCESSORIES

A. Install factory assembled units in accordance with manufacturer's printed instructions.

B. Set curb flange in continuous bed of sealant and anchor in place.

3.4 INSTALLATION - VAPOUR RETARDANT AND INSULATION

A. Prime the concrete substrate at rate recommended by membrane manufacturer for particular surface porosity, and generally at 1000 to 1500 g/m² minimum.

B. Install vapour retardant in a mopping of asphalt applied at the rate of 1000 to 1500 g/m² where shown. Install tapered and rigid insulation in designed sequence over vapour retardant. Lay insulation in parallel course. Stagger joints between pieces. Trim insulation to provide plain butt joints. Level the edges of the insulation at fillets and cants.

3.5 INSTALLATION - MEMBRANE

A. Install membrane roofing in accordance with manufacturer's printed instructions and as specified.

B. Horizontal Surface - Base Sheet
1. Apply base sheet membrane mopping of 1000 to 1500 g/m² of asphalt. Provide 75 mm side laps and 150 mm end laps.
2. Take base sheet to top of cant or to edge of horizontal surface.

C. Torch welding: soften the inner side of sheet without overheating, with even heat until the coating flows, resulting in uniform adhesion over the entire surface. Do not damage membrane or reinforcement.

D. Provide reinforcing strip 200 mm wide at changes in plane centred over edge of plane.

E. Vertical Surfaces – Cap Sheet and Cap Sheet Flashing Sheet
1. Apply cap sheet in strips of 900 mm to the vertical surfaces, extending onto the flat surface a minimum of 100 mm. Provide 75 mm side laps and 150 mm end laps. Stagger laps a minimum of 100 mm from the laps of the granular polyester reinforced sheet on horizontal surfaces to avoid excessive thickness.
2. Torch weld granular cap sheet directly on its substrate from bottom to top.

3. Secure top edge of sheet membrane using continuous securement bar fastened on 300 mm o.c.

F. On vertical surfaces where membrane is covered with metal flashing, provide polyester reinforced sheet.

G. Horizontal Surfaces - Cap Sheet
1. Over base sheet torch weld cap sheet. Unroll granular cap sheet starting from low points. Take care to ensure good alignment of the first strip parallel with the edge of the area.
2. Stagger base sheet and cap seams a minimum of 300 mm.
3. Provide 75 mm side laps and 150 mm end laps. Remove granules on 150 mm end laps before torch application.
4. After installation of the cap sheet, check lap seams.
5. During installation keep asphalt seepage at seams to 6 mm maximum. Over joints apply matching granules and sweep off excess.

H. Ensure that sheets have been continuously welded, without air pockets, wrinkles, fishmouth or tears.

I. Bar completed area from traffic until membrane protection is installed.

3.6 INSTALLATION - ROOF DRAINS

A. Inspect roof drain setting and ensure that drain outlet will not be above the general level of completed roof membrane.

B. Cut back insulation at drains to form drain well.

C. Extend membrane into the upper surface of the drain base and ensure a watertight seal between membrane and drain and seal with clamping ring.

3.7 INSTALLATION - ROOF WALKWAYS

A. Prime walkway area. Torch apply granular cap sheet of grey colour to layout shown. Butt ends of sheets. At edges and joints of sheet, sprinkle granules into asphalt.

3.8 INSTALLATION - MISCELLANEOUS ROOF OPENINGS

A. Supply and install flashings and sleeves around mechanical and electrical openings, ducts, pipes and other projections through roofs. Seal flexible flashing with adhesive and stainless steel clamps.

B. Fabricate metal sleeves around vent pipes and other similar items from 0.95 mm stainless steel.

C. Dress down metal counterflashings supplied by the Section providing the item passing through the roof and seal and make good the completed installation with sealant.

3.9 APPLICATION - SEALING

A. General:
1. Apply sealant into reglets upon completion of flashing.
2. Ensure that surfaces to be sealed are free from contaminants which may adversely affect the performance of the sealing materials.
3. Clean joint surfaces and mask adjacent areas. Remove masking promptly after sealing is completed.
4. Prime joints immediately before installation of sealant.
5. Mix sealants to a uniform colour and free from unmixed material.
6. Before commencing sealing, test the materials for indications of staining or proof adhesion.
7. Maintain correct sealant depth. Make installation free from air pockets and embedded impurities and having smooth surfaces, free from ridges, wrinkles, sags, air pockets and imbedded impurities.
8. Immediately clean adjacent surfaces.

3.10 MANUFACTURER’S FIELD SERVICES

A. Provide manufacturer’s representative at site for installation assistance, inspection and certification of proper installation and training of City’s personnel for maintaining specified system.

3.11 CLEANING

A. Clean and make good to the Engineer's acceptance surfaces soiled or otherwise damaged in connection with the work of this Section. Pay the cost of replacing any finishes or materials that cannot be cleaned.

B. On completion of the work, check roof drains and ensure their cleanliness and proper function.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.1 SUMMARY

A. Comply with Division 1, General Requirements.

1.2 REFERENCES

A. Comply with the latest edition of the following statutes codes and standards and all amendments thereto.
   1. CAN/CGSB-19.13Sealing Compound, One Component, Elastomeric, Chemical Curing.
   2. CAN/CGSB-19.24Multicomponent, Chemical Curing Sealing Compound.
   3. CAN/ULC S115 Standard Method of Fire Tests of Firestop Systems.
   4. NSF/ANSI 61 Drinking Water System Components – Health Effects

1.3 QUALITY ASSURANCE

A. Pre-Installation Meeting
   1. Arrange for sealant manufacturer's technical representative to visit site prior to commencement of sealing, to review with Contractor, installer and [Contract Administrator], installation procedures to be adopted, conditions under which work will be carried out, and inspect surfaces and joints to be sealed.
   2. Review weather conditions under which work will be done, anticipated frequency of joint movement, shape factor of the joint, durometer hardness, slump, and curing characteristics of materials specified, joint characteristics as built, sample of sealed joint to determine acceptable workmanship.
   3. Submit review comments in writing to Contract Administrator.

B. Submit certification that sealants in contact with potable water are suitable and approved for intended use.

1.4 SEQUENCING

A. Install sealant and backing material after applied finishes are completed.

1.5 WARRANTY

A. Submit a two-year warranty for the work of this Section against defects in materials and workmanship.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sealant Type A: CAN/CGSB 19.24 Type II, Class B, Dymeric 240/240FC, by Tremco (Canada) Ltd., multi-component polyurethane.

B. Sealant Type B: CAN/CGSB 19.24, Sikaflex 2C-NS/SL, by Sika Canada Inc., multi-component polyurethane based sealant for horizontal and vertical surfaces.

C. Sealant Type C: Sikaflex 1A, by Sika Canada Inc., one component polyurethane based, non-sag, elastomeric sealant, NSF/ANSI 61 approved for contact with potable water.

D. Sealant Type D: Duoflex-SL, by Sika Canada Inc., two component polysulphide sealant for interior and exterior locations.

E. Sealant Type F: DC 786 by Dow Corning Inc., one component silicone.

F. Sealant Type G: CAN/CGSB-19.13, DC 795 by Dow Corning Inc., one component silicone sealant.

G. Colour of sealant: From manufacturer's standard colour range matching predominant material to which sealant is applied and to review by the Contract Administrator.

H. Primer: Where required and of type recommended by manufacturer of sealant and compatible with material used in the same joint as joint filler.

I. Joint backing: Closed-cell, plastic foam filler as recommended by manufacturer of sealant. Minimum 25 percent oversized. Bond breaker strip as recommended by manufacturer.

J. Cleaning material: As recommended by manufacturer of sealant.

K. Steel deck closure strips: Continuous closed cell neoprene strips R-411-N fabricated by Rubatex Corporation.
   1. Profile strips: 38 mm wide, 6 mm valley thickness with ribs to suit type of steel deck used.
   2. Flat strips: Minimum 38 mm wide of thickness to suit the joint.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces of joints and spaces to be sealed with solvent or cleaner. Ensure that surfaces are structurally sound, free from dust, grease, other contaminants, or laitance which may adversely affect adhesion of sealing materials. Use dry clean compressed air stream if necessary to clean out the joint.

B. Test materials for indications of staining or poor adhesion.

C. Prime joints to prevent staining, to assist bond, and to stabilize porous surfaces. Apply two coats of primer at base of aluminum handrail posts and other porous surfaces.

D. Conform to manufacturer's printed instructions for mixing, work life, and other characteristics of sealant to be used.

E. Where necessary to prevent contamination or marring surface of adjacent materials, mask area adjacent to joints with masking tape. Remove tape immediately after joint has been completed and initial set achieved.

3.2 INSTALLATION

A. Install sealant with equipment recommended by manufacturer. Install sealant and primer when surfaces are prepared, and when ambient temperature and weather conditions are consistent with manufacturer's recommendations.

B. Install joint backing material, and bond breaker type material.

C. Ensure that correct sealant depth is maintained or provide width-to-depth ratios for specified sealant:

JOINT WIDTH	JOINT DEPTH	
	Minimum	Maximum
6 mm	3 mm	
6 mm - 25 mm	One half width	Equal to width
Over 25 mm	As accepted in writing	

D. Tool joint sealant to produce smooth full bead, free from ridges, wrinkles, sags, air pockets and embedded impurities.

E. Remove droppings and excess sealant as work progresses, before material achieves initial set.

F. Install closure strips where indicated and as required under metal deck to provide continuous closure along perimeter of rooms.

3.3 SCHEDULE

A. Where mechanical compression type seals are provided under the work of other Sections (at pipe penetrations), sealant is not required.

B. Sealant Type A:
1. Seal vertical, construction and expansion joints in concrete. Do not seal joints which will be immersed.
2. Seal control and expansion joints in unit masonry.

3. Seal joints at top of non-load bearing masonry walls to underside concrete slab except fire rated walls.
4. Seal both sides at perimeter of openings between frame and wall/partition.
5. Seal both sides around frames of exterior doors and entrances.
6. Seal both sides around frames of exterior windows and skylights.
7. Seal both sides of frames of translucent panels and skylights.
8. Seal control joints in gypsum board.
9. Seal around louvers and blank-off panels.
10. Seal at thresholds.
11. Except where indicated otherwise, seal around pipes, ducts, cables, conduits and other penetrations through walls, floor and ceiling slabs, which are not designated fire separations.
12. Seal around grouted-in railing posts.
13. Seal underside of joints in concrete slabs.

C. Sealant Type B:
1. Seal joints between structural precast slabs.
2. Seal control and expansion joints in monolithic flooring.
3. Seal control and expansion joints in ceramic tile.

D. Sealant Type C:
1. Seal expansion and control joints in concrete surfaces and joints between concrete and other surfaces which will be immersed.

E. Sealant Type D:
1. Seal control joints in saw cut concrete slab.

F. Sealant Type F:
1. Seal vanity, lavatory, water closet, urinals and other metal protrusions to tile.
2. Seal junction between horizontal and vertical tile.
3. Seal junction between tile and special coatings.

G. Sealant Type G:
1. Seal metal flashings.

END OF SECTION