

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

**DESCRIPTION:**

Work includes all architectural work for the, SB Auxiliary Operator House the NB Operator House and the SB & NB Gate Houses as shown on the drawings and specified herein. Work shall include interior wall, and floor finishes, paints, windows, doors, ladders, roofing, and repairs.

**MATERIALS:**

Material specifications, fabrication details and manufacturer's catalogs and specifications shall be submitted for all materials. Submittals shall conform to the requirements for shop drawings as specified under each subsection.

**Metal Doors and Frames:**

**Stainless Steel Doors:** Exterior doors shall be bronze toned as shown on the drawings, 44 mm thick, of 1.6 mm thick AISI Type 316 Stainless Steel and panel permanently bonded to a vertically stiffened stainless steel core. Stiffeners shall be a minimum 1 mm thick stainless steel. All doors shall be fitted with thermal insulation. Interior door shall be flush type. Bevel lock stiles of hinged doors at the rate of 3 mm in 51 mm. Reinforce doors with concealed stainless steel plates or rolled shapes of stainless steel, minimum 1 mm thick, to make them rigid and secure and as necessary to obtain satisfactory alignment. Fasten reinforcements with concealed stainless steel bolts or rivets, or with approved spot welding. The top edges of exterior doors shall be enclosed flush. Reinforce for hardware as specified herein. Provide countersunk stainless steel tamper-proof screws for securing exterior moldings.

**Stainless Steel Frames:** Frames shall be constructed of 2 mm thick AISI Type 316 Stainless Steel. Construct jambs and heads from one piece of metal each; rabbeted and flanged as required for the various types of openings, and neatly mitered or inter-locked and welded together. Include all channel, angle and/or bent plate stainless steel reinforcing indicated or otherwise required, as per approved shop drawings. Provide stainless steel reinforcing in the heads of frames where shown or required. Provide counter sunk frames with anchors, using not less than three (3) at each jamb. Provide frames with caulking stops, filler pieces and/or trim where indicated on the drawings or required; integrally formed as part of the frame wherever possible. Applied caulking stops, filler pieces, etc., shall be neatly attached by spot welding. At butts, cut back jamb the thickness of one leaf or butt. Drill and tap reinforcement to template. Reinforce for hardware as specified herein.

**Weatherstripping:** All exterior doors shall be weatherstripped at head and jambs with spring stainless steel weatherstripping. All exterior doors shall be fitted at the bottom on the outer side with a break formed stainless steel rain drip.

**Hollow Metal Interior Doors** shall be seamless, fabricated from 1.61 mm thick galvanized steel in accordance with SDI 100, galvanized by the hot dipped process. Doors shall be primed and painted as specified in this Item. Internal construction shall be manufacturers standard with internal sound deadening. Provide rabbeted frame to receive louver constructed of 1.6 mm thick AISI Type 316 Stainless Steel, free area as shown on the Contract Drawings. Shop apply paint after fabrication. Primer shall be rust-inhibitive baked on or air-dried compatible with the finish paint system.

**Hollow Metal Interior Frame:** Frames shall be fabricated from 2 mm thick galvanized steel, mitered or coped, welded and ground smooth. Frames shall be primed and painted as specified in this Item. Provide

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

frames with anchors, using not less than three (3) at each jamb. Reinforce for hardware as specified herein. Shop apply paint after fabrication. Primer shall be rust-inhibitive baked on or air-dried compatible with the finish paint system.

Miscellaneous Anchors Hollow Metal Interior Frames: Supports and anchors shall be a minimum thickness equal to the frame, and galvanized. Inserts, bolts and fasteners shall be hot dipped galvanized in accordance with ASTM A 153, Class C or D.

Submit catalog cuts of all doors, and frames including shop drawings showing construction and attachment. Submit door schedule coordinated with the Door Hardware schedule.

**Door Hardware:**

Exterior Door:

- (1) Hinges shall be 152 mm by 127 mm heavy-duty full mortise hinges, ball bearings, constructed of AISI Type 316 Stainless Steel and conforming to ANSI A5111. Hinges shall have 4 permanently lubricated non-detachable ball bearings. Tips, pins and bearings shall be stainless steel. Each hinge shall have 8 to 10 screws per butt. Finish shall be stainless steel, US32D. Each door shall receive 1-1/2 pair. Hinges shall have non-rising pin.
- (2) Door closers shall be surface mounted, full rack and pinion for high-frequency use doors. Case shall be cast aluminum, closer shall conform to ANSI A156.4. All components shall be of stainless steel, super alloy or zinc alloy for use in corrosive environments. Closers shall have hold-open option feature.
- (3) Mortise Lockset / Latchset shall be stainless steel, two cylinder heavy mortise, combined dead bolt and latch bolt lock. Dead bolt shall be forged brass with 25 mm throw. Latch bolt shall be stainless steel or brass with 16 mm throw. Front and case shall be stainless steel. Knob shall be stainless steel, knurled. Finish of all exposed surfaces shall be stainless steel, US32D. Lockset shall conform to ANSI A156.13 series 1000 Grade 1; functions shall be F05 classroom. Knob shall be 54 mm diameter, spherical with US32D finish. Rose shall be 86 mm in diameter, flat with US32D finish. Cylinders of locks shall be of proper length to fit the doors for which they are intended. Cylinders for all locks shall be cast bronze using a common standard diameter cast bronze rotating plug. The keyway shall be a paracentric type of single section with seven pins or multiple (four or more) sections with six pins capable of being masterkeyed and grand masterkeyed. All locks shall be keyed alike. Cores shall be interchangeable figure eight type with 626 finish and shall be compatible with the specified lockset.
- (4) Thresholds: Thresholds where indicated shall be fabricated of cast abrasive bronze, with bottom interlock.
- (5) Bottom raindrip attached to door face.
- (6) Spring-type weatherstripping.
- (7) Stops shall be AISI type 316 stainless steel wall stop.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Interior Door: Interior door shall be equipped with 1-1/2 pair, 114 mm by 114 mm, heavy-duty full mortise, stainless steel hinges with 4 ball bearings. The cylinder lockset shall be the manufacturer's heavy-duty lockset with stainless steel knob and rose. Function F05 classroom.

Submit catalog cuts showing all hardware and materials, to Engineer for approval prior to installation. Submit hardware schedule.

Provide sinkages, cutouts, and concealed reinforcement and drill and tap for the proper installation and attachment of all hardware.

**Steel Windows:**

Heavy Intermediate Steel Windows, Casement type: Windows shall have maximum air infiltration of .034m<sup>3</sup>/min./m of crack length when tested according to ASTM E283. Windows shall have no water penetration for 15 minutes when window is subjected to a flow of 2.03 l/hr./m<sup>2</sup> with differential pressure across window unit of 0.3 kPa (80 kmph), as per ASTM E331.

(1) Materials:

Frames: Heavy intermediate weatherstripped windows shall be manufactured from solid hot rolled steel shapes. Shapes made from new billet steel with flanges rolled integral at the mill. Perimeter frames and ventilator sections shall have glazing rebates providing an unobstructed glazing surface 19 mm height. Glazing rebate surfaces must be perpendicular to the web or stem of the section. Rebate surfaces that are tapered will not be acceptable. Combined weight of frame and ventilator sections shall be a minimum of 1.7 kg per 305 mm. The ventilator sections shall have an integral dovetail groove located on the inside bedding contact for the reception of weatherstripping. Muntins shall be bulb tee type 44 mm deep front to back, with a minimum 28 mm wide sight line flange, and weigh not less than 1.3 kg per lineal meter.

Glazing beads of heavy intermediate windows shall be extruded aluminum alloy AAMA 6063-T5, architectural grade, with a minimum thickness of 1.6 mm.

Weatherstripping shall be continuous extruded vinyl applied to the integral weatherstrip groove in the exterior contact surface of the ventilator surface and shall be on the same plane around the interior perimeter of the ventilated area.

Hardware shall be as follows: Fastener: Bronze cam fastener; or bronze spring catches for ventilators beyond reach. Provide aluminum pole for each spring catch. Ventilators shall be hung on heavy-duty steel arm brass friction shoes.

Insect Screens: Frames shall be roll-formed of minimum 1 mm thick electro-galvanized steel. Screens shall be .28 mm diameter woven aluminum wire.

Glazing: Windows shall be factory glazed with insulating glass conforming to ASTM 774-88. Each double-lite insulating unit shall have a one-piece welded aluminum spacer desiccant and dual seals of butylene and silicone. Each light shall be 6 mm laminated safety glass on the interior and 6mm clear tempered glass in the outside with a 13 mm air space for an overall unit thickness of 25 mm.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

(2) Fabrication:

Frames: Fabricate heavy intermediate steel windows in accordance with approved shop drawings. Prior to fabrication, all hot rolled steel sections shall be cleaned by shot blasting. Corners of frame and ventilators shall be mitered or coped then solidly welded. Exposed and contact surfaces shall be finished smooth flush with the adjacent surfaces.

Glazing: All sashes shall be designed for inside glazing. Provide continuous snap-in glazing beads to suit the glass as specified. Glazing beads shall be extruded aluminum Alloy 6063-T5 architectural grade, with a minimum thickness of 2 mm.

Operable Hardware: Projected-in and projected-out ventilators shall be balanced on heavy-duty steel side arms securely pivoted to the vent and frame at each jamb. Friction shall be maintained by means of two brass shoes sliding in the channel of the frame section controlled by the compression springs enclosed in tubular housings. Provide crank for operation.

Hardware shall be as follows: Fastener: Bronze cam fastener, or bronze spring catches for ventilators beyond reach.

Insect Screens: Screen frames shall be finished to match the sash. Screens shall be rewirable to allow for mesh replacement. Screen fastenings shall permit easy attachment and removal from the interior.

Factory Finishing: After fabrication, but prior to final assembly, steel windows, mullions, covers and trim shall be thoroughly cleaned, pickled and fluxed. All material shall then be completely immersed in a bath of molten zinc, as per ASTM A-123-89A. Following this pretreatment, one coat of a special primer is applied and oven cured. Following the prime coat, all windows shall be given a spray coat of aliphatic acrylic polyurethane, applied by an automated electro-static process and oven cured. Color shall be approved by the Engineer from samples matching those on the approved color boards.

(3) Shop Drawings:

Shop drawings shall be submitted for approval by the Engineer prior to installation. Shop drawings shall include a window schedule, construction, materials, operation, hardware and attachment details to houses.

**Glass Block:**

Units shall be 76mm thick solid glass block units shall be standard sizes as shown on the drawings. Units shall have an 80% light transmission value, and a STC rating of 53, and solar heat gain coefficient of .75 to .78. compressive strength of 552 mPa.

System shall include spacers, panels reinforcement, panel anchors, and expansion strips, provided by the glass block manufacturer.

Include mortar asphalt emulsion, sealants and framing channels as indicated on the drawings.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

**Ceiling Tile:**

Tile shall be 305 mm by 305 mm mineral fiberboard with a white medium textured finish directly adhered to substrate. Tiles shall have a UL class A flame spread rating. Edge shall be beveled. Tile shall have a mold and mildew inhibitor and shall be suitable to remain dimensionally stable in humid environments.

**Roofing System**

Roofing System shall be an Asphalt-applied Modified Bitumen System with polyester Reinforced cap sheet over insulation and vapor retarder adhered to the substrate.

(1) Submittals

Submit the shop drawings, product data, samples, and quality control submittals at the same time as a package.

Submit an accurate layout of the tapered insulation showing the slopes to the drains. Show cross section drawings illustrating the location and thickness of tapered insulation pieces and filler pieces. Show the thickness of the insulation system at high and low points.

Submit written certification that the roof system, including the specific insulation, has been tested in conjunction with the type of structural roof deck and roof slope applicable to the project and has achieved an Underwriters Laboratories Class A external fire resistance rating.

Submit a letter from the roofing membrane manufacturer certifying that the insulation is approved for use with the roofing system. The manufacturer must require that the roof system be installed by a licensed or approved applicator.

Submit a letter from the membrane manufacturer certifying that the applicator is licensed or approved to install the specified roof system.

(2) Ply Sheet

Material: Premium, asphalt-coated, process fiberglass ply sheet for use in Modified Bitumen Roofing systems meeting ASTM D 2178, VI. Nominal Weight: .44 kg/m<sup>2</sup>.

(3) Surfacing Sheet

Material: A fire-resistant, dual reinforced premium, polyester mat granular-surfaced, modified bitumen cap sheet meeting ASTM D6164. Nominal weight: 5.4 kg/m<sup>2</sup>.

(4) Modified Bitumen Flashing Sheet.

Material: A flexible polyester/glass scrim reinforced, granular-surfaced flashing sheet meeting ASTM D 5147. Nominal Weight: 4.9 kg/m<sup>2</sup>. Color: White.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

(5) Tapered Perlite

Material: A homogeneous perlite based, roof insulation board factory tapered to provide additional roof slope meeting ASTM C 728. Minimum taper 2%; 275 kPa compressive strength. Minimum Resistance Value: R=0.02 watts/mm.

(6) Expanded Polystyrene

Material: A rigid, roof insulation meeting ASTM: C578. Minimum Resistance Value: R=2.9 watts. Minimum Thickness 73mm. U.L. class A component.

Note: Total average thermal value of insulation must average R=3.5 watts.

(7) Asphalt

Material: Air blown roofing grade asphalt meeting ASTM D 312 Type IV Asphalt.

(8) Flashing Cement

Material: A two-part, urethane-based, trowel grade, elastomeric adhesive for use with modified bitumen flashing.

(9) Roof Cement

Material: A one-part, troweling grade, elastomeric adhesive for use as a utility adhesive with modified bitumen systems.

(10) Asphalt Primer

Material: Thin, cut-back asphalt used to prepare porous roof surfaces to receive hot asphalt and enhance adhesion meeting ASTM D 41.

(11) Fasteners for flashings

Type: Wood nails shall be galvanized with 16mm head. Masonry nails shall be case hardened. 25 mm diameter tin caps must be used. Size: Sufficient length to penetrate 20 mm minimum.

(12) Cant Strips

Material: A perlite based, fire-resistant, cant and tapered edge strip for use in built-up roofing systems meeting ASTM C 728. Minimum size on horizontal and vertical sides: 100 mm.

(13) Summary of materials per square meter (weights shown are nominal):

1. 2 Ply Vapor Retarder: 0.44 kg/m<sup>2</sup>

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

2. Asphalt (vapor retarder): 0.20 kg/m<sup>2</sup>
3. 73 mm Rigid Insulation- layer 1
4. Tapered Perlite, min.2% slope- layer 2
5. Asphalt (Insulation): 2.9 kg/m<sup>2</sup>
6. Type VI Ply Sheet, 3 layers 1.9 kg/m<sup>2</sup>.
7. Asphalt, 2 moppings: 2.2 kg/m<sup>2</sup>.
8. Asphalt (surfacing sheet): 1.1 kg/m<sup>2</sup>.
9. Polyester reinforced cap sheet 4.4 kg/m<sup>2</sup>

(14) Flashing System Components

Base Flashing: Modified bitumen flashing sheet  
Flange Stripping: 2 additional ply sheet.  
Drain Flashing: sheetlead and 2 additional ply sheets  
Scupper Flashing: 2 additional ply sheet.  
Pitch Pan Flashing: 2 additional ply sheets

(15) Roof Drain

Cast iron body with adjustable extension sleeve, reversible collar, combination flashing clamp, threaded outlet and cast iron dome.

**Rough Carpentry:**

Includes, blocking, and roof sheathing including preservative and fire retardant treatment.

Lumber: All lumber shall conform to the requirements of Section 594 of the NYSDOT Standard Specifications as applicable. Unless otherwise specified, each piece of lumber shall bear the grade mark, stamp, or other identifying marks indicating grades of material, and rules or standards under which produced. Such identifying marks on a material shall be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification. The inspection agency for lumber shall be approved by the Board of Review and the American Lumber Standards Committee for the grade and species used.

All lumber: Unless otherwise specified, any species graded under the grading rules of an inspection agency approved by the Board of Review, American Lumber Standards Committee. Furring, blocking, nailers and similar items 102 mm and narrower shall be Standard Grade and members 152 mm and wider shall be No. 2 Grade.

Sizes: Lumber sizes shall conform to U.S. Department of Commerce, PS20. When size reference specified are nominal sizes, actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

Moisture Content: Moisture content of lumber at the time of delivery to site shall be not more than the following: Lumber 51 mm and Less in Thickness: 19 percent. Boards: 19 percent. Lumber 51 mm thick and thicker: 25 percent.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Preservative Treatment: All wood members and plywood, furring, nailers, edge strips, curbs, cants, and other members used in connection with roofing and flashing materials, shall be preservative treated by the pressure method, in accordance with Section 594 of the NYSDOT Standard Specifications. Roofing Plywood shall be APA rated sheathing EXP 1 or better and marked with the APA designation, PS 1.

Plywood: Each sheet of plywood shall bear the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood. The mark shall identify the plywood by veneer grade, group number, span rating, durability classification, glue type, and compliance with National Bureau of Standards Product Standard, PSI. Plywood Sheathing: Rated Sheathing, Exposure 1 or Exterior for roof sheathing. Sheathing shall be 19 mm.

Rough Hardware: Anchors and bolts (with nuts and washers), straps, and hangers shall be galvanized; except bolts may be cadmium plated, or zinc-coated by electro-galvanized process. Bolt heads and nuts bearing on wood shall be fitted with washers. For work exposed to weather, washers shall be of a corrosion resistant material equivalent to AISI 316 Stainless Steel. Ties, anchors, framing connectors, hangers and similar items shall be packaged with special nails required for their intended use. Stainless steel grade shall be AISI 316/ASTM – A276.

- (1) Fastenings for Wood Grounds, Furring and similar items, to Masonry or Concrete, shall be metal and of a type and spacing best suited to conditions. Use hardened steel nails, expansion screws, toggle bolts, self-clinching nails, metal plugs, inserts or similar fastenings. Use of wood plugs or nailing blocks is prohibited. Power actuated drive pins may be used where practical.
- (2) Bolts (Lag, Toggle, and Miscellaneous), and Screws: Type, size, and finish as required for attachment to substrate materials and for intended use, except expansion bolts for studs anchored to walls shall be long enough to extend at least 64 mm into masonry and concrete.
- (3) Expansion Shields: Type and size as required for attachment to substrate materials and for intended use.
- (4) Nails and Staples: For sheathing, length of nails shall be sufficient to extend 25 mm into supports. In general, eight-penny or larger nails shall be used for nailing through one inch thick lumber and for toe nailing 51 mm lumber thick; 16 penny or larger nails shall be used for nailing through 51 mm thick lumber. All fasteners shall be corrosion resistant equivalent of AISI Type 316 stainless steel.

**Building Insulation:**

Where thermal resistance ("R" value) is specified or shown for insulation, the thickness shown on the drawings is nominal. Use only insulation with actual thickness that is not less than that required to provide the thermal resistance specified. Where "R" value is not specified for insulation, use the thickness shown on the drawings. Where more than one type of insulation is specified, the type of insulation for each use is optional, except use only one type of insulation in any particular area.

Rigid (Mineral Fiber Board) Insulation: Conforming to ASTM C578-92, Type I. Mineral fibers and water-resistance binders formed into rigid, non-combustible: FS HH-I-558C, Form A

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Mineral Fiber Insulation (Batt or Blanket) Glass fibers and resinous binders formed into flexible blankets or rolls; ASTM C 665. Batts for lay in tile ceiling shall be factory encapsulated in a 150 microns minimum polyethylene sheeting meeting ASTM D4397. The maximum perm rate shall be 3.7 g/m<sup>2</sup> per 24 hr.

Insulation: Rigid Insulation – low conducting, closed cell, extruded polystyrene with square edge.

Fasteners: Staples or nails – corrosion resistant and type best suited for purpose. Screws – corrosion resistant size and length best suited for purpose with washer not less than 51 mm in diameter.

Sealant tape shall be 76mm wide x 1mm thick continuous lengths adhered to rigid insulation face. Sealant tape shall conform to the following American Society of Test Materials (ASTM) standards:

ASTM D3767A –Thickness  
ASTM D412 –Tensile Strength

Concrete Water Repellent: Concrete coating shall be a colorless, penetrating coating, which forms a breathable screen that does not trap moisture. The coating shall reduce surface erosion and corrosion resulting from water and water carried salts.

Coating shall conform to the following standards:

American Society of Testing Materials (ASTM):

ASTM D3278 –Flash point: 34° c

Volatile Organic Compounds:

V.O.C. –Meets or exceeds NY State V.O.C. requirements.  
376 grams/liter

Submit catalog cuts showing all types of insulation used, including thickness and "R" value, vapor barrier, tape, and fasteners, for approval by the engineer.

**Miscellaneous Metals and Flashing:**

Stainless Steel flashing shall be AISI Type 316 Stainless Steel, dead soft temper, 0.7 mm thick. Finish shall be No. 4 in accordance with NAAM (National Association of Architectural Metal Manufacturers) Metal Finishes manual.

Stainless steel sills shall be formed of 2.8 mm thick stainless steel and as indicated on the drawings.

Flux and solder type and alloy shall be as per manufacturer's recommendations for use with metals to be soldered.

Rivets, Screws, Bolts and washers shall be stainless steel. Stainless steel nails shall not be less than 2.8 mm thick and shall be annular threaded. Rivets shall not be less than 3 mm diameter.

Expansion Shields shall be non-corrosive type.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

**Sealants and Caulking:**

Sealants: Sealants shall conform to the following: ASTM-C920 Polyurethane or polysulfide, Type S or Type M, Class 25, Grade NS, Shore A hardness of 25-40. Sealants used adjacent to exposed masonry shall match color of stonework. Color of sealants for other locations shall be light gray or aluminum, unless specified otherwise.

Caulking Compound: Caulking shall conform to the following: ASTM 834 acrylic latex or ASTM 1085 butyl rubber. Caulking shall be light gray or white unless specified otherwise.

Bond Breakers: Polyethylene tape or similar type and consistence as recommended by the sealant manufacturer for the particular application. Back-up rod shall be closed cell neoprene, butyl, polyurethane, vinyl, or polyethylene rod, as per ASTM D1056; diameter approximately 1-1/3 times the joint width.

Filler: Filler shall be mineral fiberboard Class 1, thickness to be the same as joint width. Depth shall completely fill void behind back-up rod.

Primer: Primer shall be stain type as recommended by the manufacturer of caulking or sealant materials.

Asphaltic roofing mastic shall be used for sealing joints in metal flashing.

Provide catalog cuts of all materials used, for approval by the Engineer.

**Resilient Flooring:**

Vinyl composition tile shall be 305 mm x 305 mm x 3 mm thick, slip resistant, fire and burn resistant tile.

Adhesives: All adhesives used for installation of flooring material, including field area, integral cove, end cuts, and cross seams, shall be those recommended by the flooring manufacturer to suit the grade level, subfloor conditions and usage conditions.

Leveling compounds, underlayments and patching compounds: As recommended or approved by resilient flooring manufacturer.

Reducer strips: 25 mm wide, tapered to meet abutting materials.

Submit catalog cuts of all materials used. Submit three samples of flooring minimum 152 mm by 152 mm, to Engineer for approval.

**Painting – General:**

The prime, intermediate and finish coat for each finish system shall be the same manufacturer.

The Contractor shall verify the compatibility of the proper items furnished with manufacturers standard shop coats.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Interior Walls: Latex Wall Primer shall be one of the following: Pro Mar 200 Primer as manufactured by Sherwin Williams, Acrylic Wall Primer as manufactured by Pratt & Lambert or Latex Primer as manufactured by Pittsburgh Paint. Alkyd Semi-Gloss Enamel for walls shall be one of the following: Pro Mar 200 as manufactured by Sherwin Williams, Cellutone as manufactured by Pittsburgh Paint Semi-gloss enamel by Pratt and Lambert.

Concrete Walls & Ceilings: Shall be Heavy Duty Block Filler, pure acrylic block filler as manufactured by Sherwin Williams.

Concrete Floor: Shall be Epolon II Multi-Mil Epoxy, high performance epoxy as manufactured by Sherwin Williams, VOC compliant, high build, self-priming catalyzed polyamide epoxy.

Miscellaneous Steel including hangers, sleeves, and electrical boxes not receiving manufacturers paint or galvanizing, shall be painted in accordance with Section 572 of the Standard Specification for structural steel paint system. All steel within finished construction shall receive one prime coat and one finish coat. Steel exposed to the interior or exterior of the structures shall receive one prime coat and two finish coats.

Galvanized steel door and frame shall be primed and finished with a paint intended for galvanized surfaces.

All surface preparation, coating thickness, color/tinting, and application, shall be as per manufacturer's recommendations.

Colors shall be as indicated on the drawings.

Submit manufacturer's specifications for each paint and three-color chips of each paint to Engineer for approval.

**Fire Extinguishers:**

Fire extinguishers shall be rechargeable dry chemical type for Class A, B, and C fires. Units shall contain 4.6 kg of mono ammonium phosphate powder in a steel cylinder with red corrosion resistant polyester epoxy paint finish approximately 127 mm diameter by 508 mm high. Units shall have pressure gauge, pull pin upright grip operation. Units shall comply with Factory Mutual, Underwriters Laboratories, and U.S. Coast Guard requirements.

Provide wall-mounting bracket as indicated on drawings.

Submit cut of fire extinguisher and wall bracket for engineer's approval.

**Lighting Fixtures:**

1. Exit Lights

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

- a. Exit Sign- Corrosion and impact resistant reinforced fiberglass housing, with clear polycarbonate face cover. Illuminated with red LED's single face letters. Provide mounting kit for application as shown on the drawings. 120/227 VAC, sealed nickel cadmium batteries.
  - b. Combination Exit Sign and Emergency Lights – Corrosion and impact resistant reinforced fiberglass housing, with clear poly carbonate face cover. Illuminated with red LED's, single face letters. Provide mounting kit for application as shown on the drawings. 120/277 VAC, with sealed lead calcium batteries.
2. Emergency Lights
- a. Two sealed Lexan beam lamp heads, with PAR 36 lamp, halogen, 6 volt, 12 watt. Housing shall be corrosion and impact resistant molded fiberglass reinforced polyester, with formed in place gasket. Batteries shall be lead calcium.

**Structural Glazed Facing Tile and Mortar**

Size: Manufacturer's standard units to match existing

Special Shapes: Provide where required, lintels, bases, bullnose, corners, jambs, control joints and other specials.

Units shall conform to ASTM C126 in colors to match existing as selected by the Engineer.

Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce the required mortar color to match existing.

**Mortar**

Mortar shall be in Type N

**CONSTRUCTION DETAILS:**

**Basis of Acceptance:**

All work under these Items, including, but not limited to fabrication, inspection, transportation, and erection, shall be done in accordance with the provisions of the New York State Steel Construction Manual (SCM), and the New York State Building Code as applicable. The term "Structural Steel" in the New York State Steel Construction Manual shall include Stainless Steel. Shop drawings required for these items shall be prepared, in accordance with the provisions of the New York State Steel Construction Manual, and the applicable requirements of the NYSDOT Standard Specifications, Sections 555, 556, 564, 572, 701, 703, 708, and as required by the Engineer. All shop drawing submissions shall follow all guidelines set in the SCM and shall include the name of the fabricator of the materials, the fabricator's technical specifications for them, and all installation details and methods. Shop drawings shall be forwarded to the Engineer for review and approval. No work may begin until the Shop Drawings have been approved.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

**Metal Doors and Frames:**

Prior to installation of metal doors and frames, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence. Verify that metal doors and frames may be installed in strict accordance with all pertinent codes and regulations, the original design, approved Shop Drawings, and manufacturer's recommendations.

Install all metal doors and frames in strict accordance with all pertinent codes and regulations, the approved Shop Drawings, and the manufacturer's recommendations, anchoring all components firmly in position for long term under hard use.

Set frames accurately, plumb and true.

Adjust any irregular or defective frame work.

Cutouts, Sinkages and Reinforcement for Hardware: Cutouts and sinkages shall be provided for butt hinges, lock fronts and strikes. Reinforcement for butt hinges shall be minimum 5 mm thick and extend 102 mm above and below hardware. Provide reinforcement for closers in doors, 102 mm high, 305 mm wide with nearest edge 102 mm from hinge line. Reinforcement in frame for bracketing door closer shall be 32 mm high by 254 mm wide located with nearest edge 152 mm away from hinge line. The stop of frame shall be provided with 5 mm reinforcement for corner bracket not less than 203 mm in horizontal length, 152 mm in vertical length located in the corner of frame. Provide 6 mm thick reinforcement for doorstop in door.

**Door Hardware:**

Hardware. All hardware shall be secured with suitable screws and bolts of the same material and finish. All hardware shall be mounted on doors and frames which have been reinforced, drilled and tapped ready to receive hardware as described in this section under steel doors.

**Steel Windows:**

Windows specified under this section shall be installed by experienced personnel.

Install windows in openings in strict accordance with approved shop drawings. Set units plumb, level and true to line, without warp or rack of frames. Anchor units securely to surrounding construction, maximum 457 mm on center, with approved fasteners. The exterior joints between the sash, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.

Install all glazing units from the inside. Install glazing beads.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Attach ventilator hardware, as required, and adjust ventilators to operate smoothly free from twist and to be weathertight when closed.

Repair and refinish any abraded areas of the factory finish.

**Ceiling Tile:**

**Roofing System**

(1) Delivery:

Roofing materials shall be delivered to the site in the manufacturer's unbroken containers and shall bear the manufacturer's printed labels. All bitumen delivered in containers or tanker trucks shall be accompanied by the manufacturer's certification stating; manufacturer's name, type, softening point range, flash point, and compliance with ASTM specifications. Certification for Asphalt Bitumen shall also state the equiviscous temperature range and the finished blowing temperature range.

(2) Storage and Handling:

Store materials a minimum of 152 mm off the ground, in a dry, well ventilated place protected from the weather. Enclosed trailers are recommended. Do not stock pile aggregate surfacing materials on unsurfaced felt which are in place on the roof. Mark for identification all materials which become wet. Remove such materials from the site. Handle roll goods with care; store on end. Do not use roll goods which have been damaged.

(3) Project Conditions:

Do not execute the Work of this Section unless the Engineer is present, or unless he directs that the Work be performed during his absence.

(4) Temperature:

Do not apply built-up roofing when the deck or air temperature is below 4.4° C.

Do not execute the Work of this Section unless the substrate is dry, and free from debris and dust.

(5) Moisture Protection:

Cover, seal, and otherwise protect the roof and all flashings so that water cannot accumulate or flow under the completed portions. When and where required, provide temporary water cut-offs in accordance with the roofing manufacturer's written specifications. At the discretion of the Engineer, a watertight built-up vapor barrier may be acceptable temporary protection for a maximum of 48 hours.

(6) Preparation:

The deck shall be cleaned, repaired. Any 9.5 mm or greater depression holes, deformations, etc. shall be made smooth prior to new roofing application.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

The entire roof surface shall be swept free of all dust, dirt, grime, debris or other foreign material.

At the end of the day, edge-seal the finished portion of the roofing system completed that day with fabric or felt set into hot bitumen or plastic cement. Remove edge seals prior to the start of the next day's work.

Start roofing work in dry weather only and without threat of immediate inclement weather. Keep the roofed area of the building watertight each day as the work progresses.

(7) Asphalt:

Discontinue operations if asphalt temperatures at point of application cannot be maintained in the EVT range.

Do not overheat asphalt. Kettle temperatures generally should not exceed 280°C.

Asphalt shall not be heated to the minimum flash point. The minimum finished blowing temperature shall not be exceeded for more than a total of four hours, for any asphalt batch or portion thereof. Remove from the project any asphalt heated above these limits.

Materials shall not be applied when foaming, blistering, or bubbling of the hot bitumen occurs. Remove any materials applied when such activity occurs.

(8) Primer:

Material may be applied by brush, spray, or roller.

Apply primer to concrete deck, as well as any metal surfaces to receive bituminous products at the nominal rate of 410 ml/m<sup>2</sup>. Allow to dry thoroughly prior to application of roofing materials.

(9) Roof Cement:

Material may be applied either by trowel or by hand.

Material shall be maintained at the working temperatures recommended by the Manufacturer.

(10) Vapor Retarder:

Prime deck surface with 108 ml/m<sup>2</sup>. Allow to dry thoroughly.

Set 2 plies fiberglass felt into a solid mopping of asphalt over the primed deck.

Set subsequent roof insulation in solid, uniform mopping of asphalt.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

(11) Roof Insulation:

Insulation shall be laid with edges parallel to the roof edges.

Space roof Insulation 6.4 mm from all vertical flashings.

Provide tapered roof insulation around roof drains to provide positive drainage.

Roof insulation shall be embedded in a uniform mopping of asphalt applied at a nominal rate of 2.9 kg/m<sup>2</sup>.

Offset the joints of subsequent insulation layers a minimum of 150 mm over the underlying insulation layer.

Set subsequent insulation layers into hot asphalt applied at the nominal rate of 1.146 kg/m<sup>2</sup>.

(12) Cant Strip:

Install 102 mm x 102 mm perlite cant strips at the juncture of all vertical surfaces and roof. Where cant strips will not fit, use the largest practical size. Cant strips shall be set into hot, steep asphalt over the secured insulation.

(13) Ply Sheets:

Using the appropriate ply sheet, apply a piece 457 mm wide, then over that, a full width piece.

The following felts are to be applied full width, overlapping the preceding felts so that at least 3 plies of felt cover the substrate at all locations.

Ply sheets shall be shingled in, free of buckles, fishmouths or voids.

Ply sheets may be applied by a mechanical felt layer or by rolling into a hand mopping of asphalt.

Ply sheets shall be applied so that the flow of water is over or parallel to, but never against, the lap.

End laps shall be a minimum of 102 mm and a minimum of 305 mm apart.

Embed the full 914 mm width of each ply in hot asphalt, at the nominal rate of 1.12 kg/m<sup>2</sup>. Installation over porous substrates may require up to 1.61 kg/m<sup>2</sup>.

Brooming shall be required under normal conditions for both felt layer and hand mopped applications.

When "rolling in" by hand, the mopping asphalt shall be kept within 1.83 m of the roll.

Mop shall be kept full and flow asphalt on the roof. Do not scrub with mop.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Cut and repair any fishmouths, wrinkles, tears, buckles or other damage in any ply on a ply-for-ply basis. Install additional plies set into hot bitumen over the cuts. Mop the full width under each layer. No dry laps shall be permitted. Feather felts 51 mm over preceding layers.

Extend all ply sheets to the top of the cant strip, solidly adhered without bridging or buckling.

(14) Surfacing Sheet:

Roof surface shall be clean, free of dust, dirt or moisture when surfacing sheet is applied.

Cut surfacing sheet into 3 m to 6 m lengths.

Embed surfacing sheet in hot steep asphalt applied at a nominal rate of 1.12 kg/m<sup>2</sup>. It is recommended that surfacing sheet be flopped into place. Tension shall be placed on the ends of the surfacing sheet lengths as they are flopped into place to ensure that the sheet lays flat in the asphalt.

Surfacing sheet shall be applied free of buckles, wrinkles, blisters, fishmouths or voids of any type between the sheet and the mopping asphalt.

Surfacing sheet shall be applied over and parallel to the underlying roofing and lapped so that the flow of water is over or parallel to, but never against, the laps.

Surfacing sheet shall be lapped with 76 mm side laps and 102 mm end laps.

End laps shall be broken not less than 914 mm apart.

Brooming in may be necessary under certain conditions to ensure bond between asphalt and sheet.

For clean, finished surface, embed loose granules into overrun of hot asphalt at side and end laps while still hot.

Weather conditions, such as temperature, wind, sun, etc. must be given consideration when the temperatures get below 10° C, as cracking, wrinkles, non-adhesion and fishmouths are more likely to occur. The pre-cutting and stacking of surfacing sheet will reduce application problems in these instances.

(15) Flashing:

Flashing shall not be applied until the roof membrane (excluding surfacing) has been laid. Provide temporary seal at ply terminations until installation of flashing.

Prime concrete or masonry walls with 2.5 liters of asphalt primer per square meter of wall area and allow to dry thoroughly.

All sheet metal that will come in contact with bituminous materials shall be primed with an asphaltic primer and allowed to dry before applying bitumen.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Comply with all applicable manufacture's guidelines, instructions and requirements relating to preparation and application of all flashing components.

(16) Base Flashing:

Prime concrete or masonry surfaces with asphalt primer applied at a nominal rate of 2.5 l/m<sup>2</sup>.

Embed flashing sheet into a solid mopping of steep asphalt over junctures, extending at least 203 mm up the curb or wall. Flashing sheet shall extend at least 102 mm beyond the cant strip, onto the roof.

Fasten the top edge of the base flashing at a maximum spacing of 150 mm on center with appropriate fasteners through 25 mm diameter metal discs.

Seal the top edge of the base flashing, including all nail heads, as well as all inside and outside comers with roof cement. Cover all exposed roof cement with aluminum coating.

Completely bond all flashings to the underlying surface without any looseness, bubbles, or voids. Remove and replace any loose flashing materials.

(17) Roof Drain Flashing:

Drain rings shall be removed prior to roof application.

Provide gradual taper to roof drains by the use of tapered perlite.

Extend roof plies into the drain under the clamping ring.

Set a lead sheet into a solid coating of roof cement over the installed plies. Lead shall be primed on both sides. The lead sheet shall extend at least 152 mm beyond the outside of the drain bowl. Shape the sheet to conform snugly to the underlying substrate. Prime lead sheet and cover with two stripping plies with the first extending at least 76 mm beyond the edge of the lead sheet and the second extending at least 76 mm beyond the first. Cover stripping plies with appropriate surfacing. Extend all plies, including field plies, stripping plies and lead sheet, into the drain, under the clamping ring.

The drain ring shall be securely tightened. Strainer dome shall be installed over roof drains.

After complete installation of the roofing system, all roof drains should be inspected and tested to assure that no clogging of the drainage system is present. The roof drain leader should be in such condition that the full diameter of the drain leader is clear.

(18) Flanged Sleeves and Accessories:

Flanges will be set into plastic roof cement over the installed surfacing sheet.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

All flanges shall be primed on both sides and flashed on the roof with a stripping layer of flexible flashing embedded into Utility Cement. This flashing layer shall extend a minimum of 102 mm beyond the flange, onto the roof.

(19) Miscellaneous Items:

Install new tapered perlite crickets/saddles as needed to insure positive water flow at locations indicated. Comply with manufacturer's guidelines for proper installation of tapered insulation.

**Rough Carpentry:**

Furring, blocking, nailers and grounds: Provide furring, blocking nailers and grounds where shown and where required to complete the work. Provide these items in the longest lengths practicable.

Secure wood nailers to structural steel members with bolts, placed one at each end of each nailer and at 610 mm intervals between endbolts. Countersink bolt heads flush with the surface of nailers.

**Building Insulation:**

Building Insulation: Install insulation with the vapor barrier facing the heated side, unless specified otherwise. Install insulation with tight joints, filling framing voids completely. Seal cuts, tears, and unlapped joints with tape. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise.

Apply sealant tape to clean and dry surface of insulation, in a continuous length. Roll on with even pressure. Store material as required by the manufacturer.

Concrete Water Repellent: Protect all adjacent non-masonry surfaces from product. Surfaces should be clean and free of dust, dirt, oil, grease, moisture and other contaminants. Concrete shall be thoroughly cured before application. Apply with low-pressure airless spray, in accordance with manufacturers recommendations.

**Miscellaneous Metals and Flashing:**

Fabrication:

- (1) Jointing: Surfaces of stainless steel required to be soldered shall be pretinned on both mating surfaces with solder for a width not less than 38 mm. Surfaces of other sheet metal work required to be soldered shall be treated in accordance with metal producers recommendation. Completely remove acid and flux after soldering is completed. In general, stainless steel joints, except expansion and contraction joints, shall be locked and soldered.

Joints shall conform to following requirements: Flat-lock joints shall be finished not less than 19 mm wide. Lap joints subject to stress shall be finished not less than 25 mm wide and shall be soldered and riveted. Unsoldered lap joints shall be finished not less than 102 mm wide.

Flat and lap joints shall be made in direction of flow.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

- (2) Expansion and Contraction Joints: Provide expansion and contraction joints, fabricated in accordance with the Architectural Sheet Metal Manual recommendation for expansion and contraction of sheet metal work in continuous runs, spaced as specified. Provide expansion and contraction joints for stainless steel at intervals not exceeding 7.32 m. Expansion and contraction joints shall be slip-type or loose locked, and filled with plastic cement unless otherwise specified.
- (3) Fastenings: Fastenings shall be AISI Type 316 Stainless Steel for stainless steel. Direct nailing of sheet metal shall be confined to strips 305 mm or less wide. Flashings shall be nailed along one edge only. Nails shall be spaced not over 102 mm on center. Nails shall have large flat heads and needle points, and shall penetrate nailer at least 22 mm. Nails exposed to the weather shall have neoprene washers. Install bolts, rivets, band screws where indicated, specified or required in accordance with the Architectural Sheet Metal Manual (SMACNA). Rivets shall be spaced at 76 mm on centers in two rows in a staggered position.
- (4) Cleats: Provide cleats to secure flashing and sheet metal work over 305 mm wide and elsewhere specified or required. Cleats shall be evenly spaced not over 305 mm on centers. Secure one end of cleat over nail heads. Lock other end into the seam. Pre-tin cleats for soldered seams. Cleats shall be formed of the same metal and weights as the sheet metal being installed.
- (5) Drips: Form drips at lower edge of sheet metal counterflashings and fascias by folding edge back and bending out 45 degrees from vertical to carry water away from the wall. Form drip to provide hook to engage cleat for fastening.
- (6) Counterflashing shall be stainless steel. Form drip as specified at lower edge. Stiffen lower edge of counterflashing by 13 mm hem.

Installation: Install flashing and sheet metal items as shown in Sheet Metal and Air Conditioning Contractors National Association, Inc., publication, Architectural Sheet Metal Manual, except as otherwise shown or specified.

Surface Preparation: Apply sheet metal and other flashing material to surfaces that are smooth, sound, clean, dry and free from defects that might affect the application. Remove projections which would puncture the materials and fill holes and depressions with material compatible with the substrate, except cover holes or cracks in wood wider than 6 mm shall be covered with sheet metal compatible with the flashing material used. Apply a skim coat of mortar to surfaces of unit masonry to receive flashing material before the application of flashing.

Submit shop drawings showing all materials, details, dimensions, fabrication and flashing, to Engineer for approval.

**Sealants and Caulking:**

Inspection: Inspect substrate surface for bond breaker contamination and unsound materials at adherent faces of sealant. Coordinate for repair and resolution of unsound substrate materials. Inspect for uniform joint width and confirm that the dimensions are within tolerances established by sealant manufacturer.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

Preparation: Prepare joints in accordance with manufacturer's instructions and as per ASTM – C1193. Clean surfaces of joint to receive caulking or sealants leaving joint dry to the touch, free from frost, moisture, grease, oil, wax, paint, or other foreign matter that would tend to destroy or impair adhesion. Do not cut or damage joint edges. Apply masking tape to face of surfaces adjacent to joints before applying primers, caulking, or sealing compounds. Apply primer to sides of joints wherever required by compound manufacturer's printed instructions. Apply primer prior to installation of back-up rod or bond breaker tape using brush or other approved means that will reach all parts of joints.

Backing Installation: Install back-up material, to form joints enclosed in three sides as required for specified depth of sealant. Where deep joints occur, install filler to fill space behind the back-up rod and position the rod at proper depth. Cut fillers installed by others to proper depth for installation of back-up rod and sealants. Install back-up rod, without puncturing the material, to a uniform depth, within plus or minus 3 mm for sealant depths specified. Where space for back-up rod does not exist, install bond breaker tape strip at bottom of joint so sealant bonds only to two opposing surfaces taking all necessary steps to prevent three side adhesion of sealants.

Backing Installation: Sealant Depth and Geometry: At widths up to 6 mm, sealant depth equal to width. At widths over 6 mm, sealant depth 1/2 of the width up to 13 mm maximum depth at center of joint with sealant thickness at center of joint approximately 1/2 of depth at adhesion surface.

Installation:

- (1) General: Apply the sealants and caulking only when the ambient temperature is between 7 and 30 degrees Celsius.
- (2) Do not use polysulfide base sealants where sealant may be exposed to fumes from bituminous materials, or where water vapor in continuous contact with cementitious materials may be present. Do not use sealant type listed by manufacturer as not suitable for use in locations specified.
- (3) Apply caulking and sealing compound in accordance with manufacturer's printed instructions. Avoid dropping or smearing compound on adjacent surfaces. Fill joints solidly with compound and finish compound smooth. Tool joints to concave surface unless shown or specified otherwise. Apply compounds with nozzle size to fit joint width.
- (4) Test sealants for compatibility with each other and substrate. Use only compatible sealant.
- (5) For application of sealants, application of acrylic latex caulking, and of butyl rubber caulking, follow manufacturer's requirements, and as per ASTM C1193.

Cleaning: Fresh compound accidentally smeared on adjoining surfaces shall be scraped off immediately and rubbed clean with a solvent as recommended by the caulking or sealant manufacturer. After filling and finishing joints, remove masking tape. Leave adjacent surfaces in a clean and unstained condition.

Locations: Use sealant for vertical and inclined joints at:

- (1) Both exterior and interior joints, and recesses formed where frames of doors and louvers and the like adjoin other materials.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

- (2) Joints or recesses on exterior of building (including locations not specifically shown or specified) where sealing is required to prevent infiltration of water, moisture, and wind into building construction.
- (3) Where sealant is shown on drawings.
- (4) Concrete joints in which shelf angles occur.
- (5) Openings where pipes, conduits and similar items pass through exterior walls.
- (6) Bottoms of exterior doorway frames.
- (7) Seats of metal thresholds for exterior doors.
- (8) At penetration through flashings.
- (9) Use caulking compound for the following interior applications:
  - a. Openings 6 mm and less between walls and partitions and adjacent shelving, built-in or surface mounted equipment, plumbing and lighting fixtures.
  - b. Perimeters of frames of doors, access panels and the like which adjoin exposed interior concrete surfaces.
  - c. Exposed joints at top of full height walls and partitions where isolation seals occur.
  - d. Where caulking is shown on drawings.
  - e. Other interior locations where small voids between materials require filling for painting.

**Resilient Flooring:**

Install resilient flooring as per manufacturer's recommendations. Provide solid vinyl reducer strips at transitions of materials and around floor openings. Edging strip shall allow a proper sized, compatible caulk sealant joint be tooled to structural members passing through the finish floor.

**Fire Extinguishers:**

Bracket mounted attached to wall framing.

**Lighting Fixtures:**

Install as indicated on the drawings.

**ITEM 599.2740 10 M- SB BRIDGE AUXILIARY OPERATOR HOUSE**

**ITEM 599.2741 10 M- NB BRIDGE OPERATOR HOUSE**

**ITEM 599.2742 10 M- SB BRIDGE GATE HOUSES**

**ITEM 599.2743 10 M- NB BRIDGE GATE HOUSES**

**Repair, Pointing and Cleaning Structural Glazed Facing Tile**

Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds.

Clean exposed glazed block by dry brushing at the end of each day's work and after final pointing to remove mortar spots and droppings.

**METHOD OF MEASUREMENT:**

Payment for each of these Items shall be made on a lump sum basis.

**BASIS OF PAYMENT:**

The lump sum price bid for each item shall include the cost of furnishing all labor, materials and equipment for each item necessary to complete the work. No payment will be made for repair or replacement of damaged material, which was made necessary due to the Contractor's operations.

This lump sum will be paid in the following installments, with each payment subject to approval of the balance by the Engineer:

50% of the lump sum will be paid upon successful completion of all removals and patching; and delivery of the following: doors, hardware, windows, louvers, roofing and flashing, and glass block, subject to the Engineer's approval of the work and delivery of materials.

40 % of the lump sum will be paid upon successful completion of the installation of all components, including all interior and exterior finishes, subject to the Engineer's approval.

10% of the lump sum will be paid upon successful completion of and final adjustments to the work, subject to the Engineer's approval.