

SECTION 071113 - BITUMINOUS DAMPPROOFING

1.1 MATERIALS

- A. Cold-applied, emulsified asphalt.
- B. Primer: Emulsified asphalt.
- C. Protection Course, one of the following:
 - 1. Fiberglass or asphaltic-core sheets
 - 2. Fan-folded, extruded-polystyrene board
 - 3. Extruded-polystyrene board insulation
 - 4. Smooth-surfaced roll roofing.

1.2 INSTALLATION

- A. Cold-Applied, Cut-Back-Asphalt Dampproofing:
 - 1. Concrete Foundations, buried column necks, exterior faces of basement walls and all substructure concrete surfaces exposed to earth: Apply two brush or spray coats.

END OF SECTION 071113

SECTION 071353 - ELASTOMERIC SHEET WATERPROOFING

1.1 QUALITY ASSURANCE

- A. Mockups for each type of waterproofing as directed by the Engineer.

1.2 WARRANTY

- A. Manufacturer's Warranty: 20 years for materials only.
- B. Installer's Warranty: Two years on specified form.

1.3 RELATED SECTIONS

- A. Division 07 Section 074213.19 "Insulated Metal Wall Panels".

1.4 MATERIALS

- A. EPDM Rubber Sheet Waterproofing: 60 mils (1.5 mm) thick, unreinforced.
- B. Auxiliary Materials:
 - 1. Metal Termination Bars: Aluminum.

1.5 INSTALLATION

- A. Horizontal Application: Fully adhered.
- B. Vertical Application: Fully adhered.

1.6 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor engaged.
- B. Inspections by manufacturer's site representative.
- C. Testing: Flood testing of each deck area.

END OF SECTION 071353

SECTION 071416 - COLD FLUID-APPLIED WATERPROOFING

1.1 QUALITY ASSURANCE

- A. Mockups.

1.2 WARRANTY

- A. Water-tightness Warranty: 10 years.
- B. Installer's Warranty: Two years. Includes overburden removal and replacement.

1.3 MATERIALS

- A. Single component reinforced, modified polyurethane waterproofing, for wet areas, under tiles.

B. Typical Physical Properties

PROPERTY	VALUE
Color	yellow-gray
Physical State	cures to solid
Thickness (165 fleece)	70 mils
VOC Content	6 g/l
Tensile Strength @ Break	120 lb/in
Elongation	50 %
Tear Resistance	5.0 lbs
Puncture Resistance	150 lbf
Dimensional Stability	0.1 %
Water Vapor Transmission	0.04 perms
Water Absorption	2.2 %
Impact Resistance	Shore A:85
Usage Time*	30 minutes
Water resistant after*	2 hours
Solid to walk on after*	48 hours
Can be driven on after*	48 hours
Apply surfacing/coating after*	16-48 hours
Apply overburden after*	2 days
Completely hardened after*	3 days
Crack Spanning	2 mm/0.08 inch
Short-term temperature resistance	250 °C/ 482 °F

- C. Sheet Flashing: Uncured neoprene.
- D. Membrane-Reinforcing Fabric: Fiberglass or polyester.

1.4 INSTALLATION

- A. Reinforced Application: Average dry film total thickness of 70 mils (1.8 mm).

1.5 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor engaged to perform flood testing.
- B. Manufacturer's field service engaged full time to inspect conditions and installation.

END OF SECTION 071416

SECTION 071613 - POLYMER MODIFIED CEMENT WATERPROOFING

1.1 QUALITY ASSURANCE

- A. Applicator Qualifications: Workers trained and approved by manufacturer.
- B. Mockups.

1.2 MATERIALS

- A. Prepackaged, positive and negative-side waterproofing.
- B. Water Permeability: Zero 9 m.

1.3 APPLICATION

- A. Number of Coats: Number required for specified water permeability.
- B. Final Coat Finish: Smooth troweled, to receive tile adhesive material. .
- C. Protective floor topping 25.4 mm thick.

1.4 FIELD QUALITY CONTROL

- A. Manufacturer's representative to inspect application.

END OF SECTION 071613

SECTION 071616 - CRYSTALLINE WATERPROOFING

1.1 QUALITY ASSURANCE

- A. Applicator Qualifications: Workers trained and approved by manufacturer.
- B. Mockups.

1.2 MATERIALS

- A. Water Permeability: Zero at 30 feet (9 m).
- B. Positive side waterproofing.

1.3 APPLICATION

- A. Number of Coats: Number required for specified water permeability
- B. Final Coat Finish: Smooth.

1.4 FIELD QUALITY CONTROL

- A. Manufacturer's representative to inspect application.

END OF SECTION 071616

SECTION 072100 - THERMAL INSULATION

- A. U-Value for Wall: 0.2 W/m².K.
- B. U-Value for Roof: 0.25 W/m².K.

1.2 MATERIALS

A. Insulation:

- 1. Rock-Wool Board, Aluminum Foil Faced for Solid Partition wall assembly refer , Insulation with Density of 80kg/cu. m.
- 2. Loose Fill for Sound attenuation, and where required to be Rockwool with a density of 50 kg/cu. m unless otherwise required to achieve the indicated acoustical requirements.

B. Auxiliary Insulating Materials:

- 1. Insulation fasteners.
- 2. Adhesive.

END OF SECTION 072100

SECTION 074116 - INSULATED METAL ROOF PANELS

1.1 QUALITY ASSURANCE

- A. Mockups.

1.2 WARRANTY

- A. Special Warranty: Two years.
- B. Finishes: 20 years.

1.3 RELATED SECTIONS

- A. Division 07 Section 074646 "Fiber Cement Siding", for cement board underlayment.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: ASTM E1592 and SBC Code for the following:
 - 1. Wind Loads.
 - 2. Other Design Loads.
 - 3. Deflection Limits.
- B. Air Infiltration: ASTM E1680 or ASTM E283.
- C. Water Penetration: ASTM E1646 or ASTM E331.
- D. Wind-Uplift Resistance: UL 580.
 - 1. Uplift Rating: UL 90.
- E. FM Global listed.
 - 1. Fire/Windstorm Classification: Class 1A-90.

1.5 PRODUCTS

- A. Foam-Insulation-Core Metal Roof Panels:
 - 1. Profile: As selected by the Engineer from Manufacturer's full range..
 - 2. Exterior Face: Aluminum sheet.
 - 3. Interior Face: Metallic-coated steel.
 - 4. Core Material: Manufacturer's foamed in-place Polyisocyanurate (PIR).
 - 5. Panel Thickness: 120 mm.
 - 6. Finish: Three coat fluoropolymer, complying with AAMA 621
 - 7. Thermal-Resistance Value (R-Value): 5 according to ASTM C1363.
- B. Cement Board Underlayment: Refer to Division 07 Section 074646 "Fiber Cement Siding", provide 15 mm thick cement board interrupted between Z-purlins.
- C. Accessories:

1. Flashing and trim.
2. Insulated Gutters: Formed from same material, finish and color as exterior facings of panels, complete with rigid insulation, end pieces, outlet tubes and other special pieces as required. Size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual".
3. Aluminum Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 3.6 m, concealed anchorage, with corner units, end cap units, and concealed splice plates with finish matching coping caps..

1.6 FIELD QUALITY CONTROL

- A. Testing: By factory-authorized service representative.

END OF SECTION 074116

SECTION 074213.19 - INSULATED METAL WALL PANELS

1.1 QUALITY ASSURANCE

- A. Mockups.

1.2 WARRANTY

- A. Special Warranty: Two years.
- B. Finishes: 20 years.

1.3 RELATED SECTIONS

- A. Division 07 Section 074646 "Fiber Cement Siding" and Division 09 Section 092400 "Gypsum Board".

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: ASTM E72 and SBC Code.
 - 1. Wind Loads.
 - 2. Other Design Loads.
 - 3. Deflection Limits.
- B. Air Infiltration: ASTM E283.
- C. Water Penetration: ASTM E331.

1.5 PRODUCTS

- A. Concealed Fasteners, Foam-Insulation-Core Metal Wall Panels:
 - 1. Exterior Face: Aluminum sheet.
 - 2. Interior Face: Metallic-coated steel.
 - 3. Core Material: Manufacturer's foamed in-place Polyisocyanurate (PIR).
 - 4. Panel Thickness: 100 mm.
 - 5. Finish: Three coat fluoropolymer, complying with AAMA 621
 - 6. Thermal-Resistance Value (R-Value): 4 according to ASTM C1363.
- B. Accessories:
 - 1. Backer board, refer to Section 074646 "Fiber Cement Siding" for wet areas and Section 092900 "Gypsum Board" for dry areas.
 - 2. Flashing and trim.

1.6 FIELD QUALITY CONTROL

- A. Testing: By factory-authorized service representative.

END OF SECTION 074213.19

SECTION 074213.23 - METAL COMPOSITE MATERIAL WALL PANELS

1.1 MOCKUPS

- A. Mockups for each type of metal composite material (MCM) system.

1.2 WARRANTY

- A. Panel Integrity Warranty: 10 years from date of Substantial Completion.
- B. Panel Finish Warranty: 20 years from date of Substantial Completion.
- C. MCM System Warranty: Five years from date of Substantial Completion.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: ASTM E330.
 - 1. Wind Loads: As per SBC code.
 - 2. Other Design Loads: As per SBC code.
 - 3. Deflection Limits: As per SBC code.
- B. Air Infiltration: ASTM E283.
- C. Water Penetration, Static Pressure: ASTM E331.
- D. Water Penetration, Dynamic Pressure: AAMA 501.1.
- E. Pressure Cycling: AAMA 508.
- F. Drained and Back-Ventilated Cavity: AAMA 509.
- G. Fire-Resistance Rating: ASTM E119 and UL listed.
- H. Fire Propagation: NFPA 285.

1.4 PRODUCTS

- A. MCM Panels Metal Canopy Cladding:
 - 1. Panel Material: Aluminum faced, with non-combustible mineral core.
 - 2. Thickness: 6 mm.
 - 3. Exterior Finish: PVDF fluoropolymer.
- B. MCM System:
 - 1. Drained and Back-Ventilated Cavity MCM System: Provide factory-formed and -assembled, MCM panels formed into profile for system installation, drained at horizontal joints.
- C. Attachment Assembly: Manufacturer's standard.

- D. Accessories: Provide components required for a complete, weathertight wall system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items.

1.5 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor engaged.

END OF SECTION 074213.23

SECTION 074646 - FIBER-CEMENT SIDING

1.1 MOCKUPS

- A. Mockups for each type of siding and soffit.

1.2 WARRANTY

- A. Materials and Workmanship: 50 years.

1.3 PRODUCTS

- A. Fiber-Cement Siding: ASTM C1186, Type A, Grade II.

1. Pattern: Panel.
2. Texture: Smooth.
3. Factory primed.

- B. Fiber-Cement Soffit: ASTM C1186, Type A, Grade II.

1. Texture: Smooth.
2. Ventilation: Perforated.
3. Factory primed.

- C. Flashing: Aluminum.

1. Finish: Factory-prime coating.

- D. Continuous soffit vents.

- E. Physical Properties:

Property	ASTM test reference	Cement board Value 1/2"	Underlayment Value 5/16"
Flexural strength-psi (MPa)	C947-81	750 (5.17)	1250 (8.61)
Indentation strength, psi (MPa) 1" dia. disc @ 0.02" indent	D2394	2300 (15.85)	2300 (15.85)
Uniform load—psf (KPa) studs 12"o.c.	—	50 (2.39) max.	—
Water absorption % by wt. 24 hrs.	C473-84	10	10
Nail pull resistance, lb. (N) 0.4" (10 mm) head diameter (wet or dry)	C473-84	125 (556)	—
Weight—psf	C473-84	3	2
Density pcf (kg/m3)	C1185	72 (1153)	48 (768)
Freeze/thaw resistance, Procedure B number of cycles with no deterioration	C666-84	100	100
Surface burning characteristics—flame/ smoke	E84	5/0	5/0
Fire rating	E119	1 hr	—
Thermal "R/k" value	C177	0.26/1.92	—
Standard method for evaluating ceramic floor tile installation systems	C627	Residential	Residential
Min. bending radius l—ft (mm).	—	8 (2438)	—

END OF SECTION 074646

SECTION 078100 - APPLIED FIRE PROTECTION

1.1 QUALITY ASSURANCE

- A. Mockups for each type of fire protection, substrate, and finish.

1.2 PRECONSTRUCTION TESTING

- A. Testing service engaged by Contractor.

1.3 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Design: Tested according to ASTM E119 or UL 263. Steel members are considered unrestrained unless specifically noted otherwise.

1.4 SPRAYED FIRE-RESISTIVE MATERIALS

- A. Sprayed Fire-Resistive Material: Wet, cementitious type for exterior and interior use:
 - 1. Bond Strength: Minimum 150 lbf/sq. ft. (7.18 kPa).
 - 2. Compressive Strength: According to ASTM E761.
 - 3. Fungus resistant.
 - 4. Sound Absorption: not less than 0.60 according to ASTM C423 for Type A mounting according to ASTM E795.
 - 5. Finish: As selected by the Engineer from Manufacturer's full range.
 - 6. Density: Not less than density specified in the approved fire-resistance design, according to ASTM E605
 - 7. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E605, whichever is thicker, but not less than 9 mm
- B. Auxiliary Materials: According to fire-resistance designs indicated.
 - 1. Sealer.
 - 2. Topcoat: Cement or Water based, as approved by SFRM Manufacturer.

1.5 FIELD QUALITY CONTROL

- A. Special Inspections: Contractor- engaged special inspector.

END OF SECTION 078100

SECTION 078413 - PENETRATION FIRESTOPPING

1.1 QUALITY ASSURANCE

- A. Installer Qualifications: FM Approvals approved or UL qualified.

1.2 PENETRATION FIRESTOPPING

- A. Penetrations in Fire-Resistance-Rated Walls: F-ratings per ASTM E814 or UL 1479.
- B. Penetrations in Horizontal Assemblies: F-, T-, and W-ratings per ASTM E814 or UL 1479.
- C. Penetrations in Smoke Barriers: L-ratings per UL 1479.

1.3 INSTALLATION

- A. Identification: Walls and penetrations.

1.4 FIELD QUALITY CONTROL

- A. Inspection of Installed Firestopping: Engage an agency according to ASTM E2174.

END OF SECTION 078413

SECTION 078443 - JOINT FIRESTOPPING

1.1 QUALITY ASSURANCE

- A. Installer Qualifications: FM Approvals approved or UL qualified.

1.2 FIRE-RESISTIVE JOINT SYSTEMS

- A. Joints in or between Fire-Resistance-Rated Construction: ASTM E1966 or UL 2079.
- B. Joints at Exterior Curtain-Wall/Floor Intersections: ASTM E119 or ASTM E2307.

1.3 FIELD QUALITY CONTROL

- A. Inspection of Installed Firestopping: By Contractor-engaged agency according to ASTM E2393.

END OF SECTION 078443

SECTION 079100 - PREFORMED JOINT SEALS

1.1 MOCKUPS

- A. Mockups for each form of construction and finish.

1.2 WARRANTY

- A. Installer Warranty: Two years.
- B. Manufacturer's Warranty: Five years.

1.3 PRODUCTS

- A. Preformed, foam joint seals.
- B. Extruded-silicone joint seals.

END OF SECTION 079100

SECTION 079200 - JOINT SEALANTS

1.1 MOCKUPS

- A. Mockups for each form of construction and finish.

1.2 WARRANTY

- A. Installer Warranty: Two years.
- B. Special Manufacturer's Warranty: Five years.

1.3 JOINT SEALANTS

- A. Silicone joint sealants.
- B. Non-staining silicone joint sealants.
- C. Urethane joint sealants.
- D. Immersible joint sealants.
- E. Silane-modified polymer joint sealants.
- F. Mildew-resistant joint sealants.
- G. Polysulfide joint sealants.
- H. Butyl joint sealants.
- I. Latex joint sealants.
- J. Joint-sealant backing.
- K. Acoustical Sealants for Exposed and Concealed Joints: Latex.
- L. Acoustical Sealant for Concealed Joints: Non-skinning, synthetic rubber.

1.4 FIELD QUALITY CONTROL

- A. Field-adhesion testing.

END OF SECTION 079200