



WAYNE STATE
UNIVERSITY

Project Manual | Volume 01 | Divisions 00 - 14

Wayne State University
Health Science Research Building
Detroit, Michigan

Addendum 02
October 28, 2025



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WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN



2025-10-28

PROJECT MANUAL
TABLE OF CONTENTS

LEGEND

First Column:	Current Date for Section
Second Column:	Checked Indicates Section is Included in Current Issue
Third Column:	Section Number
Fourth Column:	Section Title
Fifth Column:	Section Author

NOTES FOR REVISED SPECIFICATIONS

1. Deleted information is indicated by STRIKETHROUGH; for example, ~~THIS IS DELETED~~.
2. Added information is indicated by DOUBLE UNDERLINE; for example, THIS IS ADDED.

ISSUES

2025-05-09	Design Development
2025-05-16	Design Development Specification Issue
2025-06-02	Design Development 2 (Foundation)
2025-06-20	MEP Draft Specs
2025-07-25	50% Construction Document – WSU Permit Review
2025-09-29	Construction Documents
2025-10-17	Addendum 01
2025-10-17	Compiled Set
2025-10-28	Addendum 02

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

VOLUME 01

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

2025-09-29	☐	00 7200	General Conditions	HKS
2025-09-29	☐	00 7300	Supplementary Conditions	HKS

DIVISION 01 - GENERAL REQUIREMENTS

2025-09-29	☐	01 1000	Summary	HKS
2025-09-29	☐	01 2300	Alternates	HKS
2025-09-29	☐	01 2500	Substitution Procedures	HKS
2025-09-29	☐	01 2600	Contract Modification Procedures	HKS
2025-09-29	☐	01 2900	Payment Procedures	HKS
2025-10-17	☐	01 3100	Project Management and Coordination	HKS
2025-10-17	☐	01 3300	Submittal Procedures	HKS
2025-09-29	☐	01 4000	Quality Requirements	HKS
2025-09-29	☐	01 4200	References	HKS
2025-10-17	☐	01 4519	Field Testing for Air and Water Leakage	HKS
2025-09-29	☐	01 5000	Temporary Facilities and Controls	HKS
2025-09-29	☐	01 6000	Product Requirements	HKS
2025-07-25	☐	01 7419.11	Construction Waste Management and Disposal - LEED	HKS
2025-09-29	☐	01 7700	Closeout Procedures	HKS
2025-09-29	☐	01 7823	Operation and Maintenance Data	HKS
2025-09-29	☐	01 7839	Project Record Documents	HKS
2025-09-29	☐	01 7846.13	Extra Stock and Maintenance Materials - Architectural	HKS
2025-09-29	☐	01 7900	Demonstration and Training	HKS
2025-07-25	☐	01 8112.11	Health and Environmental Performance Requirements – LEED WELL	HKS
2025-09-29	☐	01 8116.16	Construction Requirements for VOCs	HKS
2025-09-29	☐	01 9113	General Commissioning	FST
2025-09-29	☐	01 9119	Commissioning of the Building Enclosure	FST

DIVISION 02 - EXISTING CONDITIONS

2025-09-29	☐	02 4119	Selective Demolition	HKS
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DIVISION 03 - CONCRETE

2025-09-29	☐	03 3000	Cast-In-Place Concrete	RE
2025-09-29	☐	03 4500	Architectural Precast Concrete	HKS

DIVISION 04 - MASONRY

2025-09-29	☐	04 4200	Exterior Stone Cladding	HKS
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WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

DIVISION 05 – METALS

2025-09-29	☐	05 1200	Structural Steel Framing	RE
2025-09-29	☐	05 1213	Architecturally Exposed Structural Steel (AESS) Framing	HKS
2025-09-29	☐	05 3100	Steel Decking	RE
2025-09-29	☐	05 4000	Cold-Formed Metal Framing	HKS
2025-09-29	☐	05 4300	Slotted Channel Framing	HKS
2025-09-29	☐	05 5000	Metal Fabrications	HKS
2025-09-29	☐	05 5113	Metal Stairs	HKS
2025-09-29	☐	05 5213	Pipe and Tube Railings	HKS
2025-09-29	☐	05 5300	Metal Gratings	HKS
2025-09-29	☐	05 5813	Ornamental Metal Column Covers	HKS
2025-09-29	☐	05 7300	Ornamental Handrails and Railings	HKS

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

2025-09-29	☐	06 1053	Miscellaneous Rough Carpentry	HKS
2025-09-29	☐	06 1643	Exterior Gypsum Sheathing	HKS
2025-09-29	☐	06 4023	Interior Architectural Woodwork	HKS
2025-09-29	☐	06 6100	Simulated Stone Fabrications	HKS
2025-09-29	☐	06 6413	Translucent Resin Panel Fabrications	HKS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

2025-10-17	☐	07 0152	Patching of Existing Roofing	HKS
2025-09-29	☐	07 1326	Sheet Waterproofing	HKS
2025-09-29	☐	07 1416	Cold Fluid Applied Waterproofing	HKS
2025-09-29	☐	07 1800	Traffic Coatings	HKS
2025-09-29	☐	07 2100	Thermal Insulation	HKS
2025-09-29	☐	07 2119	Foamed-In-Place Insulation	HKS
2025-09-29	☐	07 2617	Below Slab Vapor Retarders	HKS
<u>2025-10-28</u>	☒	<u>07 2716</u>	<u>Self-Adhering Air and Water Barriers</u>	<u>HKS</u>
2025-10-17	☐	07 4213	Formed Metal Wall Panels	HKS
2025-09-29	☐	07 4229	Terra Cotta Panels	HKS
2025-09-29	☐	07 4243	Composite Metal Wall Panels	HKS
2025-09-29	☐	07 4263	Insulated-Core Metal Wall Panels	HKS
2025-09-29	☐	07 4616	Aluminum Siding and Soffits	HKS
2025-09-29	☐	07 5013	Single-Ply Membrane Roofing	HKS
2025-09-29	☐	07 6200	Sheet Metal Flashing and Trim	HKS
2025-09-29	☐	07 7200	Roof Accessories	HKS
2025-09-29	☐	07 8116	Sprayed Fire Resistive Materials	HKS
2025-09-29	☐	07 8123	Intumescent Mastic Fireproofing	HKS
2025-09-29	☐	07 8413	Penetration Firestopping	HKS
2025-09-29	☐	07 8446	Fire-Resistive Joint Firestopping	HKS
2025-09-29	☐	07 9200	Joint Sealants	HKS
2025-10-17	☐	07 9513	Expansion Joint Cover Assemblies	HKS

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

DIVISION 08 - OPENINGS

2025-09-29	☐	08 1113	Hollow Metal Doors and Frames	HKS
2025-09-29	☐	08 1216	Interior Aluminum Frames	HKS
2025-09-29	☐	08 1416	Solid Core Flush Wood Doors	HKS
2025-09-29	☐	08 1426	Hollow Core Wood Doors	HKS
2025-09-29	☐	08 3113	Access Doors and Frames	HKS
2025-10-17	☐	08 3323	Overhead Coiling Doors	HKS
2025-09-29	☐	08 4110	Interior Storefront	HKS
2025-09-29	☐	08 4213	Aluminum Entrance Doors	HKS
2025-09-29	☐	08 4229	Automatic Entrances	HKS
2025-09-29	☐	08 4313.13	Fire Resistance Rated Glazed Aluminum Framing Systems	HKS
2025-09-29	☐	08 4400	Glazed Aluminum Framing Systems	HKS
2025-10-17	☐	08 7100	Door Hardware	
2025-10-17	☐	08 8000	Glazing	HKS
2025-09-29	☐	08 8300	Unframed Mirrored Glazing	HKS
2025-09-29	☐	08 9100	Wall Louvers	HKS

DIVISION 09 - FINISHES

2025-09-29	☐	09 0565	Floor Preparation for Renovation Work	HKS
2025-10-17	☐	09 2900	Gypsum Board Assemblies	HKS
2025-09-29	☐	09 3000	Tiling	HKS
2025-09-29	☐	09 5113	Acoustical Panel Ceilings	HKS
2025-09-29	☐	09 5135	Snap-in Metal Pan Ceilings	HKS
2025-09-29	☐	09 5423	Linear Metal Ceilings	HKS
2025-09-29	☐	09 6115	Concrete Floor Sealer	HKS
2025-09-29	☐	09 6116	Liquid Floor Hardener	HKS
2025-09-29	☐	09 6500	Resilient Flooring	HKS
2025-09-29	☐	09 6513	Resilient Base and Accessories	HKS
2025-09-29	☐	09 6623	Thin-Set Terrazzo Flooring	HKS
2025-09-29	☐	09 6723	Resinous Flooring	HKS
2025-09-29	☐	09 6800	Carpeting	HKS
2025-09-29	☐	09 7200	Wall Covering	HKS
2025-09-29	☐	09 9100	Painting	HKS
2025-09-29	☐	09 9413	Textured Interior Coatings	HKS
2025-09-29	☐	09 9600	High-Performance Coatings	HKS

DIVISION 10 - SPECIALTIES

2025-09-29	☐	10 1443	Photoluminescent Exit Path Marking System	HKS
2025-09-29	☐	10 2113	Toilet Compartments	HKS
2025-09-29	☐	10 2239	Vertically Retractable Acoustical Partitions	HKS
2025-09-29	☐	10 2613	Wall and Corner Guards	HKS
2025-10-17	☐	10 2813	Toilet Accessories	HKS
2025-09-29	☐	10 4116	Emergency Key Cabinets	HKS
2025-09-29	☐	10 4400	Fire Protection Specialties	HKS
2025-09-29	☐	10 4450	Automated External Defibrillators (AED)	HKS
2025-09-29	☐	10 5129	Phenolic Lockers	HKS

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

2025-09-29	☐	10 5713	Wall Mounted Coat Rack and Shelf	HKS
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DIVISION 11 - EQUIPMENT

2025-09-29	☐	11 1300	Loading Dock Equipment	HKS
2025-09-29	☐	11 2400	Building Maintenance Equipment	HKS
2025-09-29	☐	11 5213	Projection Screens	HKS
2025-09-29	☐	11 5300	Lab Equipment	HKS
2025-09-29	☐	11 5313	Lab Fume Hoods	HKS
2025-09-29	☐	11 5319	Lab Sterilizers, Glassware Washers and Dryers	HKS
2025-09-29	☐	11 5353	Biological Safety Cabinets	HKS

DIVISION 12 - FURNISHINGS

2025-09-29	☐	12 2413	Roller Window Shades	HKS
2025-09-29	☐	12 3553.13	Mobile Laboratory Benches	HKS
2025-09-29	☐	12 3553.14	Stainless Steel Laboratory Casework	HKS
2025-09-29	☐	12 3553.33	Laboratory Casework and Furnishings	HKS
2025-09-29	☐	12 3653	Laboratory Casework Tops	HKS
2025-09-29	☐	12 3661	Simulated Stone Countertops	HKS
2025-09-29	☐	12 4816	Entrance Floor Grilles	HKS
2025-09-29	☐	12 5250	Upholstered Seat Cushions	HKS
2025-07-25	☐	12 9300	Site Furnishings	ISDS
2025-09-29	☐	12 9313	Bicycle Racks	HKS

DIVISION 13 - SPECIAL CONSTRUCTION

2025-09-29	☐	13 2100	Controlled Environment Rooms	HKS
2025-09-29	☐	13 4275	Integrated Interior Assemblies	HKS
2025-09-29	☐	13 4900	Radiation Protection	HKS

DIVISION 14 - CONVEYING EQUIPMENT

2025-09-29	☐	14 2100	Electric Traction Elevators	HKS
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VOLUME 02

DIVISION 21 – FIRE SUPPRESSION

2025-09-29	☐	21 0500	Common Work Results For Fire Suppression	OEC
2025-09-29	☐	21 0523	General Duty Valves For Water Based Fire Suppression Piping	OEC
2025-09-29	☐	21 0553	Identification For Fire Suppression Piping and Equipment	OEC
2025-09-29	☐	21 0800	Commissioning of Fire Suppression	FST
2025-09-29	☐	21 1200	Fire Suppression Standpipes	OEC

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

2025-09-29	☐	21 1300	Fire Suppression Sprinkler Systems	OEC
2025-09-29	☐	21 3000	Fire Pumps	OEC

DIVISION 22 – PLUMBING

2025-09-29	☐	22 0500	Common Work Results For Plumbing	OEC
2025-09-29	☐	22 0513	Common Motor Requirements For Plumbing Equip	OEC
2025-09-29	☐	22 0517	Sleeves and Sleeve Seals For Plumbing Piping	OEC
2025-10-17	☐	22 0519	Meters and Gauges For Plumbing Piping	OEC
2025-09-29	☐	22 0523	General Duty Valves For Plumbing Piping	OEC
2025-10-17	☐	22 0529	Hangers and Supports For Plumbing Piping And Equipment – Pending Approval	OEC
2025-09-29	☐	22 0533	Heat Tracing For Plumbing Piping	OEC
2025-09-29	☐	22 0553	Identification For Plumbing Piping and Equipment	OEC
2025-10-17	☐	22 0719	Plumbing Piping And Equipment Insulation	OEC
2025-09-29	☐	22 0800	Commissioning of Plumbing	FST
2025-10-17	☐	22 1005	Plumbing Piping	OEC
2025-09-29	☐	22 1006	Plumbing Piping Specialties	OEC
2025-09-29	☐	22 1123	Domestic Water Pumps	OEC
2025-10-17	☐	22 1429	Sump Pumps	OEC
2025-10-17	☐	22 3000	Plumbing Equipment	OEC
2025-09-29	☐	22 4000	Plumbing Fixtures	OEC
2025-09-29	☐	22 4500	Emergency Plumbing Fixtures	OEC
2025-10-17	☐	22 6000	Gas And Vacuum Systems For Laboratory And healthcare Facilities	OEC

DIVISION 23 – HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

2025-09-29	☐	23 0500	Common Work Results For HVAC	OEC
2025-09-29	☐	23 0516	Expansion Fittings and Loops For HVAC Piping	OEC
2025-09-29	☐	23 0517	Sleeve And Sleeve Seals For HVAC Piping	OEC
2025-09-29	☐	23 0519	Meters And Gauges For HVAC Piping	OEC
2025-09-29	☐	23 0523	General Duty Valves For HVAC Piping	OEC
2025-09-29	☐	23 0529	Hangers And Supports For HVAC Piping And Equip	OEC
2025-09-29	☐	23 0533	Heat Tracing For HVAC Piping	OEC
2025-09-29	☐	23 0548	Vibration Controls For HVAC	OEC
2025-09-29	☐	23 0553	Identification For HVAC Piping And Equipment	OEC
2025-09-29	☐	23 0593	Testing, Adjusting, And Balancing For HVAC	OEC
2025-09-29	☐	23 0713	Duct Insulation	OEC
2025-09-29	☐	23 0719	HVAC Piping And Equipment Insulation	OEC
2025-09-29	☐	23 0800	Commissioning of HVAC	FST
2025-09-29	☐	23 0913	Instrumentation And Control Devices For HVAC	OEC
2025-10-17	☐	23 0923	Direct-Digital Control System For HVAC	OEC
2025-10-17	☐	23 0934	Variable-Frequency Motor Controllers For HVAC	OEC
2025-10-17	☐	23 2113	Hydronic Piping	OEC
2025-09-29	☐	23 2114	Hydronic Specialties	OEC
2025-10-17	☐	23 2123	Hydronic Pumps	OEC
2025-10-17	☐	23 2500	HVAC Water Treatment	OEC
2025-09-29	☐	23 3100	HVAC Ducts	OEC
2025-09-29	☐	23 3300	Air Duct Accessories	OEC

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

2025-10-17	☐	23 3400	HVAC Fans	OEC
2025-09-29	☐	23 3433	Air Curtains	OEC
2025-09-29	☐	23 3600	Air Terminal Units	OEC
2025-09-29	☐	23 3700	Air Outlets And Inlets	OEC
2025-09-29	☐	23 4000	HVAC Air Cleaning Devices	OEC
2025-09-29	☐	23 5100	Breechings, Chimneys, And Stacks	OEC
2025-09-29	☐	23 5216	Condensing Boilers	OEC
2025-09-29	☐	23 5700	Heat Exchanges For HVAC	OEC
2025-09-29	☐	23 6426	Rotary-Screw Water Chillers	OEC
2025-10-17	☐	23 7323	Custom Fabricated Central Station Air Handling Units	OEC
2025-09-29	☐	23 8200	Convection Heating And Cooling Units	OEC
2025-10-17	☐	23 8413.29	Self-Contained Humidifiers	OEC

DIVISION 26 – ELECTRICAL

2025-09-29	☐	26 0100	Common Work Results For Electrical	OEC
2025-09-29	☐	26 0101	Electrical Demolition	OEC
2025-09-29	☐	26 0513	Medium-Voltage Cables	OEC
2025-09-29	☐	26 0519	Low-Voltage Electrical Power Conductors And Cables	OEC
2025-09-29	☐	26 0526	Grounding And Bonding For Electrical Systems	OEC
2025-09-29	☐	26 0529	Hangers And Supports For Electrical Systems	OEC
2025-09-29	☐	26 0533	Raceways And Boxes For Electrical Systems	OEC
2025-09-29	☐	26 0543	Underground Ducts And Raceways For Electrical Systems	OEC
2025-09-29	☐	26 0544	Sleeves And Sleeve Seals For Electrical Raceways And Cabling	OEC
2025-09-29	☐	26 0548	Vibration Controls For Electrical Systems	OEC
2025-09-29	☐	26 0553	Identification For Electrical Systems	OEC
2025-09-29	☐	26 0573	Electrical System Studies	OEC
2025-09-29	☐	26 0800	Commissioning of Electrical	FST
2025-09-29	☐	26 0923	Lighting Control Devices	OEC
2025-09-29	☐	26 0943.13	Digital-Network Lighting Controls	OEC
2025-10-17	☐	26 1200	Medium-Voltage Transformers	OEC
2025-10-17	☐	26 1300	Medium-Voltage Switchgear	OEC
2025-09-29	☐	26 2200	Low-Voltage Transformers	OEC
2025-10-17	☐	26 2313	Paralleling Low-Voltage Switchgear	OEC
2025-10-17	☐	26 2413	Switchboards	OEC
2025-10-17	☐	26 2416	Panelboards	OEC
2025-10-17	☐	26 2417	Low Voltage Roll Up Generator Termination Cabinet	OEC
2025-10-17	☐	26 2500	Enclosed Bus Assemblies	OEC
2025-09-29	☐	26 2713	Electricity Metering	OEC
2025-09-29	☐	26 2726	Wiring Devices	OEC
2025-09-29	☐	26 2733	Power Distribution Units	OEC
2025-09-29	☐	26 2813	Fuses	OEC
2025-09-29	☐	26 2816	Enclosed Switches And circuit Breakers	OEC
2025-09-29	☐	26 2913	Enclosed Controllers	OEC
2025-10-17	☐	26 3213	Engine Generators	OEC
2025-10-17	☐	26 3353	Static Uninterruptible Power Supply	OEC

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

2025-09-29	☐	26 3600	Transfer Switches- Non-Healthcare	OEC
2025-09-29	☐	26 4113	Lightning Protection For Structures	OEC
2025-09-29	☐	26 4313	Surge Protective Devices	OEC
2025-09-29	☐	26 5100	Interior Lighting	OEC
2025-09-29	☐	26 5600	Exterior Lighting	OEC
2025-10-17	☐	26 6010	Heat Tracing For Piping	OEC

DIVISION 27 – COMMUNICATIONS

2025-09-29	☐	27 0000	Communications Work	OEC
2025-09-29	☐	27 0524	Fire Stopping For Communications Systems	OEC
2025-09-29	☐	27 0526	Grounding and Bonding For Communications Systems	OEC
2025-09-29	☐	27 0529	Hangers and Supports For Communications Systems	OEC
2025-09-29	☐	27 0533.13	Conduit For Communications Systems	OEC
2025-09-29	☐	27 0536	Cable Trays For Communications Systems	OEC
2025-09-29	☐	27 1000	Structured Cabling	OEC
2025-09-29	☐	27 1500	Communications Equipment Room Fittings	OEC

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

2025-09-29	☐	28 1000	Access Control Systems	OEC
2025-09-29	☐	28 2000	Video Surveillance	OEC
2025-09-29	☐	28 3111	Building Intrusion Detection	OEC
2025-09-29	☐	28 4600	Fire Detection and Alarm	OEC

DIVISION 31 - EARTHWORK

2025-09-29	☐	31 1000	Site Clearing	SDA
2025-09-29	☐	31 1012	Fine Grading	SDA
2025-09-29	☐	31 1018	Soil Erosion Control	SDA
2025-09-29	☐	31 2000	Earth Moving	SDA
2025-09-29	☐	31 2319	Dewatering	SDA
2025-09-29	☐	31 2400	Green Stormwater Infrastructure	ISDS
2025-09-29	☐	31 3116	Termite Control	HKS
2025-09-29	☐	31 6329	Drilled Concrete Piers and Shafts	RE

DIVISION 32 - EXTERIOR IMPROVEMENTS

2025-09-29	☐	32 1216	Hot-Mix Asphalt Concrete Paving	SDA
2025-09-29	☐	32 1313	Cement Concrete Pavements, Curbs, And Gutters	SDA
2025-09-29	☐	32 1415	Pavement Marking	SDA
2025-09-29	☐	32 9200	Fine Grading, Lawn Seeding and site Stabilization	ISDS
2025-09-29	☐	32 9310	Planting	ISDS
2025-09-29	☐	32 9320	Landscape Maintenance and Guarantee	ISDS

DIVISION 33 - UTILITIES

2025-09-29	☐	33 0500	Common Work Results for Utilities	SDA
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WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

2025-09-29	☐	33 4100	Storm Sewers, Underdrains And Drainage Structures	SDA
2025-09-29	☐	33 4613	Foundation Drainage System	HKS

ADDITIONAL REPORTS – FOR REFERENCE ONLY

2025-04-23	☐	Geotech Report	TEC
	☐	Environmental Assessment Report- Available Upon Request	TEC

END OF TABLE OF CONTENTS

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WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

SECTION 072716

SELF-ADHERING AIR AND WATER BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Self-adhering air and water barriers located within exterior wall assemblies; and supplementary items necessary for installation.
 - 1. Self-adhering air and water barrier - vapor retarding.
- B. Related Requirements:
 - 1. Refer to Division 01 Section Field Testing for Air and Water Leakage.
 - 2. Refer to Division 01 Building Enclosure Commissioning Plan for Field Observations and Performance Testing.
 - 3. Refer to Division 6 Section Exterior Gypsum Sheathing for wall sheathing and sheathing joint-and-penetration treatments. Joint treatment components shall be compatible with air and water barrier assembly.

1.2 DEFINITIONS

- A. Air and Water Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air and Water Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air and Water Barrier Assembly: The collection of air and water barrier materials and accessory materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.
- D. Air-Barrier System: The combination of air-barrier assemblies installed to provide a continuous barrier to the movement of air through building enclosures. This term applies to the whole building.

1.3 ACTION SUBMITTALS

- A. Product Data: Manufacturer's technical literature for each product and system indicated.
 - 1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.
 - 2. Include data on air and water-vapor permanence based on testing according to referenced standards.
 - 3. Include VOC content of each material, and applicable legal limit in the jurisdiction of the project.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- B. Samples: Actual samples for each of following:
 - 1. Air and Water Barrier Membrane: Minimum 8-1/2 in by 11 in ().
 - 2. Accessory Materials: Sample of each item.
- C. Shop Drawings: For air and water barrier assemblies.
 - 1. Show locations and extent of air and water barrier assemblies and details of typical and project specific conditions.
 - a. Include recommended values for field adhesion test on each substrate.
 - 2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
 - 3. Include details of interfaces with other materials that form part of air barrier system.
- D. Shop Drawings of Mock-Up: Submit shop drawings of proposed mock-ups showing plans, elevations, large-scale details, and connections to the test apparatus.

1.4 INFORMATIONAL SUBMITTALS

- A. Manufacturer's Project Acceptance Document: Certification by the manufacturer that its products and systems are approved, acceptable, suitable for use in specific locations, for specific details, and for applications indicated, specified, or required, and that a warranty will be issued.
 - 1. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with other Project materials that attach to or that come in contact with the barrier.
- B. Field Quality Control Reports: Written report of testing and inspection required by "Field Quality Control".
- C. Warranty:
 - 1. Provide manufacturer's written warranty covering materials and installation (labor) stating obligations, remedies, limitations and exclusions.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Experience: Installer's personnel with not less than 5 years of experience in the successful performance of Work similar to scope of this Project.
 - 2. Supervision: Installer shall maintain a competent supervisor at Project while the Work is in progress, and who has not less than 5 years of experience installing products and systems similar to scope of this Project.
 - 3. Manufacturer Acceptance: Installer shall be certified, approved, licensed, or acceptable to manufacturer to install products.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

B. Mock-ups: Prior to fabrication and installation, build mock-up for each form of construction and finish required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mock-up using materials indicated for the completed Work.

1. Build mock-up in the location and of the size indicated or, if not indicated, as directed by Architect. Contractor shall provide structural support framework.
 - a. Build integrated mockups of exterior wall assembly, incorporating backup wall construction, external cladding, glazed aluminum framing, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
 - b. If indicated, coordinate construction of mockups to permit inspection by Owner's testing agency of air barrier before external insulation and cladding are installed.
 - c. Include junction with roofing membrane, building corners and, foundations.
2. Notify Architect seven days in advance of the dates and times when mock-up will be installed.
3. Obtain Architect's acceptance of mock-ups before starting fabrication or installation.
4. Acceptance of mock-ups does not constitute acceptance of deviations from the Contract Documents contained in mock-ups unless such deviations are specifically noted by Contractor and accepted by Architect in writing.
5. Demolish and remove mock-ups when directed by Architect unless accepted to become part of the completed Work.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner may engage a qualified testing agency to perform preconstruction testing on field mockups.

B. Mockup Testing: Air-barrier assemblies shall comply with performance requirements indicated, as evidenced by reports based on mockup testing by a qualified testing agency.

1. Air Leakage Volume Testing - Assembly: Maximum 0.04 cfm/sq.ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 783 or ASTM E 2357.
2. Adhesion Testing: Mockups will be tested for minimum air-barrier adhesion of 16 lbf/sq. in. according to ASTM D 4541.

1.7 PRE-INSTALLATION CONFERENCE

A. Pre-Installation Conference: Before Work begins, conduct conference at Project site.

1. Participants:
 - a. Architect.
 - b. Contractor, including superintendent.
 - c. Installer, including project manager and supervisor.
 - d. Manufacturer's qualified technical representative.
 - e. Installers of other construction interfaced with Work.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

2. Minimum Agenda: Installer shall demonstrate understanding of the Work required by describing detailed procedures for preparing, installing, and cleaning the Work. Demonstration shall include, but not be limited to, following topics:
 - a. Tour representative areas of Work, inspect and discuss condition of substrate, and other preparatory work performed by other trades.
 - b. Review Contract Document requirements.
 - c. Review approved submittals.
 - d. Review inspection and testing requirements.
 - e. Review environmental conditions and procedures for coping with unfavorable conditions.
 - f. Resolve deviations or differences between Contract Documents and the manufacturer's specifications.
3. Record discussions, including decisions and agreements, and prepare report.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store weather barrier materials as recommended by manufacturer.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Install air and water barrier within range of ambient and substrate temperatures and moisture conditions as recommended by manufacturer.
 1. Protect substrates from environmental conditions that affect performance.
 2. Do not apply to a damp or wet substrate or during high humidity conditions including snow, rain, fog, or mist.

1.10 COORDINATION

- A. Coordinate installation of products and systems with interfacing and adjoining construction to provide a successful installation without failure.

1.11 WARRANTY

- A. Manufacturer's Warranty: Furnish manufacturer's written material and labor warranty signed by an authorized representative using manufacturer's standard form agreeing to furnish materials and labor required to repair or replace work which exhibits material defects caused by manufacture or design of product. "Defects" are defined to include but not limited to deterioration or failure to perform as required.
 1. Warranty Period: Manufacturer shall warrant the products to be free from material and labor Defects for a period of 5 years from date of Substantial Completion

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- B. Installer's Warranty: Furnish installer's written workmanship warranty signed by an authorized representative using installer's standard form agreeing to provide labor required to repair or replace work which exhibits workmanship defects. "Defects" is defined to include but not limited to deterioration or failure to perform as required.
 - 1. Warranty Period: Installer shall warrant the installation to be free from workmanship Defects for a period of 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Acceptable Manufacturers and Products: Subject to compliance with requirements of Contract Documents as judged by the Architect, provide product by one of manufacturers listed. If not listed, submit as substitution according to Conditions of the Contract and Division 01 Section "Substitution Procedures".

2.2 MATERIALS, GENERAL

- A. Single Source Responsibility: Furnish each type of product from single manufacturer. Provide secondary materials only as recommended by manufacturer of primary materials.

2.3 PERFORMANCE REQUIREMENTS

- A. General: Air and water barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air and water barrier and as a liquid-water drainage plane flashed to discharge to the exterior. Air and water barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
 - 1. Assembly shall perform as a drainage plane flashed to discharge condensation or water penetration to the exterior.
 - 2. Assembly shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air and water seal materials at such locations, changes in substrate and perimeter conditions.
 - 3. Assembly shall be capable of withstanding positive and negative combined design wind, fan and stack pressures on the envelope without damage or displacement and shall transfer the load to the structure.
 - 4. Assembly shall not displace adjacent materials under full load.
 - 5. Assembly shall be joined in an airtight and flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of assemblies due to thermal and moisture variations and creep, and anticipated seismic movement.
- B. Connections to Adjacent Materials: Provide connections to prevent air leakage and water migration at the following locations:
 - 1. Foundation and walls, including penetrations, ties and anchors
 - 2. Walls, windows, curtain walls, storefronts, louvers or doors.
 - 3. Different wall assemblies and fixed openings within those assemblies.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

4. Wall and roof connections.
 5. Floors over unconditioned space.
 6. Walls, floor and roof across construction, control and expansion joints.
 7. Walls, floors and roof to utility, pipe and duct penetrations.
 8. Seismic and expansion joints.
 9. Other leakage pathways in the building envelope.
- C. Air-Barrier Air Leakage - Assembly: Maximum 0.04 cfm/sq.ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 2357.
- D. SELF ADHERING AIR AND WATER BARRIER - VAPOR RETARDING Aluminum-Faced Modified Bituminous Sheet: Self-adhering sheet consisting of rubberized asphalt laminated to cross-laminated polyethylene film faced with aluminum foil, with release liner on adhesive side and formulated for application with primer that complies with VOC limits. Use regular or low-temperature formulation depending on site conditions within temperature ranges specified by manufacturer. Provide related accessories including primer, transition and membrane flashings, seam tape and sealant recommended by manufacturer.
1. Manufacturers and Products:
 - a. Henry; Blueskin Metal Clad
 - b. Carlisle Coatings & Waterproofing; CCW-705FR-A.
 - c. GCP Applied Technologies; Perm-A-Barrier Aluminum Wall Membrane or Perm-A-Barrier Low Temperature Aluminum Wall Membrane.
 2. Physical and Performance Properties:
 - a. Air Permeance - Materials: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
 - b. Puncture Resistance: Minimum 40 lbf; ASTM E154/E154M.
 - c. Vapor Permeance: Maximum 0.1 perm; ASTM E96/E96M, Desiccant Method.
 - d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D4541 as modified by ABAA. Test at 3 locations; During construction; once daily and a minimum of 4 tests per major elevation. Note: tests to be performed for each substrate type.
 - e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.4 ACCESSORY MATERIALS

- A. General: Provide compatible accessory materials recommended by air and water barrier manufacturer to produce a complete air and water barrier assembly.
1. Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic/sealant, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air and water barrier manufacturer to produce a complete air and water barrier assembly and that are compatible with primary air and water barrier material and adjacent construction to which they may seal.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- B. Primer: Liquid primer recommended for substrate by air and water barrier material manufacturer.
- C. Flexible Flashing: Minimum 40 mil self adhering sheet membrane consisting of rubberized asphalt integrally bonded to high density cross laminated polyethylene film as recommended for substrate by air and water barrier material manufacturer.
- D. Flexible Flashing - High Temperature Resistance: For use under exposed sheet metal and where indicated on Drawings. Minimum 30 mil self-adhering sheet membrane composed of a butyl rubber bonded to high density cross laminated polyethylene film as recommended for substrate by air and water barrier materials manufacturer.
- E. Foil Faced Flexible Flashing Membrane: Minimum 25 mil self-adhering sheet membrane composed of high density cross laminated polyethylene aluminum surfaced sheet backed by a pressure sensitive rubberized asphalt adhesive. Do not use foil faced products with cement plaster assemblies.
- F. Liquid Membrane: Liquid applied two-component asphalt modified urethane.
- G. Substrate-Patching Membrane: Manufacturer's standard trowel-grade substrate filler.
- H. Stainless-Steel Sheet: ASTM A240/A240M, Type 304, 0.0250 inch thick, and Series 300 stainless-steel fasteners.
- I. Preformed Silicone Extrusion: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 100/50 (low-modulus) silicone sealant for bonding extrusions to substrates.
- J. Detail Membrane / Barrier Sealing Tape: Sheet material laminated to adhesive coated butyl or other barrier sealing tape approved by air and water barrier manufacturer for sealing fastener and anchor penetrations.
- K. Termination Bars:
 - 1. Bar: 1/8 in thick by 1 in wide continuous stainless-steel bar with 1/4 in diameter holes spaced at 8 in on centers.
 - 2. Mechanical Fasteners: Corrosion resistant, self-tapping drill point screws with hex washer head with bonded EPDM, shank size and length as required to penetrate steel stud flange and strap back-up by not less than 3 exposed threads.
- L. One-Piece Electrical Box:
 - 1. Description: Rigid reinforced polyethylene electrical box designed to prevent leaks at air and water barrier, with fixed or adjustable flange to suit installation conditions, with clear hinged weatherproof in-use cover.
 - 2. Manufacturer and Product: Arlington Industries, Inc.; In Box.
- M. Sheathing Joint Treatments: Refer to Division 6 Section "Exterior Gypsum Sheathing". All components shall be compatible with air and water barrier system.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- N. Joint Sealant: Silicone construction sealant and weather barrier sealant as specified in Division 07 Section "Joint Sealants".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Acceptance of Surfaces and Conditions: Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting Work within a particular area will be construed as acceptance of surface conditions.
1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 2. Verify that concrete has cured and aged for minimum time period recommended by air-barrier manufacturer.
 3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 4. Verify that masonry joints are flush and completely filled with mortar.
 5. Verify sealants and joint treatments used in sheathing are compatible with membrane.

3.2 INSTALLATION, GENERAL

- A. Installation Quality Standards: In addition to standards listed elsewhere, perform Work according to following, unless otherwise specified:
1. Respective manufacturer's written installation instructions.
 2. Accepted submittals.
 3. Contract Documents.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

3.3 PREPARATION

- A. General: Comply with manufacturer's instructions, recommendations, and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.
- B. Clean, prepare, and treat substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air-barrier application.
- C. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258
- D. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- E. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- F. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.
- G. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- H. At changes in substrate plane, apply sealant or termination mastic/sealant beads at sharp corners and edges to form a smooth transition from one plane to another.
- I. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.
- J. Bridge and cover isolation joints, expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with overlapping membrane strips.
- K. Masonry joints shall be struck flush and cracks greater than crack bridging ability shall be filled (routed and filled where necessary) prior to application of membrane to the surface.
- L. Sheathing joints shall be treated in accordance with manufacturer installation details.

3.4 AIR AND WATER BARRIER INSTALLATION

- A. General: Install materials according to air and water barrier manufacturer's written instructions and details and according to recommendations in ASTM D6135 to form a seal with adjacent construction and ensure continuity of air and water barrier.
 - 1. When recommended by air and water manufacturer for ambient and substrate temperature range, install self-adhering, modified bituminous air and water barrier sheet produced for low-temperature application.
 - 2. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
- B. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
- C. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations with termination mastic/sealant and according to ASTM D 6135.
- D. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier sheet on same day. Re-prime areas exposed for more than 24 hours.
 - 1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- E. Apply and firmly adhere modified bituminous sheets horizontally over area to receive air barrier. Accurately align sheets and maintain uniform 3-inch minimum lap widths and end laps.
 - 1. Overlap and seal seams, and stagger end laps to ensure airtight installation.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- a. Lap 12 inches (300 mm) minimum at inside and outside corners; lap flashing 4 inches (150 mm) minimum.
- 2. Beginning at bottom of wall, apply sheets in a shingled manner to shed water without interception by any exposed sheet edges. Seal leading edges with compatible sealant or liquid membrane.
- 3. Roll sheets firmly to enhance adhesion to substrate. Use manufacturer approved roller.
- F. Apply continuous sheets over strips bridging substrate cracks, construction, and contraction joints.
 - 1. Form bellows or use preformed silicone sheets at drift or deflection joints to allow movement.
 - 2. Install a 12 inch strip of flexible flashing centered at all inside and outside corners.
- G. CMU: Install air-barrier sheet horizontally against the CMU beginning at base of wall. Align top edge of air-barrier sheet immediately below protruding masonry ties or joint reinforcement or ties, and firmly adhere in place.
 - 1. Overlap horizontally adjacent sheets a minimum of 3-inches and roll seams.
 - 2. Apply overlapping sheets with bottom edge slit to fit around masonry reinforcing or ties. Roll firmly into place.
 - 3. Seal masonry reinforcing or ties and penetrations with weather barrier sealant or liquid membrane..
 - 4. Continue the membrane into all openings in the wall, such as doors and windows, and terminate at points to maintain an airtight barrier that is not visible from interior.
- H. Seal top of through-wall flashings to air-barrier sheet with an additional 6-inch- wide, transition strip
- I. Seal exposed edges of sheet at seams, cuts, penetrations, and terminations not concealed by metal counter-flashings or ending in reglets with compatible sealant or liquid membrane..
 - 1. Cladding Anchors: Apply 4 in (100 mm) by 7 in flashing tape to weather barrier membrane prior to the installation of cladding anchors.
- J. Seal air barrier to penetrations, pipes, conduits, electrical boxes, and similar items penetrating barrier with compatible sealant. Install sheet metal collar with a formed seal to the penetration. Apply flexible flashing over top and side flanges of the collar. Seal leading edges of membrane with compatible sealant or liquid membrane.
- K. Apply a layer of flexible flashing over all sheet metal and flanged cladding accessories. Apply a layer of flexible flashing over all sheet metal and flanged cladding accessories.
- L. Install air-barrier sheet and accessory materials to form a seal with adjacent construction and to maintain a continuous air barrier.
 - 1. Coordinate air-barrier installation with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 - 2. Install strip on roofing membrane or base flashing so that a minimum of 4 in of coverage is achieved over each substrate.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- M. Connect and seal exterior wall air-barrier membrane continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- N. One-Piece Electrical Box: Install in accordance with manufacturer's recommendations. Cover shall project from face of wall surface enough to allow hinged cover to fully open for access.
- O. At end of each working day, seal top edge of air-barrier material to substrate with termination mastic/sealant.
- P. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- Q. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip or flashing sheet as indicated so that a minimum of 3 in of coverage is achieved over each substrate. Maintain 3 in of full contact over firm bearing to perimeter frames.
 - 1. Counter-flash membrane over metal flashings and girts as indicated in the Drawings.
- R. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of air-barrier material with foam sealant
- S. Repair punctures, voids, and deficient lapped seams in air barrier. Slit and flatten fishmouths and blisters. Patch with flexible flashing sheet extending 6 in beyond repaired areas in all directions. Seal leading edges with compatible sealant or liquid membrane.
- T. Do not cover air barrier until it has been tested and inspected by testing agency
- U. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Manufacturer's qualified technical representative shall periodically inspect Work to ensure installation is proceeding in accordance with manufacturer's designs, recommendations, instructions, and warranty requirements. Representative shall submit written reports of each visit indicating observations, findings, and conclusions of inspection.
 - 1. Manufacturer's Technical Representative Qualifications: Direct employee of technical services department of manufacturer with experience in providing recommendations, observations, evaluations, and problem diagnostics.
- B. Testing Agency: The Owner may employ and pay a qualified independent testing agency to perform field quality control. Materials and installation failing to meet specified requirements shall be replaced at Contractor's expense. Retesting of materials and installations failing to meet specified requirements shall be done at Contractor's expense.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

- C. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 2. Continuous structural support of air-barrier system has been provided.
 3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 4. Site conditions for application temperature and dryness of substrates have been maintained.
 5. Maximum exposure time of materials to UV deterioration has not been exceeded.
 6. Surfaces have been primed.
 7. Laps in sheet materials have complied with the minimum requirements and have been shingled in the correct direction (or mastic/sealant applied on exposed edges), with no fishmouths.
 8. Liquid membrane or weather barrier sealant has been applied on cut edges.
 9. Air barrier has been firmly adhered to substrate.
 10. Compatible materials have been used.
 11. Transitions at changes in direction and structural support at gaps have been provided.
 12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 13. All penetrations have been sealed.
- D. Tests: As determined by Owner's testing agency from among the following tests:
1. Air Leakage Volume Testing - Assembly: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 783 or ASTM E 2357.
 2. Air Leakage Volume Testing - Building: Maximum 0.4 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 779.
 3. Adhesion Testing: Air-barrier assemblies will be tested for minimum air-barrier adhesion of 16 lbf/sq. in. according to ASTM D 4541.
 4. Refer to Division 01 Section Field Testing for Air and Water Leakage.
 5. Refer to Division 01 Building Enclosure Commissioning Plan for Field Observations and Performance Testing.
- E. Air barriers will be considered defective if they do not pass tests and inspections.
1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
 2. Remove and replace deficient air-barrier components for retesting as specified above.
- F. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.
- G. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

WAYNE STATE UNIVERSITY
HEALTH SCIENCES RESEARCH BUILDING
DETROIT, MICHIGAN

1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer.
 2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed Work, using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION