SECTION 02 4100 – DEMOLITION

PART 1 GENERAL

1. SUBMITTALS

1.1. Demolition plan: Submit demolition plan as specified by OSHA and local authorities as required for existing site components and structures.
1.2. Project record documents: Accurately record actual locations of capped and active utilities and subsurface construction.
1.3. Quality assurance
1.4. Demolition firm qualifications: Company specializing in the type of work required.

PART 2 PRODUCTS

1. MATERIALS

1.1. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1.1.1. Obtain required permits.

1.1.2. Comply with applicable requirements of NFPA 241.

1.1.3. Use of explosives is not permitted.

1.1.4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.

1.1.5. Provide, erect, and maintain temporary barriers and security devices.

1.2. Do not begin removal until built elements to be salvaged or relocated have been removed.
1.3. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding sedimentation of public waterways or storm sewers, or other pollution.
1.4. If hazardous materials are discovered during removal operations, stop work and notify architect and owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
1.5. Hazardous materials; Comply with 29 CFR 1926 and state and local regulations.
1.6. Perform demolition in a manner that maximizes salvage and recycling of materials.

2. EXISTING UTILITIES

2.1. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
2.2. Protect existing utilities to remain from damage.

3. SELECTIVE DEMOLITION FOR ALTERATIONS

3.1. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only. Verify all conditions and dimensions in field. Report any discrepancies affecting the scope of work to the architect immediately.
3.2. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
3.3. Remove existing work as indicated and as required to accomplish new work.
3.4. Services (including but not limited to HVAC, plumbing, fire protection, electrical, and telecommunications): remove existing systems and equipment as indicated.
3.5. Protect existing work to remain.

4. DEBRIS AND WASTE REMOVAL

4.1. Remove debris, junk, and trash from site

SECTION 03 3000 – CAST IN PLACE CONCRETE

PART 1 GENERAL

Requirements of structural documents shall supercede requirements listed below wherever a conflict occurs.

PART 2 PRODUCTS

1. FORMWORK

1.1. Formwork design and construction: comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.
1.2. Form materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

2. REINFORCEMENT

2.1. Steel welded wire reinforcement: ASTM A 185/A 185M, plain type.

3. CONCRETE MATERIALS

3.1. Cement: ASTM C 150, Type I – normal Portland type.
3.2. Fine and coarse aggregates: ASTM C 33.
3.3. Lightweight aggregate: ASTM C 330.
3.4. Water: Clean and not detrimental to concrete
3.5. Fiber reinforcement: Synthetic fiber shown to have long-term resistance to deterioration when exposed to moisture and alkalis; ½ inch (12mm) length.

4. ACCESSORY MATERIALS

4.1. Under slab vapor retarder: Class 'A' vapor retarder, 10 mil min. thickness, "STEGO" or equal. Taped seams with manufacturer approved product. Suitable for installation in contact with soil or granular fill under concrete slabs.
4.2. Non-shrink cementitious grout: ASTM C 1107/C 1107M; premixed compound consisting of non-metallic drawings for additional information.

5. CONCRETE MIX DESIGN

5.1. Proportioning normal weight concrete: comply with ACI 211.1 recommendations.

5.1.1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.

5.2 Proportioning structural lightweight concrete: comply with ACI 211.2 recommendations.

5.2.1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hill ash as is consistent with ACI recommendations.

5.3. Concrete strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
5.4. Normal weight concrete:

5.4.1. Compressive strength, when tested in accordance with ASTM C 39/C 39M at 28 days: refer to structural drawings.

5.5. Structural lightweight concrete
5.6. Compressive strength, when tested in accordance with ASTM C 39/C 39M at 28 days: refer to structural drawings

PART 3 EXECUTION

1. PLACING CONCRETE

1.1. Place concrete in accordance with ACI 304R.
1.2. Place concrete for floor slabs in accordance with ACI 302.1R.

SECTION 03 3500 – CONCRETE FINISHING

PART 1 GENERAL

1. SUMMARY

1.1. Section includes:
1.2. Single application cure-seal-hardener for new concrete floors.

1.2.1. Precautions for avoiding staining concrete before and after application

1.3. Related section:

1.3.1. Cast-in-place concrete: Division 03 cast-in-place concrete sections.

1.4. SUBMITTALS

1.4.1. Product data: Submit product data, including manufacturer's spec-data sheet, installation instructions and technical bulletins for specified products.

1.4.2. Certificates: Manufacturer's certification that the installer is acceptable.

1.4.3. Maintenance data: Maintenance instructions, including precautions

1.4.4. Avoiding staining after application.

1.5 QUALITY ASSURANCE

1.5.1. Installer qualifications: Acceptable to the manufacturer.

PART 2 PRODUCTS

1. MATERIAL

1.1. Cure-seal-hardener: Ashford formula, a water-based chemically reactive penetrating sealer and hardener that seals by densifying concrete so that water molecules cannot pass through but air and water vapor can, and allows concrete to achieve full compressive strength, minimizing surface crazing and eliminating dusting.

1.1.1. Abrasion resistance to revolving disks: At least a 32.5% improvement over untreated samples when tested in accordance with ASTM C779.

1.1.2. Surface adhesions: At least a 22% increase in adhesion for epoxy when tested in accordance with ASTM D3359.

1.1.3. Hardening: As follows when tested in accordance with ASTM C39:

1.1.3.1. After 7 days: An increase of at least 40% over untreated samples.

1.1.3.2. After 28 days: An increase of at least 38% over untreated samples.

1.1.4. Coefficient of friction: 0.86 dry, 0.69 wet when tested in accordance with ASTM C1028.

1.1.5. Rebound number: An increase of at least 13.3% over untreated samples when tested in accordance with ASTM C805.

1.1.6. Light exposure degradation: No evidence of adverse effects on treated samples when tested in accordance with ASTM G23.

PART 3 EXECUTION

1. MANUFACTURER'S INSTRUCTIONS

1.1. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

2. EXAMINATION

2.1. Do not begin installation until substrates have been properly prepared and are suitable for application of product.
2.2. If substrate preparation is the responsibility of another installer, notify architect of unsatisfactory preparation before proceeding.

3. PREPARATION

3.1. Clean surfaces thoroughly prior to installation.
3.2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
3.3. Do not use frozen material. Thaw and agitate prior to use.
3.4. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid or other liquids.

4. INSTALLATION

4.1. All work must be performed by an applicator certified by the manufacturer. Certification credentials are required.
4.2. New concrete: Apply cure-seal-hardener to new concrete as soon as the concrete is firm enough to work on after troweling; with colored concrete, wait a minimum of 30 days before application.

4.2.1. Spray on at rate of 200 FT2/GAL (5M2/L).

4.2.2. Keep surface wet with cure-seal-hardener for a minimum soak-in period of 30 minutes without allowing it to dry out or become slippery. In hot weather, slipperiness may appear before the 30 minutes without allowing elapsed. If that occurs, apply additional cure-seal0hardener as needed to keep the entire surface in a non-slipper state for the first 15 minutes. For the remining 15 minutes, mist the surface as needed with water to keep the material in a non-slippery state. In hot weather conditions, follow manufacturer's special application procedures.

4.2.3. When the treated surface becomes slippery after this period, lightly mist with water until slipperiness disappears.

4.2.4. Wait for surface to become slipper again, and then flush entire surface with water to remove all cure-seal-hardener residue.

4.2.5. Squeegee surface to become slippery again, and then flush entire surface with water to remove all cure-seal-hardener residue.

4.2.6. Wet vacuum or scrubbing machines can be used in accordance with manufacturer's instructions to remove residue.

5. PROTECTION

5.1. Protect installed floors for at least 3 months until chemical reaction
5.2. Process is complete.

5.2.1. Do not allow traffic on floors for 3 hours after application.

5.2.2. Do not allow parking of vehicles on slab, place drop cloths under vehicles during entire time parked.

5.2.3. If vehicles must be temporarily parked on slab, place drop cloths under vehicles during entire time parked.

5.2.4. Do not allow pipe cutting using pipe cutting machinery on concrete slab.

5.2.5. Do not allow temporary placement and storage of steel members on concrete slabs.

5.2.6. Clean up spills immediately and spot-treat stains with degrease or oil emulsifier.

5.2.7. Clean floor regularly in accordance with manufacturer's recommendations.

SECTION 04 2000 – UNIT MASONRY

PART 1 GENERAL

*Contractor shall provide single source responsibility for all building waterproofing components. One contract shall be responsible for coordination / installation of all components affecting building water / air barrier.

PART 2 PRODUCTS

1. CONCRETE MASONRY VENEER UNITS

1.1. Concrete block: Comply with referenced standards and as follows:

1.1.1. Size: Standard units with nominal face dimensions of 16 x 8 inches (400 x 200 mm) and nominal depths as indicated on the drawings for specific locations.

1.1.2. Special shapes: Provide non-standard blacks configured for corners. Provide chamfered water table / sill block as indicated in contract drawings at transition to EIFS veneer above block.

1.1.3. Finish: Provide split face texture finish.

1.1.4. Color: As selected by architect from manufacturer's available standard colors

1.1.5. Load-bearing units: ASTM C 90, normal weight.

1.1.6. Non-loadbearing units: ASTM C 129.

1.1.7. Provide units with integral water repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.

2. MORTAR AND GROUT MATERIALS

2.1. Masonry cement: ASTM C 91, type N.
2.2. Portland cement: ASTM C 150, type I; color as required to produce approved color sample.
2.3. Mortar aggregate: ASTM C 144.
2.4. Grout aggregate: ASTM C 404.
2.5. Pigments for colored mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C 979.
2.6. Water: Clean and potable.

3. REINFORCEMENT AND ANCHORAGE

3.1. Reinforcing steel: ASTM A 615/A 615M grade 40 (280) deformed billet bars; galvanized.
3.2. Flexible anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch (25 mm) and not less than ½ inch (13 mm) of mortar coverage from masonry face.
3.3. Masonry veneer anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153m, Class B. Basis of design: Heckman POS-I-TIE (or equal) if U-shaped anchors are used in lieu of POS-I-TIE system provide self-adhering membrane flashing behind ties.

4. FLASHINGS

4.1. Metal flashing materials: As specified in section 07 6200.
4.2. Copper flashing: ASTM B 370, 060 soft annealed; 20 oz/sq ft (0.7 mm) thick; natural finish.
4.3. Pre-coated galvanized steel flashing: ASTM A 653/A 653m, with G90/Z275 coating, 24 gage (0.61 mm) total thickness, shop precoated with fluoropolymer coating in color matching masonry.
4.4. Rubberized asphalt flashing: Self-adhering polymer-modified asphalt sheet; 40 mil total thickness; with cross-linked polyethylene top and bottom surfaces. Self-adhering
4.5. Stainless steel flashing (drip edge exposed termination): ASTM A 666, type 304, soft temper; 26 gage (0.45 mm) thick; finish 2B to 2D

5. ACCESSORIES

5.1. Preformed control joints: Rubber material. Provide with corner and tee accessories, fused joints.
5.2. Cavity mortar control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
5.3. Weeps: Polyethylene tubing.
5.4. Cavity vents: Polyester mesh.

6. MORTAR AND GROUT MIXES

6.1. Mortar for unit masonry: ASTM C 270, using the proportion specification.
6.2. Colored mortar: Proportion selected pigments and other ingredients to match architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
6.3. Grout: ASTM C 476. Consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).

PART 3 EXECUTION

1. COLD AND HOT WEATHER REQUIREMENTS

1.1. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

2. COURSING

2.1. Establish lines, levels, and coursing indicated. Protect from displacement.
2.2. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
2.3. Concrete masonry units:

2.3.1. Bond: Running.

2.3.2. Coursing: One unit and on mortar joint to equal 8 inches (200 mm).

2.3.3. Mortar joints: Concave.

3. PLACING AND BONDING

3.1. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
3.2. Lay hollow masonry units with face shell bedding on head and bed joints.

4. CAVITY MORTAR CONTROL

4.1. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
4.2. Utilize cavity mortar control products (MESH) at all weep and through wall flashing locations; minimum of 24" above weeps

5. REINFORCEMENT AND ANCHORAGE – GENERAL

5.1. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches (400 mm) on center.
5.2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.
5.3. Place continuous joint reinforcement in first and second joint below top of walls.
5.4. Lap joint reinforcement ends minimum 6 inches (150 mm).
5.5. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches (400 mm) on center.
5.6. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches (900 mm) horizontally and 24 inches (600 mm) vertically.

6. MASONRY FLASHINGS

6.1. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
6.2. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.
6.3. Extend metal flashings to within ¼ inch (6mm) of exterior face of masonry.
6.4. Extend rubberized asphalt flashings to within ¼ inch (6 mm) of exterior face of masonry. Provide separate, exposed metal drip flashing as specified.
6.5. Lap end joints of flashings at least 4 inches (100 mm) and seal watertight with mastic or elastic sealant.

7. GROUTED COMPONENTS

7.1. Place and consolidate grout fill without displacing reinforcing.
7.2. At bearing locations, fill masonry cores with grout for a minimum 12 inches (300 mm) either side of opening.

SECTION 05 5000 – METAL FABRICATIONS

PART 1 GENERAL

PART 2 PRODUCTS

1. MATERIALS – STEEL

1.1. Steel sections: ASTM A 36/A 36M.
1.2. Steel tubing: ASTM A 500, grade B cold-formed structural tubing.
1.3. Plates: ASTM A 283.
1.4. PIPE: ASTM A 53/A 53M, grade B schedule 40, black finish.
1.5. Bolts, nuts, and washers: ASTM A 325 (ASTM A 325M), type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.
1.6. Welding materials: AWS D1.1/D1.1M; type required for materials being welded.
1.7. Shop and touch-up primer: SSPC-paint 15, complying with VOC limitations of authorities having jurisdiction.
1.8. Touch-up primer for galvanized surfaces: SSPC-paint 20, Type I – inorganic, complying with VOC limitations of authorities having jurisdiction.

2. MATERIALS – ALUMINUM

2.1. Extruded aluminum: ASTM B 221 (ASTM B 221M), 6063 Alloy, T6 Temper.
2.2. Sheet aluminum: ASTM B 209 (ASTM B 209M), 5052 Alloy, H32 or H22 Temper.
2.3. Aluminum-Alloy drawn seamless tubes: ASTM B 210 (ASTM B 210M), 6063 Allot, T6 Temper.
2.4. Formed aluminum: Items noted in contract drawings as formed aluminum shall be of sufficient gauge to hold indicated forms and dimensions without oil canning or deformations. All required fasteners shall be concealed from view.
2.5. Bolts, nuts, and washers: Stainless steel.
2.6. Welding materials: AWS D1.2/D1.2M; type required for materials being welded.

3. FABRICATION

3.1. Fit and shop assemble items in largest practical sections, for delivery to site.
3.2. Fabricate items with joints tightly fitted and secured.

4. FINISHES – STEEL

4.1. Prime paint all steel items.

5. FINISHES– ALUMINUM

5.1. Exterior aluminum surfaces: As indicated on contract drawings.
5.2. Interior aluminum surfaces: Class I natural anodized.
5.3. Formed aluminum surfaces: High performance organic coating for exposure to the elements, color as selected by the architect.

SECTION 05 5100 – METAL STAIRS

PART 1 GENERAL

1. WARRANTY

1.1. Alaco ladders carry a limited warranty of 5 years.

PART 2 PRODUCTS

Basis of design product: Alaco ships ladders – Model H1000-65 (775H-65)

1. Height – up to 20' (6.1 M) / Width – 24" (610 MM) standard, 48" (1220 MM) maximum angles – 75 standard; 70, 65, 60 degrees available
2. Model H1000-65 (775H-65) ladder is designed for use with roof hatches. It can be ordered with or without handrails.
3. FINISHES & COATINGS

3.1. Mill finish is standard on aluminum ladders.
3.2. Factory applied paint coatings and chem-film treatment for field applied primers are available upon request.
3.3. Custom coatings and surface treatments are also offered. 2.01

4. LADDER CONSTRUCTION:

4.1. Alaco aluminum ladders and their components are fabricated from 6061 – T6 aluminum alloy for added safety, strength and long-lasting durability, with no painting required.
4.2. Model H1000-65 (775H-65) ships ladders feature extra heavy-duty capacity of 1000lb. Total, 500lb. Per step, 6" (153 MM) wide steps with non-slip ridges mounted on 12" (305 MM) centers. These 24" (610 MM) wide ladders are equipped with 4 mounting brackets. Flush handrails consist of 1-1/4" schedule 40 (42 MM OD) round aluminum pipe with cast aluminum fittings.

PART 3 EXECUTION

1. PREPARATION

1.1. Handle and store product according to alaco recommendations.

2. INSTALLATION

2.1. Model H1000-65 (775H-65) aluminum ships ladder standard assembly
2.2. Establish distance from the floor to the underside of the roof hatch cover. Locate the mounting bracket centerline 17" (432 MM) below the underside of the roof hatch. Check clear floor space required in installed position, then install the ladder to 65 angular degrees. Flush handrails are standard and can be installed singularly or on both sides of the ladder side rails.
2.3. Complete installation recommendations for all product models are available from the manufacturer.

SECTION 06 1000 – ROUGH CARPENTRY

PART 1 GENERAL

PART 2 PRODUCTS

1. GENERAL REQUIREMENTS

1.1. Dimension lumber: Comply with PS 20 and requirements of specified grading agencies.
1.2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
1.3. Grading agency: Any grading agency whose rules are approved by the board of review, American lumber standard committee (www.ALSC.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
1.4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2. DIMENSION LUMBER FOR CONCEALED APPLICATIONS

2.1. Sizes: Normal sizes as indicated on drawings, S4S/
2.2. Moisture content: S-DRY or MC19.
2.3. Stud framing (2 by 2 through 2 by 6 (50 by 50 MM through 50 by 150 MM):

2.3.1. Species: Any allowed under referenced grading rules.

2.3.2. Grade: NO. 2.

2.4. Joist, rafter, and small beam framing (2 by 6 through 4 by 16 (50 by 150 MM through 100 by 400 MM):

2.4.1. Machine stress-rated (MSR) as follows:

2.4.1.1. FB – single (Minimum extreme fiber stress in bending): 1350 PSI (9,300 KPA).

2.4.1.2. E (Minimum modulus of elasticity): 1,300,000 PSI (8960 MPA).

2.4.2. Species: Any allowed under grading rules.

2.4.3. Grade: NO. 1 & BTR.

2.5. Miscellaneous framing, blocking, nailers, grounds, and furring:

2.5.1. Lumber: S4S, NO. 2 or standard grade.

2.5.2. Boards: Standard or NO. 3.

3. CONSTRUCTION PANELS

3.1. Roof sheathing: APA PRP-108, structural I rated sheathing, exterior exposure class, and as follows:

3.1.1. Span rating: 24/0 (610/0).

3.1.2. Thickness: ½ inch (13 MM), nominal.

3.2. Wall sheathing: APA PRP-108, structural I rated sheathing, exterior exposure class, and as follows: ½" plywood or OSB, as indicated on structural drawings.
3.3. Communications and electrical room mounting boards: PS 1 A-D plywood, or medium density fiberboard; ¾ inch (19 MM) thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with, ASTM E 84.

4. FACTORY WOOD TREATMENT

4.1. Treated lumber and plywood: Comply with requirements of AWPA U1 – use category system for wood treatments determined by use categories, expected service conditions, and specific applications.

PART 3 EXECUTION

1. FRAMING INSTALLATION

1.1. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
1.2. Install structural members full length without splices unless otherwise specifically detailed.

SECTION 06 4100 – ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

PART 2 PRODUCTS

1. CABINETS

1.1. Quality grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI architectural woodwork standards for premium grade.
1.2. Plastic laminate faced cabinets: Custom grade – in locations indicated on contract drawings.
1.3. Cabinets:

1.3.1. Finish – Exposed exterior surfaces: Decorative plastic laminate; type varies by location. Coordinate laminate selections with owner / architect.

1.3.2. Finish – Exposed interior surfaces: White melamine.

1.3.3. Door and drawer front edge profiles: Square edge with thin applied band.

1.3.4. Casework construction type: Type A – frameless.

2. LAMINATE MATERIALS

2.1. High pressure decorative laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

3. COUNTERTOPS

3.1. Material and finish: Plastic laminate as selected by owner / architect.
3.2. Plastic laminate countertops: Plywood substrate covered with HPDL, conventionally fabricated and self-edge banded.

4. Shop finishing

4.1. Finish work in accordance with AWI/AWMAC/WI architectural woodwork standards, section 5 – finishing for grade specified

PART 3 EXECUTION – NOT USED

SECTION 07 1300 – SHEET/FLUID APPLIED WATERPROOFING

PART 1 GENERAL

*Contractor shall provide single source responsibility for all building waterproofing components. One contract shall be responsible for coordination / Installation of all components affecting building water / air barrier. Verify compatibility of all membrane flashing and building wraps w/ adjacent materials. Do not mix asphaltic and bituminous based flashing / materials without appropriate separation.

PART 2 PRODUCTS

1. WATERPROOFING APPLICATIONS

1.1. Self-adhered modified asphaltic sheet waterproofing: Use as indicated on drawings.

1.1.1. For use at the following locations:

1.1.1.1. Membrane flashing at building exterior wall assembly locations above grade/

1.2. Self-adhered rubberized asphalt sheet with cross laminated polyethylene film (Ice and water shield):

1.2.1. For use at the following locations:

1.2.1.1. Roofing system underlayment waterproofing.

1.3. Polymer modified asphalt waterproofing: Use at below grade foundation walls. Provide full system including fluid applied waterproofing membrane, drainage sheet layer; Carlisle "BARRICOAT" or equal.

1.3.1. Vertical surfaces: Adhesive bonded to substrate.

1.3.2. Horizontal surfaces: Adhesive bonded to substrate.

1.3.3. Cover with protection board.

2. MEMBRANE MATERIALS

3. FLUID APPLIED WATERPROOFING MATERIALS

3.1. Water based, rubberized asphalt emulsion which rapidly cures in place to provide a seamless waterproofing membrane.

4. SEAMING MATERIALS

4.1. As recommended by membrane manufacturer.

5. MEMBRANE SEALANT

5.1. As recommended by membrane manufacturer.

PART 3 EXECUTION

1. INSTALLATION – MEMBRANE

1.1. Install membrane waterproofing in accordance with manufacturer's instructions.
1.2. Self-adhering membrane: Remove release paper layer. Roll out on substrate with a mechanical roller to encourage full contact bond.
1.3. Overlap edges and ends and seal by method recommended by manufacturer, minimum 3 inches (75 MM). Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

2. INSTALLATION – FLUID APPLIED MEMBRANE

2.1. Allow materials used during surface preparation to cure fully before applying product.
2.2. Roller-grade product: Apply according to instructions in manufacturer's literature.
2.3. Cured membrane thickness shall measure a minimum of 0.060 inch (60MILS).
2.4. Provide complete coverage without pinholes or voids. Apply greater thickness of product as necessary to provide continuous coating over rough surfaces and irregularities.

3. INSTALLATION – DRAINAGE PANEL AND PROTECTION BOARD

3.1. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward. Scribe and cut boards around projections, penetrations, and interruptions.
3.2. Place protection board directly against below grade insulation; butt joints. Scribe and cut boards around projections, penetrations, and interruptions.

SECTION 07 2100 – THERMAL INSULATION

PART 1 GENERAL

1. SUBMITTALS

1.1. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

PART 2 PRODUCTS

1. APPLICATIONS

1.1. Insulation under concrete slabs: Extruded polystyrene board; thickness as required to achieve R-15 CI.
1.2. Insulation at perimeter of foundation: Expanded polystyrene board; thickness as required to achieve R-15 CI.
1.3. Insulation inside masonry cavity walls: Expanded polystyrene board; thickness as required to achieve R-3.8 CI.
1.4. Insulation behind EIFS veneer: Expanded polystyrene board; thickness as required to achieve R-3.8 CI.
1.5. Insulation in wood framed walls: Batt insulation (unfaced) with no vapor retarder. Provide non-combustible material rated for plenum exposure wherever exposed to the interior of the building or plenum; thickness as required to achieve R-19.
1.6. Insulation in roofing system: NONE.
1.7. Insulation above lay-in acoustical ceilings: NONE

2. FOAM BAORD INSULATION MATERIALS

2.1. Expanded polystyrene board insulation: ASTM C 578; with the following characteristics:

2.1.1. Flame spread index: 75 or less, when tested in accordance with ASTM E 84.

2.1.2. Smoke developed index: 450 or less, when tested in accordance with ASTM E 84.

2.1.3. Thermal conductivity (K factor) at 25 degrees F (-3.9 degrees C): 0.28 (0.48).

2.1.4. Thermal resistance: R-Value as listed per assembly and specific location.

2.2. Extruded polystyrene board insulation: ASTM C 578, Type X; extruded polystyrene board with either natural skin or cut cell surfaces; with the following characteristics:

2.2.1. Flame spread index: 75 or less, when tested in accordance with ASTM E 84.

2.2.2. Smoke developed index: 450 or less, when tested in accordance with ASTM E 84.

2.2.3. Thermal conductivity (K factor) at 25 degrees F (-3.9 degrees C): 0.18 (0.31).

2.2.4. Thermal resistance: R-value as listed per assembly and specific location.

2.3. Polyisocyanurate board insulation: Rigid cellular foam, complying with ASTM C 1289; type I, aluminum foil both faces; class 1, non-reinforced foam core.

2.3.1. Flame spread index: 75 or less, when tested in accordance with ASTM E 84.

2.3.2. Smoke developed index: 450 or less, when tested in accordance with ASTM E 84.

2.3.3. Thermal resistance: R-value as listed per assembly and specific location.

3. BATT INSULATION MATERIALS

3.1. Provide products complying with non-combustible specifications as listed in the 2012 North Carolina building code where batt insulation will be exposed to the return air plenum. Products must be rated for such exposure or separated from the plenum by a membrane.
3.2. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at contractor's option.
3.3. Glass fiber batt insulation: Flexible preformed batt or blanket, complying with ASTM C 665; friction fit.

3.3.1. Flame spread index: 25 or less, when tested in accordance with ASTM E 84.

3.3.2. Smoke developed index: 450 or less, when tested in accordance with ASTM E 84.

3.3.3. Combustibility: Non-combustible, when tested in accordance with ASTM E 136, except for facing, if any.

3.3.4. Thermal resistance: R-19 in exterior wall assemblies.

3.3.5. Thickness: As required to meet applicable thermal resistance value.

3.3.6. Facing: Unfaced.

3.4. Mineral fiber batt insulation: Flexible preformed batt or blanket, complying with ASTM C 665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E 84.

3.4.1. Where indicated, provide foil facing on one side; with flame spread index of 25 or less, when tested in accordance with ASTM E 84.

3.4.2. Smoke developed index: 0 (Zero), when tested in accordance with ASTM E 84.

3.4.3. Thermal resistance: R-19 in exterior wall assemblies.

3.4.4. Thickness: As required to meet applicable thermal resistance value.

4. ACCESSORIES

4.1. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch (50 MM) wide.
4.2. Insulation fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
4.3. Nails or staples: Steel wire; electroplated or galvanized; type and size to suit application.
4.4. Wire mesh: Galvanized steel, Hexagonal wire mesh.
4.5. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

1. BOARD INSTALLATION AT FOUNDATION PERIMETER

1.1. Install insulation in accordance with manufacturer's instructions.
1.2. Adhere a 6 inch (150 MM) wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.

2. BOARD INSTALLATION AT CAVITY WALLS

2.1. Install insulation in accordance with manufacturer's instructions.
2.2. Do not tape seams/ joints in insulation boards. Joints to be butted tightly together.
2.3. 2 Secure impale fasteners to substrate at a frequency as follows:

2.3.1. As recommended by manufacturer

3. BOARD INSTALLATION UNDER CONCRETE SLABS

3.1. Place insulation under slabs on grade after base for slab has been compacted.

4. BATT INSTALLATION

4.1. Install insulation in accordance with manufacturer's instructions.
4.2. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.
4.3. Batt insulation shall either be rated for exposure or separated via membrane and not left exposed to return air plenums.

SECTION 07 2400 – EIFS – DRAINAGE TYPE

PART 1 GENERAL

*Contractor shall provide single source responsibility for all building waterproofing components. One contract shall be responsible for coordination/installation of all components affecting building water / air barrier.

1. SUBMITTALS

1.1. Shop drawings: Indicate wall and soffit joint patterns, joint details, and molding profiles.
1.2. Product data: Provide data on system materials, product characteristics, performance criteria, and system limitations.

2. FIELD CONDITIONS

2.1. Do not prepare materials or apply EIFS during inclement weather unless areas of installation are protected. Protect installed EIFS areas from inclement weather until dry.

3. WARRANTY

3.1. Provide manufacturer's standard material warranty, covering a period of not less than 5 years.

PART 2 PRODUCTS

1. Exterior insulation and finish system: Drainage type; reinforced finish coating on mechanically-fastened insulation board over sheet-type drainage layer or spacers and separate sheet-type water-resistive barrier over substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate(s) in tested samples.
2. MATERIALS

1.1. Finish coating top coat: water-based, air curing, acrylic or polymer-based finish with integral color and texture.
1.2. Texture: Smooth
1.3. Color: As selected by architect from manufacturer's standard range.
1.4. Base coat: Acrylic – or polymer-modified, fiber reinforced Portland cement coating.
1.5. Reinforcing mesh: Balanced, open weave glass fiber fabric, treated for compatibility and improved bond with coating, weight, strength, and number of layers as required to meet required system impact rating.
1.6. Insulation board: Molded, expanded polystyrene board; ASTM C 578, type I; with the following characteristics:

1.6.1. Grooved board: Back side of board adjacent to sheathing grooved with vertical channels designed to allow moisture to drain; at drainage points provide board configuration that permits drainage to the exterior.

1.6.2. Board thickness: As indicated on drawings

1.6.3. Insulation board: Extruded polystyrene board with natural skin surfaces; ASTM C 578, type IV; with the following characteristics:

1.6.4. Board thickness: As indicated on drawings

1.6.5. Thermal conductivity (K factor) at 25 degrees F (-3.9 degrees C): 0.18 (0.31) as determined by ASTM C 177.

1.7. Drainage layer or spacers: Furnished or approved by EIFS manufacturer; capable of achieving specified drainage rate; not required to be water-resistive, air retarder, or vapor retarder.
1.8. Water-resistive barrier: sheet type material that constitutes an air retarder but which is vapor permeable; one of the following unless otherwise required by EIFS manufacturer or authorities having jurisdiction:

1.8.1. Air retarder: Air- and water-resistive sheet complying with ASTM E 1677 type I, with minimum vapor permeance of 20 perms (1150 NG/(S M SQ PA)); Furnished or approved by EIFS manufacturer.

1.9. Flashing tape: Self-adhering rubberized asphalt tape with polyethylene backing or other material furnished or approved by EIFS manufacturer.

2. ACCESSORY MATERIALS

2.1. Insulation adhesive: Type required by EIFS manufacturer for project substrate.
2.2. Insulation fasteners: Fastener and plate system appropriate for substrate and as recommended by EIFS manufacturer.
2.3. Metal flashings: As specified in section 07 6200.
2.4. Metal lath: ASTM C 847, self-furring galvanized diamond mesh, 2.5lb / sq yd (1.4 KG/SQ M).
2.5. Trim: EIFS manufacturer's standard PVC or galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
2.6. Sealant materials: As recommended by EIFS manufacturer.

PART 3 EXECUTION

1. GENERAL

1.1. Install in accordance with EIFS manufacturer's instructions and ASTM C 1397.

2. INSTALLATION – WATER-RESISTIVE BARRIER

2.1. Apply barrier coating as recommended by coating manufacturer; prime substrate as required before application.
2.2. Mechanically attach sheet materials to substrate using fasteners and fastener spacing recommended by EIFS manufacturer.

3. INSTALLATION – INSULATION

3.1. Install in accordance with manufacturer's instructions.
3.2. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch (1.6 MM)/

4. INSTALLATION – FINISH

4.1. Base coat: Apply in thickness as necessary to fully embed reinforcing mesh, wrinkle free, including back-wrap at all terminations of the EIFS. Install reinforcing fabric as recommended by EIFS manufacturer.

SECTION 07 2500 – WEATHER BARRIERS

PART 1 GENERAL

*Contractor shall provide single source responsibility for all building waterproofing components. One contract shall be responsible for coordination / installation of all components affecting building water / air barrier. Verify compatibility of all membrane flashings and building wraps w/ adjacent materials. Do not mix asphaltic and bituminous based flashing / materials without appropriate separation.

1. SUBMITTALS

1.1. Product data: Provide data on material characteristics.

PART 2 PRODUCTS

1. WEATHER BARRIER ASSEMBLIES

1.1 Water-resistive barrier: Provide on exterior walls under exterior cladding.

1.1.1Use building paper unless otherwise indicated.

1.1.2 Under siding, use two separate layers of building paper.
1.1.3 Use plastic sheet; TYVEK commercial wrap or equal, unless otherwise indicated.
1.1. AIR BARRIER:

1.1.1. On outside surface of sheathing of exterior walls use air barrier sheet product

2. AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

2.1. Air barrier sheet, mechanically fastened:

2.1.1. Air permeance: 0.004 cubic feet per square foot (0.02 liters per second per square meter), maximum, when tested in accordance with ASTM E 2178.

2.1.2. Water vapor permeance: 10 perms (574 NG/(PA S SQ M)), minimum, when tested in accordance with ASTM E96/E 96M procedure a (Desiccant method).

2.1.3. Water penetration resistance: Withstand a water head of 21 inches (55 CM) minimum, for minimum of 5 hours, when tested in accordance with AATCC 127.

PART 3 EXECUTION

1. INSTALLATION

1.1. Install materials in accordance with manufacturer's instructions.
1.2. Water-resistive barriers: Install continuous barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.
1.3. Air barriers: Install continuous airtight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
1.4. Apply sealants and adhesives within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.

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SPECIFICATIONS