SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.

B. Submittals: Shop Drawings showing details of fabrication and installation.

C. Submittal shop drawings shall be based upon completed field layout and field drilling of all holes to ensure fabricated steel is accurate.

D. Professional Engineer’s stamp is required on shop drawings for railings and stairs.

PART 2 - PRODUCTS

2.1 METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.


D. Academic / Administrative Buildings: Standard Steel Handrails, Railings, Cast Flanges and Fittings (hot dipped galvanized):
   1. Provide products by J.G. Braun
   2. Top Handrail: J.G. Braun steel handrail #1256 (1 ½” x ½” x 1/8”)
   3. Posts: Square steel tube (stainless or composite) 200 # force minimum): 1 ¼” square steel tube @ 4’-0” O.C. (Typ.)
   4. Ballusters: ½” square steel tube every 4” O.C. (Typ.)
   5. Bottom Rail: 1 ½” x ½” x 1/8” steel bottom rail.
   6. Malleable Iron Floor Flange: J.G. Braun #8163 flange at all Posts (Typ.)
   7. Handrail: 1 ¼” diameter, custom fabricated.
   8. Handrail termination: Bending of handrail at starting and ending termination points shall be detailed and submitted for approval. Coordinate details with Owner and University standards.
   9. Fabrication: All rails shall be shop fabricated.

E. Woodframe Houses: Standard Steel Handrails, Railings and Fittings (hot dipped galvanized):
   1. Top Handrail: 1 ½” x ½” x 1/8” (submit top rail profile to Owner for approval).
   2. Posts - Square steel tube 200 # force: minimum 1 ¼” square steel tube @ 4’-0” O.C. (Typ.)
   3. Ballusters: ½” square steel tube every 4” O.C. (Typ.)
   4. Bottom Rail: 1 ½” x ½” x 1/8” steel bottom rail.
   5. Floor Flange / Plate: 4” x 4” or sized as required based on field conditions. **Only required for precast concrete stair installations or at any other location that cannot be cored and grouted.**
   6. Handrail: 1 ¼” diameter, custom fabricated.
7. Handrail termination: Bending of handrail at starting and ending termination points shall be detailed and submitted for approval. Coordinate details with Owner and University standards.

8. Fabrication: All rails shall be shop fabricated.

2.2 GROUT
A. Non-shrink, Nonmetallic Grout: ASTM C 1107; recommended by manufacturer for exterior applications.

2.3 ACCEPTABLE FABRICATOR
A. AISC Certified Fabricator

2.4 FABRICATION
A. Contractor shall submit recycled use content and recycling program.

B. General: Shear and punch metals cleanly and accurately. Remove burrs and ease exposed edges. Form bent-metal corners to smallest radius possible without impairing work. Shop fabrication shall not commence until field template and hole drilling are complete and approved by the structural engineer.

C. Field joints shall not be allowed.

D. Welding: Weld corners and seams continuously. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. At exposed connections, finish welds and surfaces smooth with contour of welded surface matching those adjacent.

E. On units indicated to be cast into concrete or built into masonry, core, with a minimum 6-inch embedment. Crown/slope grout.

F. Fabricate nosings from cast iron with an integral abrasive finish.
   1. Apply bituminous paint to concealed surfaces of units set into concrete.

G. Fabricate nosings from extruded aluminum with abrasive filler consisting of aluminum-oxide or silicon-carbide grits, or a combination of both, in an epoxy-resin binder.
   1. Ribbed-type units.
   2. Apply clear lacquer to concealed surfaces of units set into concrete.

2.5 STEEL AND IRON FINISHES
A. Hot-dip galvanized steel fabrications at exterior locations.

B. Prepare uncoated ferrous metal surfaces to comply with SSPC-SP 6, "Chemical Bath Cleaning," and paint with a fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79. Apply two coats of exterior final finish paint in the shop. Touch up as required in the field. Final color shall be coordinated with the Owner.

PART 3 - EXECUTION
3.1 INSTALLATION
Wesleyan University Construction Services

A. Field measure as required to obtain dimensions needed for fabrication. Fabrication dimensions shall meet or exceed all required code requirements based on installation location.

B. Provide center rail for all widths greater than 6’-0”.

C. Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack.

D. Slope all posts in epoxy. Embedment shall be minimum 6 inches. Slope epoxy as required to eliminate water ponding.

E. Fit exposed connections accurately together to form hairline joints.

F. Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

END OF SECTION 05500
SECTION 07311 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements are made a part of this section.

B. Submittals: Product Data and Samples.

C. Identify each bundle of shingles with appropriate markings of UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A.

D. Warranties: Provide standard manufacturer's written warranty, signed by manufacturer agreeing to promptly repair or replace asphalt shingles that fail in materials or workmanship within 30 years from date of Substantial Completion, prorated, with first 5 years non-prorated. Provide transferrable warranty times one.

PART 2 - PRODUCTS

2.1 ASPHALT SHINGLES

A. Fiberglass Shingles: Architectural shingles complying with ASTM specifications E 108 Class A or UL 790 Class A, D 3462, D3161 or UL 997, D3018 Type I, ASTM D228.

B. Available Products:

1. Owens Corning; Duration Shingles with SureNail Technology
   a. 30 Year Limited Warranty
   b. Algae Resistance Limited Warranty
   c. Wind Resistance 110 mph

2. Timberline Cool Series
   a. Fiberglass Asphalt Construction
   b. Lifetime Ltd. Warranty
   c. 10 Yr. Smart Choice- Protection
   d. 130 mph Ltd. Wind Warranty**
   e. Listed Class A fire—UL 790
   f. ASTM D3161 Type 1, Class F
   g. ASTM D3018 Type I
   h. ASTM D3462***
   i. CSA 123.5-98
   j. Approx. 64 Pieces/Sq.\n   k. Approx. 4 Bundles/Sq.
   l. Approx. 256 Nails/
3. Flat tab shingles as may be identified in specific scope drawings based on existing conditions.

2.2 ACCESSORIES

A. Felts: ASTM D 226, Type I, asphalt-saturated organic felts.

B. Self-Adhering Sheet Underlayment (Ice and Water): ASTM D 1970, SBS-modified asphalt; mineral-granule or slip-resisting-polyethylene surfaced; with release paper backing; cold applied.

C. Ridge Vent: Rigid UV-stabilized plastic ridge vent with nonwoven geotextile filter strips with external deflector baffles; for use under ridge shingles.

D. Valley Flashing: ‘W’ Valley Metal

E. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

F. Roofing Nails: Aluminum, stainless-steel, or hot-dip galvanized steel shingle nails, minimum 0.120-inch diameter, of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.

G. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section "Manufactured Roof Specialties"
   1. Sheet Metal: Aluminum with baked enamel finish where exposed.
   2. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual."
   3. Drip Edge: Pre-formed sheet metal with at least a 3-inch roof deck flange and a 1-1/2-inch fascia flange with a 3/8-inch drip at lower edge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Protect all exterior elevations of building from damage or staining. Contractor to provide tarps in sufficient sizes.


C. Apply ice and water self-adhering sheet underlayment at eaves and rakes from edges of roof to at least 36 inches inside exterior wall line including confined rake edges, low slope areas, ridge, hip, dormers, chimneys, skylights, roof hatches. See detail below (H.).

D. Apply ice and water self-adhering sheet underlayment at valleys extending 18 inches on each side.

E. Install W metal valleys complying with ARMA and NRCA instructions. Rolled roofing is not acceptable in valleys.
F. Install metal flashings and other sheet metal to comply with requirements in Division 7 Section "Manufactured Roof Specialties," recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

G. Install drip edge on top of ice and water in all locations.

H. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

I. Contractor shall meet or exceed all fall protection requirements as specified in the project manual. Failure to do so will result in contract termination.

END OF SECTION 07311
 SECTION 07460 – VINYL SIDING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements are made a part of this section.

B. Submittals: Product Data and Samples.

1. Product Data, schedule and shop drawings outlining building elevations, type, size and details of siding to be installed. All details must match the existing siding and trim profile details with no exception. Custom trim/siding details may be required based upon the existing house details.

2. Contractor shall photograph and document all existing siding details for each house. All documentation shall be submitted to the Owner for record. Documentation shall include but not be limited to all exterior trim details, window trim details, soffit details, watertable details, porch and railing details, decorative half-round siding details, attic louver details, shutter details, siding details, etc.

3. Contractor shall submit shop drawings for each house along with product cut sheets and samples to the Owner for review and approval. All siding and trim details must match the existing. No materials shall be ordered until reviewed and approved by the Owner.

4. Submit research/evaluation reports from a model code organization acceptable to authorities having jurisdiction.

C. Warranties: Manufacturer's standard from in which siding manufacturer agrees to repair or replace siding that fails in materials or workmanship within 20 years. Failures include, but are not limited to, cracking, deforming, fading, or otherwise deteriorating beyond normal weathering.

PART 2 - PRODUCTS

2.1 SIDING


B. Products:

1. CertainTeed CedarBoards Insulated Siding or approved equal to match existing siding and trim details. (Custom details may be required).
   
   a. 044" thickness.

   b. Straight even face with flat surface for look of wide board wood siding.

   c. Custom contoured foam to provide strength and rigidity for outstanding impact resistance.

   d. Energy Star rated.
e. 60% recycled content.

f. TrueTexture™ rough cedar finish molded from real cedar boards.

g. Patented STUDfinder™ designed for accurate and secure installation.

h. Sound Absorption for reduced exterior noise infiltration.

i. DuraLock® post-formed lock design.

j. 3/4” panel projection.

k. Lifetime limited warranty.

l. Color: Submit manufactures standard colors for Owner review and final color selection.

m. Exposure: Double 4” clapboard unless otherwise noted.

2. CertainTeed Monogram 46 and/or 46L Classic Style Siding or approved equal to match existing:

a. Heavy-Duty .046” thickness.

b. TrueTexture™ rough cedar finish molded from real cedar boards.

c. Patented STUDfinder™ designed for accurate and secure installation.

d. RigidForm™ 220 Technology tested to withstand wind load pressures up to 220 mph.

e. CertiLock™ self-aligning, post-formed positive lock system.

f. 3/4” panel projection.

g. Maintenance free material.

h. Class 1(A) fire rating.

i. Lifetime limited warranty.

j. Works with Monogram® 46L longer length siding.

k. Color: Submit manufactures standard colors for Owner review and final color selection.

l. Exposure: Double 4” clapboard unless otherwise noted.

3. CertainTeed Cedar Impressions Perfection Shingles or approved equal to match existing:

a. Patented PanelThermometer™ for precise installation.
b. TrueTexture™ finish.
c. Designed and tested to withstand hurricane force winds.
d. Made of injection molded, durable polymer.
e. 3/4" Panel Projection.
f. .100" Thick.
g. Molded Perimeter Lock™ to create a virtually seamless appearance.
h. Maintenance free material.
i. Lifetime limited warranty.
j. Color: Submit manufacturers standard colors for Owner review and final color selection.
k. Exposure: Double 7” straight Edge unless otherwise noted.

2.2 SOFFIT

A. Vinyl Soffit: ASTM D 4477, integrally colored.

B. Products:

1. CertainTeed Soffit or approved equal (To be selected to match existing soffit details):
   a. Beaded Triple 2:
   b. Triple 3 1/3”
   c. Ironmax Double 5”
   d. Universal Triple 4”

   1) Provide siding manufacturer's standard products as required to maintain siding system warranty (Soffit must match existing details – Review with Owner).

   2) Pattern: As selected from manufacturer’s full range. (Soffit must match existing details – Review with Owner).

   3) Ventilation: Provide unperforated soffit, unless otherwise indicated. (Soffit must match existing details – Review with Owner).

2.3 TRIM & DECORATIVE DETAILS

A. Products:
1. **Certainteed Restoration Millwork, Azek or approved equal:**
   a. Provide siding manufacturers trim pieces for all gable, accent, corner, window and door details. Custom fabricate break metal as required for all existing wood trim that cannot be covered with manufacturers standard trim pieces. Coordinate all details with Owner prior to the start of work.

2.4 **SPECIALTY SHAPES**

   A. **Products:**
      1. **Mid-America Siding Components or approved equal:**
         a. Provide specialty shapes to match existing shapes as closely as possible. Specialty shapes shall be selected from the manufacture’s six classic shapes as follows.

            1) Hexagon  
            2) Mitered Corner  
            3) Fish Scale  
            4) Octagon  
            5) Half Cove  
            6) Round

         Shapes selection shall be project specific and reviewed with the Owner to match existing shapes as close as possible.

         b. **Color:** Submit manufactures standard colors for Owner review and final color selection.

2.5 **SPECIALTY VENTS**

   A. **Products:**
      1. **American Louver and Vent Company (www.alvcompany.com) or approved equal:**
         a. Provide specialty gable vents to be installed at locations specified or to match existing vents removed. Review vent selection options with Owner for each specific project.

         b. Provide foundation / crawlspace vents at locations specified.

         c. **Color:** Submit manufactures standard colors for Owner review and final color selection.

2.6 **INSULATION**

   A. **Rigid Foam Insulation. 1” FOAMULAR insulating sheathing.**
3.1 INSTALLATION

A. Prior to the start of installation, contractor shall schedule a meeting with the Owner to review approved shop drawing details and all University construction standards and safety requirements.

B. Contractor shall install 1” FOAMULAR insulating sheathing over all exterior walls to create an insulating envelope over the entire structure prior to installing siding.

C. Contractor shall install vinyl siding, soffit, and all accessories in accordance with the manufacturer’s installation manual and ASTM D 4756 requirements.

D. Contractor shall meet or exceed all fall protection requirements as specified in the project manual. Failure to do so will result in contract termination.

END OF SECTION 07460
SECTION 07531 - EPDM MEMBRANE ROOFING

PART 1 - GENERAL

1.1 PERFORMANCE REQUIREMENTS

A. Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Design Uplift and Factored Design Uplift Pressure shall be per SPRI’s “Wind load design guide for Fully Adhered and Mechanically Fastened Roofing Systems” after multiplication by a safety factor.
   1. Material Compatibility: Provide roofing materials that are compatible with one another under the conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
   2. FMG listing: All materials to comply with FMG 4450, 4470. Identify such with FMG markings, class I noncombustible construction.
   3. Fire/Windstorm Classification: 1A-90.
   4. Hail Resistance: MH
   5. Complete 30-plus year NDL manufacturer’s warranty, three inspections with full reports at 6 month intervals.
   6. System design shall comply with Connecticut State Building Code for corner, perimeter, and field of roof uplift pressure.
   7. System design shall comply with Connecticut State Building Code for insulation R value.

C. All materials provided shall be asbestos-free.

1.2 SUBMITTALS

A. Product data: For each type of product indicated.

B. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system. Contractor and each individual working on installation of new roof must be certified.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with the requirements specified in “Performance Requirements.”
   1. Submit evidence of meeting performance requirements.

D. Shop drawings: For roofing system. Include plans, sections, elevations, details, and attachments to other work.
   1. Termination bar / counter flashing reglet detail at parapet walls.
   2. Base flashing, cants and membrane terminations.
   3. Tapered insulation, including slopes.
   4. Crickets, saddles, and tapered edge strips, including slopes.
5. Fastening details for all materials.

C. Samples:
1. 12 x 12 – inch square of EPDM ply sheet
2. 12 x 12 – inch square roofing with seam
3. 12 x 12 – inch square flashing sheet (all types)
4. 12 x 12 – inch square of roof insulation
5. 12 x 12 – inch square of walkway pad
6. All fastener types
7. Termination bars, counter-flashing, anchors, laps, joinery, etc

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
1. Indicate that bulk roofing asphalt materials delivered to Project comply with requirements. Include quantity and statistical and descriptive data for each product. Submit certificate with each load before it is used.
2. Include continuous log showing time and temperature for each load of bulk asphalt, indicating date obtained from manufacturer, where held, and how transported before final heating and application on roof.

E. Maintenance Data: For roofing system to include maintenance manuals.

F. Inspection Report: Copy of roofing system manufacturer’s inspection report of completed roofing installation.

G. Warranties:
1. Manufacturer’s standard form, without monetary limitation for all components, signed by roofing manufacturer agreeing to repair leaks due to defects in materials or workmanship for a period of 30 years from the date of substantial completion.
2. Roofing installer’s warranty: Full warranty without monetary limitation for all components, 2 years from substantial completion. Warranty to include all roofing materials, metals, sealants, etc.

H. Substrate shall be signed off by manufacturer and certified installer prior to installing membrane. Substrate shall be inspected by roofing installer and manufacturer prior to the application of any new roofing products.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer’s product and that is eligible to receive manufacturer’s warranty. Provide documentation to Owner.

B. Source Limitations: Obtain components for roofing system approved by roofing system manufacturer.

C. All products shall be protected from the weather. Wet insulation board will not be accepted.
D. Pre-Installation Conference: Prior to the start of work, all methods and procedures relating to the roofing system shall be reviewed to include, but not be limited to the following:

1. Meet with Owner, testing and inspection agency (if applicable), roofing installer, roofing system manufacturer’s representative, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer’s written instructions.
3. All manufacturers’ details applicable to the conditions of the respective roof shall be submitted for review. All unique details shall be reviewed during this conference.
4. Review and finalize construction schedule and verify availability of materials, Installer’s personnel, equipment and facilities needed to make progress and avoid delays.
5. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
6. Review structural loading limitations of roof deck prior to use of any machinery on the roof.
7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

E. Substrate shall be signed off by manufacturer and certified installer prior to installing membrane.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer’s name, product brand name and type, date of manufacture, and directions for storage.

B. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location, provide storage container if necessary, wet insulation will not be permitted on roof. Comply with insulation manufacturer’s written instructions for handling, storing, and protecting during installation.

C. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.5 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer’s written instructions and warranty requirements.

B. Contractor to submit detailed mobilization plan for each roof location including but not limited to – material load/unload, material staging, equipment staging/parking, crane set up, restroom facilities, employee parking.
PART 2 - PRODUCTS

2.1 ROOFING MATERIALS

A. EPDM Sheet: ASTM D 4637, 90 mils thick; Color shall be White.

1. Products:
   a. Firestone
   b. Carlisle SynTec
   c. Johns Manville
   d. Sarnafil
   e. Tremco
   f. Garland

B. Auxiliary Materials: Recommended by roofing system manufacturer for intended use and as follows:

1. Sheet Flashing: EPDM thickness shall be as required to comply with 90 mil EPDM system requirements to satisfy warranty conditions.

2. 32 Miles shall be 60 mil EPDM.
3. Seaming Material: Synthetic-rubber-polymer primer and 3-inch- wide minimum, butyl splice tape with release film or as specified in accordance with manufacturer system requirements.
4. Curb Flashing: Flashing required for roof curbs per manufacturers recommendation to maintain warranty.
5. Corner Flashing: Flashing for inside and outside corners per manufacturer’s recommendation to maintain warranty.
6. Pipe Flashing: Pre-molded pipe / conduit flashing required for round penetrations per manufacturers recommendation to maintain warranty.

C. Cover Board: ASTM C208, Type II, Grade 2 cellulostic-fiber insulation board. ASTM C 1177, Type X, glass-mat, water-resistant gypsum substrate; 1/2 inch thick.

D. Walkway Pads: 30”x 30” x .300 thick slip resistant rubber polymer.

2.2 ROOF INSULATION

A. Cant Strip: Non-flammable perlite cants with 45° face slope and minimum 5” face dimension or as recommended by the roofing manufacturer.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II.

C. Fabricate tapered insulation with slope of 1/4 inch per 12 inches, unless otherwise indicated. Submit complete tapered insulation plan for approval.

D. Insulation Accessories: Corrosion resistance FM4470

2.3 ASPHALT MATERIALS (if applicable)
A. Asphalt for insulation and EPDM roofing: ASTM D312, Type III or IV
B. Asphalt Primer: ASTM D-41

PART 3 - EXECUTION

3.1 EXAMINATION

A. During the bid process and prior to the start of work, contractor shall examine all existing field conditions to incorporate all work required for a complete installation for each building noted.
B. Verify that substrate is visibly dry and free from moisture. Test for moisture in accordance with manufacturer’s installation requirements.
C. Substrate shall be signed off by manufacturer and certified installer prior to installing membrane.

3.2 INSTALLATION

A. Protect all exterior elevations of building from damage or staining. Contractor to provide tarps in sufficient sizes.
B. Clean substrate of dust, debris, moisture and other substances detrimental to roofing installation according to roofing system manufacturer’s written instructions. Remove all sharp projections.
C. Prior to the start of new work, manufacturer’s representative shall review and inspect the existing deck prior to installing the insulation. Manufacturer’s representative shall also review and inspect the entire system throughout the installation process, to include but not be limited to the tapered insulation, coverboard, EPDM membrane, flashing at all penetrations, curbs, corners, counter flashing, and all other roofing system components.
D. No insulation shall be left exposed at the end of a work day, both on the roof and on the ground. All insulation to stay covered at all times.
E. Stagger joints between rows of insulation; fill all gaps in excess of ¼”. Cut all insulation within ¼” of all terminations, nailers, projections etc.
F. Adhere insulation to wood deck in accordance with manufacturer’s requirements.
G. Adhere cover board to tapered insulation in accordance with manufacturer’s requirements. Required installation layout pattern shall comply with manufacturer requirements.
H. Install EPDM sheets in accordance with roofing system manufacturer’s written instructions and as follows:
   1. Adhered Roofing Membrane Installation:
      a. Install in strict accordance with manufacturers written instructions.
      b. Installation shall not commence without the presence of the manufacturer’s technical personnel.
c. Bonding adhesive shall be applied at rate required by roofing manufacturer.
d. Apply roofing membrane with side laps shingled with slope of roof deck, plan layout accordingly.

I. Seams: Clean and prime splices areas, applying splice tape, and firmly roll side and end laps of overlapping sheets. Seal exposed edges of sheet terminations.

J. Install sheet flashings and preformed flashing accessories and adhere to substrates. Protect roofing from damage and wear during remainder of construction period.

K. Walkway pads shall be installed at all access points (ladders, hatches, doorways, etc.) to the roof. Pads shall also be installed around all mechanical equipment which will require maintenance. Installation spacing shall comply with manufacturer requirements.

L. Correct deficiencies in or remove and reinstall roofing and sheet flashing that does not comply with requirements.

END OF SECTION 07531
SECTION 08110 – STANDARD STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE:

A. Temporary facilities and controls are specified in Section 01500. Cooperate in ensuring adequate protection.
B. General material, equipment and workmanship standards are specified in Section 01600.
C. Wood doors are specified in Section 08550.
D. Hardware is specified in Section 08710.
E. Glazing is specified in 08800.

1.2 SUBMITTALS

A. Submittal requirements and procedures are specified in Section 01301.
B. Submit shop drawings for work specified in this section. Indicate types of anchorage. Indicate method used to seal tops of exterior doors.
C. Submit product data showing conformity with requirements stated below. Indicate metals, corrosion protection, types of primers used and other data.

1.3 CODE COMPLIANCE

A. Exterior doors shall comply with the requirements of the State of Connecticut Basic Building Code. Doors shall be certified to meet required air infiltration limits.

PART 2 - MATERIALS

2.1 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 1011.
B. Cold-Rolled Steel Sheets: ASTM A 1008 or ASTM A 620, annealed, and free from scale, pitting rust and other defects.
C. Galvanized Steel Sheets: ASTM A 653/A 653M, A60 or G60 coating. All parts of exterior doors and frames shall be galvanized, mill-phosphatized stock bearing. Used galvanized material for interior doors and frames where scheduled for same.
   1. If interior parts of galvanized doors and frames are not galvanized, they shall be primed with rust-resistant primer, as specified below. If doors and frames scheduled to be galvanized contain parts which are not corrosion-protected by galvanizing or primer, they will be rejected by the Owner.

2.2 STEEL DOORS AND FRAMES

A. Products:
B. Steel Doors: Complying with ANSI 250.8 for level and model and ANSI A250.4 for physical-endurance level indicated, 1-3/4-inch-thick, unless otherwise indicated.

      a. Exterior doors shall have a “POLYSTYRENE” core providing a “U” factor of 0.26 and an “R” value of 3.75 or better.
      b. Provide steel doors that closely match the style and raised panel layout of the doors being replaced. Provide flush doors at locations where flush doors are being replaced, unless otherwise noted.

C. Hatchway Replacement Doors:

   1. Products:
      a. Gordon Corporation Replacement Door or approved equal.  
         (www.gordoncelladoor.com)
         1) Model RD or Model CD depending upon existing conditions.
         2) Foundation Plates: As required based upon existing conditions.
         3) Extensions: As required based upon existing conditions.

D. Frames: ANSI A250.8; conceal fastenings, unless otherwise indicated.

   1. Exterior frames shall be fabricated of 14 gauge, zinc coated carbon steel sheets of commercial quality, mill phosphate hot dipped galvanized conforming to ASTM A526 with designation ZF275 (A60).
   2. All frame corners shall be mitered or coped and continuously welded. All welds shall be ground smooth and finished with a coat of zinc rich primer.

E. Gauges:

   1. Interior frames: 16 gauge.
   2. Exterior frames: 14 gauge.
   3. Interior doors: 18 gauge.
   5. Reinforcement for surface applied hardware: 12 gauge plate or 14 gauge formed section.
   6. Lock, strike and flush blot reinforcement: 12 gauge plate or 14 gauge formed section.
   9. Louvers: 18 gauge frame and 20 gauge blades.

F. Glazing: For UL rated doors: UL approved ¼” clear polished wire glass with square or diamond pattern wire reinforcement. Provide UL labels on both doors and frames where indicated. Unless otherwise scheduled, “B labels” shall mean “1-1/2 hour B label”. Cores shall be as required for UL label. Doors and frames shall conform to the requirements of ASTM E 152-81A, including time-temperature curve performance.

G. Glazing Stops: Non-removable stops on outside of exterior doors and on secure side of interior doors; screw-applied, removable, glazing stops on inside. If screw type, grease screws to prevent rusting and mortar embedment.
H. Door Silencers: Three on strike jambs of single-door frames and two on heads of double-door frames.

I. Plaster Guards: Provide where mortar might obstruct hardware operation.

J. Supports and Anchors: Not less than 0.042-inch-thick galvanized steel sheet. Provide frame anchors of the proper type for adjoining construction.

K. Prepare doors and frames to receive mortised and concealed hardware according to ANSI A250.6 and ANSI A115 Series standards.

L. Reinforce doors and frames to receive surface-applied hardware.

M. Prime Finish: For non-galvanized steel, manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria. For galvanized steel, primer shall be zinc dust-zinc oxide primer or other primer certified by manufacturer for excellent adhesion to galvanized steel.

2.3 FINISHING

A. Thoroughly clean all contaminants from surface by washing with clean “Green label” solvent and wiping with clean cloths.

B. Treat with phosphate pretreatment.

C. Prime with specified primer. Cover all surfaces, including edges. Apply primer so that it penetrates seams.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Anchor work securely to adjacent construction.

B. Set frames accurately, plumb, and square. Brace until attached to permanent adjacent construction.

C. Fill frames with solid mortar where they are installed in masonry walls or partitions.

D. Place steel frames to comply with SDI 105.
   1. Fire-Rated Frames: Install according to NFPA 80.

E. Install doors to comply with ANSI A250.8. Provide galvanized shims as necessary to comply with SDI 122 and ANSI/DHI A115.1G.
   1. Fire-Rated Doors: Install with clearances specified in NFPA 80.
   2. Smoke-Control Doors: Comply with NFPA 105.

F. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer. Apply finish coats in accordance with Division 9 specifications.

END OF SECTION 08110
SECTION 08212 - STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 PROJECT CONDITIONS

A. This Section specifies products for renovation projects. The intent is to provide doors that closely match the style of existing doors. Some products specified in Part 2 may not be applicable to all installations. Matching of custom doors is not part of the work in this Section.

1.2 SECTION REQUIREMENTS

A. Division 1 – General Requirements shall be made a part of this section.

B. Hardware is specified in Section 08710.

C. Finish painting is specified in Section 09910.

D. Submittals: Product Data, Shop Drawings, door schedule including details of construction.


F. Fire-Rated Wood Doors: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing per NFPA 252. Test at atmospheric pressure NFPA 252. After 5 minutes, the neutral pressure level shall be 40 inches or less above the sill.

PART 2 - PRODUCTS

2.1 STILE AND RAIL DOORS

A. Interior Doors: WDMA Premium or Select grade made from Idaho white, lodgepole, ponderosa, or sugar pine with raised or flat panels. All interior raised panel doors shall match the existing door panel layout and shall be submitted to the Owner for review and approval.
   1. Quality grade: Custom.
   2. Doors shall have solid stiles and rails.
   3. Face veneer: Grad B hardwood for painted finish.
   4. Coordinate peep hole requirements with Owner.

B. Interior Fire-Rated Doors: WDMA Premium or Select grade made from Idaho white, lodgepole, ponderosa, or sugar pine with 1-3/4-inch thick stiles and rails and 1-3/8-inch thick raised panels. All interior raised panel doors shall match the existing door panel layout and shall be submitted to the Owner for review and approval.
   1. Core type: AWI Type FD ¾, with ¾ hour label. Doors and frames shall conform to the requirements of ASTM E 152-81A, including time-temperature curve performance. Fire rated doors shall have hinge inserts allowing full strength for full mortise hinges.
2.2 **FABRICATION AND FINISHING**

A. Factory fit doors to suit frame-opening sizes and to comply with referenced quality standard.

1. Provide 1/8-inch clearance at jambs, heads, and meeting stiles and 1/2 inch at bottom. At thresholds, provide 3/8-inch clearance.
2. Comply with NFPA 80 for fire-resistance-rated doors.

B. Factory machine doors for hardware that is not surface applied. Prep for thru-bolting on fire rated doors if recommended by door manufacturer.

C. Glaze doors and sidelights at factory.

D. Factory prime doors, including all surfaces, according to AWI.

E. Ship doors individually wrapped in protective packages.

PART 3 - EXECUTION

3.1 **INSTALLATION**

A. Install fire-rated wood door frames level, plumb, true, and aligned with adjacent materials. Countersink fasteners, fill surface flush, and sand smooth.

B. Install fire-rated doors to comply with NFPA 80.

C. Align and fit doors in frames with uniform clearances and bevels indicated below. Machine doors for hardware. Seal cut surfaces after fitting and machining.

1. Provide 1/8-inch clearance at jambs, heads, and meeting stiles and 1/8 inch at bottom. At thresholds, provide 1/4-inch clearance from bottom of door.

D. Align factory-fitted doors in frames for uniform clearances.

E. Repair, refinish, or replace factory-finished doors damaged during installation as directed by Owner’s representative.

F. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer. Apply finish coats in accordance with Division 9 specifications.

END OF SECTION 08212
SECTION 08311 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements shall be made a part of this section.

B. Submittals: Product Data.

C. Fire-Rated Access Doors and Frames: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing per the following:
   1. Vertical Access Doors: NFPA 252 or UL 10B.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 1011/A 1011M.

B. Cold-Rolled Steel Sheets: ASTM A 1008/A 1008M or ASTM A 620/A 620M.

C. Stainless-Steel Sheets: ASTM A 666, Type 304.

2.2 ACCESS DOORS AND PANELS

A. General: Provide Stainless steel access doors in areas with showers.

B. Flush, Insulated, Fire-Rated Access Doors: Prime-painted or Stainless-steel, self-latching units with automatic closer, with trimless frame.

C. Flush Access Doors with Exposed Trim: Prime-painted or Stainless-steel units.

D. Trimless, Flush Access Doors for Gypsum Board: Prime-painted steel or Stainless-steel units.

E. Locks: Flush to finished surface, key operated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install access doors and panels accurately in position. Adjust hardware and door and panels for proper operation.

B. Install fire-rated access doors and panels according to NFPA 80.

C. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer. Apply finish coats in accordance with Division 9 specifications.

END OF SECTION 08311
SECTION 08550 - WOOD WINDOWS

PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
   A. Division 1 - General Requirements shall be made a part of this section.
   B. Submittals: Product Data, Shop Drawings, and color Samples.

PART 2 - PRODUCTS
2.1 WOOD WINDOWS
   2. Basis of design is as follows:

   WINDOWS – For all locations, carefully salvage and reuse existing interior and exterior trim or provide new trim to match existing based on the condition of the trim at each window location. All rotted trim material shall be removed and replaced. Trim material and profiles shall match existing and must be submitted to and approved by the Owner prior to installation.

   b. Exterior Color: Submit manufacturer’s standard colors for approval.
   c. Interior Finish: Primed, ready for field painting by contractor or primed with factory applied topcoat.
   d. Interior Color: Submit manufacturer’s standard colors for approval.
   e. Wood Species: Pine
   f. Glass: Low-E Maximizer Plus insulating glass with argon gas filling.
   g. Sash Locks: Two (2) locks with concealed tilt mechanisms. Provide standard colors for approval.
   h. Sash Lifts: Submit manufacturer’s standard sash lifts for approval
   i. Security travel stops: maximum 6” opening (first floor only). In addition, provide vinyl snap in inserts in track to allow maximum window opening of 6”.
   j. Hardware Finish: Submit manufacturer’s standard finishes for approval.
   k. Window Sizes: Field measure as required for each individual project.
   l. Screens: Half size, with fiberglass mesh and aluminum frame. Color to be selected from manufacturer’s standard colors.
m. Cleaning: Top and bottom sash shall tilt inward 90° for easy cleaning.

n. Modern Divided Lights: Available in 7/8”, 1 1/8” or 1 ½” profiles. Adhered interior and exterior bars; spacers between glass.

1) To preserve the architectural and historic integrity of the buildings on campus, all new windows being installed must match the existing divided light pattern and color.

   a) Prior to ordering any windows, window shop drawings showing all relevant details and the divided light pattern, product data and samples must be submitted to and approved by the Owner for each specific project.

3. Interior Trim: Provide new trim as required. Trim material and profiles shall match existing and must be submitted to and approved by the Owner prior to installation.

4. Exterior Trim: Wrap window stops and trim with sheet aluminum. Provide manufacturer’s color selection for Owner’s approval.

5. Thermal Transmittance: Provide units with a whole-window R-value of 2.5 or greater at 15 MPH exterior wind velocity per AAMA 1503.

6. Provide simulated or true divided lites where indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

B. Remove existing sash and sash weights. Fill sash weight pockets with approved insulation materials in the frame cavity on the interior portion of the window frame, area adjacent to exterior of window frame remaining uninsulated.

   1. Exercise caution to avoid overlapping insulation materials across thermal barrier connectors.

   2. Exercise caution to avoid bridging of the two separated frame members.

C. Trim interior with new trim pieces as required.

D. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction. Apply caulk at all points between exterior building materials and outer frame; apply in a manner to ensure airtight and watertight continuous perimeter seal so as to prohibit seepage of cold air into the insulated cavity.

E. Touch up damaged paint on window trim to match existing finish color. Paint all new and replaced window trim to match existing.

F. Install window shade hardware. Cut existing window shades to fit new opening. Provide new window shades where missing or damaged.
G. Adjust operating panels, screens, and hardware for smooth operation and weathertight closure. Lubricate hardware and moving parts.

H. At no additional cost to owner, repair or replace window units not meeting specified performance requirements.

0.1 CLEANING

A. After installation, remove all sealants, calking, labels and other misplaced materials from all surfaces, including adjacent work.

B. Thoroughly clean window frames, casings, and glass using materials and methods recommended by the window and glass manufacturer that do not cause defacement of work.

END OF SECTION 08550
SECTION 08585 – SLIMLINE SECURITY SCREENS – LEVEL 5

PART 1 – GENERAL

1.1 Description
The screen shown on the plans and herein specified is manufactured by Avant Guards. The manufacturer's name and products have been used to establish the standard of construction and quality of workmanship required for this project. Manufacturers bidding on this project must be actively engaged in the fabrication of specified items for 3 years.

1.2 Submittals
Submit shop drawings to the Owner for review prior to the start of fabrication. Include details of attachment to surrounding materials and elevations showing the quantities and location of each screen required for the project.

1.3 Quality Assurance
Items provided in the section shall be manufactured and fabricated by firms with 3 years experience in type of work specified. Performance and testing must comply with sag, impact, and forced entry resistance tests of ANSI/SMA 6001-1990, American National Standard. Specifications for Protection Screens must meet the performance requirements for a Heavy Rating.

1.4 Delivery, Storage, and Handling
Before and during shipment to site, adequately protect products. Products should be stored in conditions that protect from damage. Installation shall be by installers experienced in type of work specified for respective item.

1.5 Inspection
Verify that openings fit allowable tolerances are plumb, level, provide a solid anchoring surface and comply with approved shop drawings. Plumb and align faces in a single plane and erect doors square and true adequately anchored. After completion of installation, screens shall be in working order and clean.

1.6 Warranty
Manufacturer will supply a written one-year warranty on all products.

1.7 References

1.8 3 ½” x 2 ¼” Installation, adjusting, and Clean up
Field measure all windows scheduled to receive security screens. Coordinate all fastening details and requirements with the manufacturer based on existing field conditions. Install in accordance with approved shop drawings and specifications. Erect guards and other work of this section, rigid, straight, and plumb with horizontal lines level. Secure connections and attachment. Adjust guards and hardware and leave in working order where applicable. Clean work of this section upon completion. Remove debris resulting from work of this section.

PART 2 – PRODUCT

2.1 Acceptable Manufacturers

Avant Guards Manufacturing
219 Cook Street
2.2 Slimline Security Screen Materials
The mainframe is 1"x 1" x 1/8"aluminum tubing. The corners of the mainframe shall be pneumatically inserted into the frame ends with an interference fit. The removable interlocking concealment plate extruded aluminum 1/16"thick shall be attached to the mainframe using tamper-resistant stainless steel screws. A brace is required for guards over 52"high. Scribe angles or channels are optional as per specification.

Infill Requirement:
18 gauge stainless perforated panel, black infill.

2.3 Fabrication
Welding shall comply with requirements of AWS. Grind welds smooth. Window guards, unless otherwise shown, shall cover entire window opening. Provide frame and accessories of size and construction as shown on drawings. Window guards over 5' wide or 8' high will be fabricated in two sections.

2.4 Paint and Finish
All interior and exterior surfaces of the mainframe and shall be thoroughly cleaned in a three-step bonderizing process. The surfaces shall receive an electro-statically applied thermoplastic polyester powder coating, which shall be applied and baked to a hard mar-resistant finish in a standard or custom color. Provide color samples to Owner for selection.

2.5 Locks and Hardware
Concealed 3 ½” x 2 ¼” F.P. butts brass pin hinges, to have 2 hinges for guards under 5’, and 3 hinges per guard 5’ and over. The infill hardware consists of bolts, clevises, stainless steel pins, oil tempered coil springs, washers, and full tempered steel 1/8” x 3/8” shock distributing bars.

Lock Options:
   Lift Quick
   Panic Push
   Push Down

END OF SECTION 08585
SECTION 08720 – WEATHERSTRIPPING & SEALS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Product Data: Submit manufacturer’s product data and installation instructions.

PART 2 - PRODUCTS

2.1 Perimeter Gasketing

A. Manufacturers

1. Pemko Manufacturing Company or approved equal.

   PO Box 3780, 4226 Transport Street, Ventura, CA 93003; Telephone: (800) 283-9988, (805) 642-2600; Fax: (805) 642-4109; E-mail: pemkosales@pemko.com; website: www.pemko.com

   a. Material / Finish: clear anodized aluminum or dark bronze anodized aluminum (Material/finish to be selected by Owner based on existing field conditions).

   b. Manufacturer Model Number: Pemko 29310CV or approved equal based on existing field conditions.

2.2 Brush Weatherstripping – Exterior Doors

1. Pemko Model #29326CP or approved equal based on existing field conditions.

   a. Material / Finish: clear anodized aluminum or dark bronze anodized aluminum (Material/finish to be selected by Owner based on existing field conditions).

2. Memtech Inc: Brush Door Seals or approved equal based on existing field conditions.

   a. 9033 General Drive, Plymouth, MI 48170. Telephone: 800-634-4471. Fax: 800-634-4472. Email: salesinfo@memtechbrush.com

3.2 Acoustic Weatherstripping

1. Pemko weatherstripping, compression: type 379CR, sizes as required for specific location.

2. Pembko door bottom compression: Type 4131CRL, size as required for specific location.

PART 3 – EXECUTION

3.1 Site Verification of Conditions:

A. Verify that site conditions are acceptable for installation of perimeter gasketing and brush weatherstrip.

B. Examine doors and frames for compliance with requirements for door and frame manufacturer’s installation tolerances, labeled fire door assembly construction, wall and floor construction and other conditions affecting performance.

C. Do not proceed with installation of perimeter gasketing or brush weatherstrip until unacceptable conditions are corrected.

3.2 Wood Door Preparation:
3.3 Steel Door and Frame Preparation:
   A. Drill and tap doors and frames for hardware per manufacturer’s positive pressure installation instructions.
   B. Ensure doors and frames are properly sized, plumb and square.
   C. Comply with ANSI A250.8/SDI-100.
   D. Mounting Location: Comply with the following requirements, unless otherwise indicated:
      1. Comply with manufacturer’s positive pressure installation instructions.
      2. Comply with ANSI A250.8/SDI-100.

3.4 Adjusting:
   A. Perform adjustments required to ensure that perimeter gasketing and brush weatherstrip function in compliance with manufacturer’s performance criteria prior to acceptance by Owner.

3.5 Cleaning:
   A. Remove any protective films and clean components as necessary following manufacturer’s recommended procedures.

3.6 Protection:
   A. Protect installed work from damage due to subsequent construction activity on the site.

3.7 Warranty:
   A. Guaranteed by manufacturer against defects in materials or workmanship for 3 years.
SECTION 08800 - GLAZING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data and 12-inch square Samples.

B. Fire-Resistance-Rated Assemblies: Products identical to those tested per NFPA 252 for doors and NFPA 257 for window assemblies; both labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.


D. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated.
   4. Flat Glass Manufacturer’s Association Publication.

E. Insulating-Glass Certification Program: Permanently marked with certification label of Insulating Glass Certification Council (IGCC) and/or Insulating Glass. Manufacturers Alliance (IGMA).

F. The following glass manufacturers are approved:
   1. Ford Motor Co., Glass Division.
   2. Guardian Industries Corp.
   3. Libby-Owens-Ford Co.
   4. PPG Industries.

G. Insulating glass shall be manufactured by a member of SIGMA or one of the manufacturers listed above.

PART 2 - PRODUCTS

2.1 GLASS

A. Glass for UL labeled doors and frames and other places where wire glass is indicated: UL approved for fire-resistant clear polished ¼” clear wire glass with pattern chosen by Owner. Provide samples for Owner selection.

B. Safety glass: One of the following conforming to the reference listed above and also ANSI Z97.1 and CPSC 16 CFR Part 1201; 42 FR 148:
1. Laminated safety glass for exterior doors, sidelights and transoms within 18” of floor and where indicated on the drawings; ¼” standard 2-ply conforming to reference listed above and ANSI Z97.1 and 16 CFR 1201, Category II.

2. Tempered glass for exterior doors, sidelights and transoms within 18” of floor and where indicated: ¼” clear tempered polished plate or float glass, conforming to reference listed above and also ANSI Z97.1 1972 or current. Glass shall bear visible, permanent labels.

C. Wired Glass: ASTM C 1036, Type II, Class 1, Quality q8; Form 1 polished with m1 diamond 0.25 inch thick.

D. Insulating glass: Sealed edge insulating glass composed of ¼” sheet of clear flat Glasson the inside face and ¼” float, PPG Solex Green, Low-E or equal on the outside and ½” dry airspace. Tempered glass for insulating glass shall conform to paragraph above. Seal shall consist of inner seal of polyisobutylene sealant and outer seal of silicone glazing sealant.

E. Mirror Glass: ASTM C 1036, Type 1, Class 1, Quality q1 or q2, silver coated per FS DDM411C, 6.0 mm thick, with edges beveled polished.

F. All other glass: Float glass, glazing or commercial quality. If thickness not indicated, it shall be determined from BOCA Basic National Building Code and glass manufacturer’s tables for sizes, wind load, and exposures where used. Owner will verify thicknesses.

2.2 FABRICATED GLASS PRODUCTS

A. Laminated Glass: Two sheets of ¼-inch thick glass, with urethane acrylate resin interlayer. Comply with ASTM C 1172.

B. Sealed Insulating-Glass Units: Preassembled units complying with ASTM E 2190 for Class CBA units, with two ¼-inch thick sheets of glass separated by a 1/2-inch dehydrated space filled with argon.

2.3 GLAZING

A. Elastic glazing compound: FS TT-G 410E (1) or as recommended by Flat Glass marketing Association. Owner will choose colors. Provide color samples.

B. Glazing sealant:
   1. For topping: Silicone glazing sealant; FS TT-S-1543A.
   2. For heel bead and metal joints: One part acrylic sealant, FS TT-S-00230.
   3. Color: As chosen by Owner. Provide color samples.

C. Glazing tape: Polyisobutylene-butyl tape, self shimming.

D. Interior tape: Closed cell sponge neoprene.

E. Shims: Silicone with durometer hardness of 40-60.

F. Setting blocks: Silicone with durometer hardness of 70-90.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with published recommendations of glass product manufacturers and organizations listed above, unless more stringent requirements are indicated. Notify Owner and proceed as directed by Owner.

B. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

C. Install interior glass with glazing compound or felt.

D. If glazing gaskets are specified with entrance system, glaze entrance and storefront system according to entrance system manufacturer’s recommendations.

E. Clean and protect glass and plastics as recommended by manufacturer and Flat Glass Marketing Association.

END OF SECTION 08800
SECTION 09290 - FIBERGLASS COMPOSITE STRUCTURAL COLUMNS

1.0 GENERAL

1.1 DESCRIPTION:

A. Columns shall be DuraCast/DuraLite Structural Fiberglass Composite Columns manufactured by Hartmann-Sanders based on the design of a square recessed pedestal column with square alto base and square cap.

B. Column design shall have the correct proportions based on Orders of Architecture, except when cut to a specific overall length; Square Recessed Pedestal Posts shall be used at 107 High Street.

C. DuraCast columns are manufactured from highly advanced fiberglass reinforced polymers (FRP).

D. All DuraCast shafts shall be 100% sanded.

E. All DuraCast shafts shall be classified as NFPA Class A and UBC Class 1, with a smoke density rating below 450 according to ASTM E84-01 testing criteria.

F. Caps shall be Polyurethane.

G. Bases shall be Polyurethane.

H. Plinths shall be Polyurethane.

1.2 SUBMITALS

A. Submit Hartmann-Sanders product data and shop drawings clearly marked to show column requirements.

2.0 PRODUCTS

2.1 ACCEPTABLE MANUFACTURER:

A. First Class Building Products, Inc
3600 Dallas Highway Suite 230-387
Marietta, Georgia  30064
Tel:  770-514-8141     Fax: 770-514-0731

B. Hartmann-Sanders Manufacturing Company
1700 West Grand Avenue
Gadsden, AL 35901
B. Approved Equal.

2.2 MATERIALS

A. All fiberglass columns shall be manufactured from advanced fiberglass reinforced polymers (FRP).

3.0 EXECUTION

3.1 INSTALLATION

A. Follow manufacturer’s detailed installation procedures.

1. Determine the position of the plinth by dropping a plumb line from the center of the soffit beam to the floor. Mark this point on the floor with a "X". This mark is where you will center the plinth so that the top of the shaft will align with the soffit.

2. Measure the overall height. Raise the soffit or porch slightly with brace for easy installation of the columns.

3. Trim column shaft on the bottom end only. Trim with an abrasive saw. Finish both top and bottom of shaft with a rasp to ensure an even load distribution around the entire circumference.

4. Slide cap over top of column shaft. Let cap slide down to rest on neck mold temporarily until shaft is correctly positioned. (If installing a square column, slide neck mould over top of shaft to desired location. Fasten neck mould to shaft. Caulk between neck mould and shaft.)

5. Slide base/plinth onto column shaft from bottom.

6. Place column in a vertical position with load centered over column shaft with even distribution around bearing surfaces.

7. If installation requires that column be secured in place prior to bearing load, use small L brackets. Be careful to ensure L brackets do not interfere with seating of cap and base. Note: To secure bracket to column, drill hole in shaft and use through bolts. Do not use screws.

8. Remove brace to allow load to bear on column shaft.
9. Slide cap up to soffit and attach to soffit using corrosion resistant type screws. Attach base/plinth to floor using appropriate fasteners.

10. Caulk between the cap and the soffit, the cap and shaft, and the base and the shaft for a finished appearance.

3.2 PAINTING/FINISHING

A. Make sure all surfaces are clean prior to painting. Use mineral spirits if oil or alkyd products are used. Warm soapy water should be used if latex products are utilized.

B. It is necessary to sand the column and caps and base/plinths prior to priming and painting. Some filling may be required. Note: The surface on polyurethane caps and base/plinths must be thoroughly scuff sanded with 120 grit sand paper and wiped clean prior to priming and painting.

C. Alkyd or oil based primer and paint are recommended. Latex products can be used, but additional sanding is required. Only alkyd or oil based primer and paint must be used on DuraWound columns, caps, and base/plinths.

D. Use a good, high quality exterior paint. At least one coat of primer and two coats of paint should be applied.

E. Follow paint manufacturer’s instructions concerning use within temperature ranges for best results.

F. Do not use paint or solvents containing acetone.

3.3 WARRANTY

A. All fiberglass columns and polyurethane, fiberglass components, and decorative capitals have a Limited Lifetime Warranty.

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Through continual development of both processes and materials, we have been able to provide significant product improvements while simultaneously reducing the impact on the environment.

Since our inception, we made a commitment to use only products that demonstrate the highest level of performance benefits. Often these performance benefits are achieved by utilizing materials that are more environmentally friendly. An example of such a change is our commitment to coating all of our products with water base paints, which reduces the greenhouse effect and exceeds government VOC regulations. The use of water based coatings not only virtually eliminate VOC emissions but also increase adhesion, UV protection, and recoating performance of the coatings.

Our polyurethane products are created from a chemical reaction that uses water, not CFC’s, HCFC’s, or any other ozone depleting compounds, to produce the foaming action.

All of our products are chemically stable and non-reactive, and do not emit toxic gases.

Spectis uses materials that contain post-consumer content which reduces landfill loading.

Also, all of our waste materials are routed for recycling.

Fire Rated Products

In addition to our standard polyurethane products, Spectis offers polyurethane products with either a Class A or Class B fire rating as tested by Underwriters Laboratories in accordance with UL 723, “Test for Surface Burning Characteristics of Building Materials”.

If your project requires non-combustible products, Spectis also manufactures most of its extensive catalogue items in both glass fibre reinforced gypsum (GFRG) and glass fibre reinforced concrete. (GFRC) For your next project, which requires Fire ratings, call your Spectis Customer Service Representative for more information and pricing.
BALUSTRADE SYSTEMS

NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.
SPECTIS RESERVES THE RIGHT TO HOLLOW OUT THE BACK OF ANY PRODUCT WITHOUT NOTICE. SOME PRODUCTS MAY BE MADE AS ASSEMBLIES.

BAL 2000
- 7/8” “M” Dimension
- 2” Max. Space 4” Ball Rule
- 1 13/16” Hole Saw

For Fossil Stone styles of this baluster refer to BAL 2031FS on page 10

BAL 2000-25EXT33
- 7/8” “M” Dimension
- 2 1/16” Max. Space 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2000-25EXT35
- 7/8” “M” Dimension
- 2 1/16” Max. Space 4” Ball Rule
- 1 13/16” Hole Saw

BALUSTER DISPLAY UNITS

BD 100
Including RAL 2100T, RAL 2100B railing with two BAL 2000-25 balusters

BD 101
Including RAL 2100T, RAL 2100B railing with one BAL 2000-25 and one BAL 2031-25FS baluster

BAL 2001-25
- 7/8” “M” Dimension
- 2 1/4” Max. Space 4” Ball Rule
- 1 7/8” Hole Saw

BAL 2002-20
- 3” “M” Dimension
- N/A Max. Space 4” Ball Rule
- 2” Hole Saw
To meet most building code regulations, a 4” ball can’t pass through the widest opening between balusters. Purchaser must check for system suitability in their area. Spectis makes no guarantee of suitability on any specific application.

NOTE:
- BAL 2000-25 assembled using RAL 2100T & 2100B spaced at the 4” Ball Rule, exceeds BOCA requirements for guard railing design in a 10’ assembly. Call for information.
- PIPE EXTENDS 1” FROM END OF BALUSTERS. Measurements are SPECIFIC for each baluster.
- Balusters and railings are reinforced with PVC, steel, aluminum or fiberglass.
- See pages 229-231 for complete balustrade installation instructions.
NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

Photo above illustrates the following Spectis products: baluster BAL 2000-25, rail RAL 2100T&B and custom newel post & newel cap.

BAL 2011-20
- 1” “M” Dimension
- 2” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2012-25
- 2 1/4” “M” Dimension
- N/A Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2013-29
- 2 1/4” “M” Dimension, N/A for BA2013-29H
- N/A Max. Space
- 4” Ball Rule
- 2 1/16” Hole Saw

BAL 2015
- 0” “M” Dimension
- 4” Max. Space
- 4” Ball Rule
- 1 1/16” Hole Saw

BAL 2016-27
- 2” “M” Dimension
- 0” Max. Space
- 4” Ball Rule
- 1 9/16” Hole Saw

BAL 2017-22
- 2 3/4” “M” Dimension
- N/A Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2018
- 0” “M” Dimension
- 4” Max. Space
- 4” Ball Rule
- 1 1/16” Hole Saw
NOTE:

PIPE EXTENDS 1” FROM END OF BALUSTERS. Measurements are SPECIFIC for each baluster.

Photo illustrates the use of the following Spectis products: BAL 2019, and RAL 2105T & B.

**BAL 2019**
- 3/4” “M” Dimension  •  2 1/2” Max. Space 4” Ball Rule  •  1 1/16” Hole Saw
Notice:
PL Premium Adhesive must be used on all bedding/butt joints.

Photo above illustrates the use of the following Spectis products: baluster BAL 2000-25 and curved rail RAL 2100 top & bottom.

**BAL 2022-23**
- 1” “M” Dimension
- 2” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

**BAL 2023-18**
- 1 1/2” “M” Dimension
- 3” Max. Space
- 4” Ball Rule
- 13/16” Hole Saw

**BAL 2024-26**
- 1” “M” Dimension
- 2” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

**BAL 2024-26EXT36**
- 1” “M” Dimension
- 3” Max. Space
- 4” Ball Rule
- 13/16” Hole Saw

**BAL 2025-23**
- 1 1/4” “M” Dimension
- 1 1/2” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

**BAL 2026-16**
- 1 1/4” “M” Dimension
- 1 1/2” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw
NOTE:
PIPE EXTENDS 1" FROM END OF BALUSTERS.
Measurements are SPECIFIC for each baluster.

BAL 2027
Dimensions refer to all BAL 2027 except BAL 2027-14 dimensions above
• 1 1/4" “M” Dimension
• 1 3/8” Max. Space 4” Ball Rule
• 1 13/16” Hole Saw

BAL 2027-14
• 1 1/8” “M” Dimension
• 1 3/4” Max. Space 4” Ball Rule
• 1 13/16” Hole Saw

BAL 2027-19
BAL 2027-20
BAL 2027-20FS
• FOSSIL STONE

BAL 2027-21
BAL 2027-22
BAL 2027-22FS
• FOSSIL STONE

BAL 2027-22EXT24
BAL 2027-26
BAL 2027-26CF
• CONCRETE FINISH

BAL 2027-22EXT30
BAL 2027-29
BAL 2027-29EXT32
BAL 2027-29EXT32FS
• FOSSIL STONE

BAL 2027-29EXT34
BAL 2027-29EXT35
BAL 2027-26EXT36
Photo above illustrates the use of the following Spectis products:
baluster BAL 2019, rail RAL 2104T & B, newel post NP 2207 and
newel cap NC 2307.

• 2” “M” Dimension  • 3 1/4” Max. Space 4” Ball Rule
• N/A Hole Saw

Finish: All Spectis' products are shipped “double primed” with an
texture latex paint and are ready for use. We recommend
final finishing after installation is complete for the most consistent
appearance possible. Please see “finishing” recommendations
(on page 233) for more information.
PIPE EXTENDS 1” FROM END OF BALUSTERS. Measurements are SPECIFIC for each baluster.

**NOTE:**

- BAL 2034-28
  - 1 7/8” “M” Dimension
  - 1/4” Max. Space
  - 4” Ball Rule
  - 2 9/16” Hole Saw

- BAL 2034-28EXT35
  - 2 1/2” “M” Dimension
  - N/A Max. Space
  - 4” Ball Rule
  - 2 9/16” Hole Saw

- BAL 2035-28
  - 2” “M” Dimension
  - 0” Max. Space
  - 4” Ball Rule
  - 2 9/16” Hole Saw

- BAL 2036-21
  - 1 1/2” “M” Dimension
  - 1” Max. Space
  - 4” Ball Rule
  - 1 13/16” Hole Saw

- BAL 2036-29
  - 1” “M” Dimension
  - 7/8” “M” Dimension
  - 2 1/4” Max. Space
  - 4” Ball Rule
  - N/A for BAL2039-21

- BAL 2037-26
  - 1 3/4” “M” Dimension
  - 1/2” Max. Space
  - 4” Ball Rule
  - 1 13/16” Hole Saw

- BAL 2038-36
  - 1” “M” Dimension
  - 2” Max. Space
  - 4” Ball Rule
  - 1 13/16” Hole Saw

- BAL 2039-18
  - 7/8” “M” Dimension
  - 2 1/4” Max. Space
  - 4” Ball Rule
  - 1 11/16” Hole Saw, N/A for BAL2039-21

- BAL 2039-18EXT21
  - 2” “M” Dimension
  - 0” Max. Space
  - 4” Ball Rule
  - 2 9/16” Hole Saw

- BAL 2040-23
  - 2” “M” Dimension
  - 0” Max. Space
  - 4” Ball Rule
  - 2 9/16” Hole Saw
BALUSTRADE SYSTEMS

NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

Photo above illustrates the following Spectis products:
blocks BL 2470 & BL 2471, baluster BAL 2041-29FS, and rail RAL 21087-FS top fossil stone texture.
NOTE:

PIPE EXTENDS 1" FROM END OF BALUSTERS.
Measurements are SPECIFIC for each baluster.

Photo above illustrates the following Spectis products: baluster BAL 2059-18, curved rail RAL 2105 top & bottom, newel post NP 2212, newel cap NC 2319, custom arch with flanker MD 1252 and custom pilasters.
BALUSTRADE SYSTEMS

NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

BAL 2053-28
• 1 1/4” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 1 9/16” Hole Saw

BAL 2053-36
• 1 1/4” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 1 9/16” Hole Saw

BAL 2054-24SS
• 1 1/2” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 2 9/16” Hole Saw

BAL 2055-32
• 1 1/4” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 1 1/16” Hole Saw

BAL 2056-19
• 1” “M” Dimension
• 2 1/8” Max. Space 4” Ball Rule
• 2 3/16” Hole Saw

BAL 2057-33
• 1 1/4” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 1 9/16” Hole Saw

BAL 2058-24
• 7/8” “M” Dimension
• 2 1/4” Max. Space 4” Ball Rule
• 1 3/16” Hole Saw

BAL 2059
• 1” “M” Dimension
• 2” Max. Space 4” Ball Rule
• 2 1/16” Hole Saw

BAL 2060-12
• 0” “M” Dimension
• 4” Max. Space 4” Ball Rule
• 2 9/16” Hole Saw

BAL 2061-40
• 7/8” “M” Dimension
• 2 1/4” Max. Space 4” Ball Rule
• 1 3/16” Hole Saw

BAL 2059-18
BAL 2059-24
BAL 2059-27

BAL 2059-18
• 1 1/4” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 1 9/16” Hole Saw

BAL 2059-24
• 1 1/4” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 1 9/16” Hole Saw

BAL 2059-27
• 1 1/4” “M” Dimension
• 1 1/2” Max. Space 4” Ball Rule
• 1 9/16” Hole Saw
Photo above illustrates Spectis products: custom gable end with blocks BL 2593 and decorative balusters BAL 2067-24 left and right.

NOTE:
PIPE EXTENDS 1” FROM END OF BALUSTERS.
BALUSTRADE SYSTEMS

BAL 2070-29
- 1 3/4” “M” Dimension
- 1/2” Max. Space
- 4” Ball Rule
- 1 3/16” Hole Saw

BAL 2071-30
- 1/2” “M” Dimension
- 3” Max. Space
- 4” Ball Rule
- 3 1/16” Hole Saw

BAL 2072-27
- 1/2” “M” Dimension
- 3” Max. Space
- 4” Ball Rule
- 3 1/16” Hole Saw

BAL 2073-38
- 2 3/4” “M” Dimension
- N/A Max. Space
- 4” Ball Rule
- 2 9/16” Hole Saw

BAL 2074-20
- 3/4” “M” Dimension
- 2 1/2” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2075-25FS
- 0” “M” Dimension
- 4” Max. Space
- 4” Ball Rule
- 1 1/16” Hole Saw

BAL 2076-24
- 1 1/4” “M” Dimension
- 1 1/2” Max. Space
- 4” Ball Rule
- 13/16” Hole Saw

BAL 2077-31
- 2 1/4” “M” Dimension
- N/A Max. Space
- 4” Ball Rule
- 3 1/16” Hole Saw

BAL 2078-10
- 1 1/4” “M” Dimension
- 1 1/2” Max. Space
- 4” Ball Rule
- 13/16” Hole Saw

BAL 2079-20
- 1” “M” Dimension
- 2” Max. Space
- 4” Ball Rule
- 1 9/16” Hole Saw

NOTE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.
NOTE:

PIE EXTENDS 1" FROM END OF BALUSTERS.
Measurements are SPECIFIC for each baluster.

Photo above illustrates the following Spectis products: baluster BAL 2078-10.

Photo above illustrates the following Spectis products: baluster BAL 2027-26CF, rail RAL 2100T & B-CF, newel post NP 2208-CF and newel cap NC 2349-CF concrete finish.
BALUSTRADE SYSTEMS

NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

BAL 2088-15
- Half Baluster
- 1 5/8" "M" Dimension
- 1 1/16" Max. Space
- 4" Ball Rule
- 1 3/4" Hole Saw

BAL 2088-30
- Half Baluster
- 1 1/2" "M" Dimension
- 1 15/16" Max. Space
- 4" Ball Rule
- 2" Hole Saw

BAL 2089-23
- 1 1/2" "M" Dimension
- 1" Max. Space
- 4" Ball Rule
- 2" Hole Saw

BAL 2090-15
- 1 5/8" "M" Dimension
- 1 1/16" Max. Space
- 4" Ball Rule
- 1 3/4" Hole Saw

BAL 2091-24
- 1 1/32" "M" Dimension
- 1 7/8" Max. Space
- 4" Ball Rule
- 1 1/4" Hole Saw

BAL 2092-17
- 7/16" "M" Dimension
- 3 3/16" Max. Space
- 4" Ball Rule
- 7/8" Hole Saw

BAL 2093-25
- 1" "M" Dimension
- 2" Max. Space
- 4" Ball Rule
- 1 3/4" Hole Saw

BAL 2094-21
- 1 5/8" "M" Dimension
- 1 1/16" Max. Space
- 4" Ball Rule
- 1 1/4" Hole Saw

BAL 2095-23
- 1 1/32" "M" Dimension
- 1 15/16" Max. Space
- 4" Ball Rule
- 2 5/8" Hole Saw

BAL 2096-24EXT30
- 1 1/16" "M" Dimension
- 1 7/8" Max. Space
- 4" Ball Rule
- 1 1/4" Hole Saw
Spectis Balusters are built to last.

Extended balusters for stairs are available. Contact your customer service representative for information.

Photo illustrates Spectis products: rail RAL 2105 top & bottom, baluster BAL 2019, newel post NP 2206 and newel cap NC 2305.

NOTE:
Pipe extends 1" from end of balusters. Measurements are specific for each baluster.

WOOD POLYURETHANE

SPECTIS BALUSTERS

BAL 2097-33P
- 1 1/16" "M" Dimension
- 1 7/8" Max. Space 4" Ball Rule
- 1" Hole Saw

BAL 2097-33
- 1 1/16" "M" Dimension
- 1 7/8" Max. Space 4" Ball Rule
- 1" Hole Saw

BAL 2098-26
- 1 5/16" "M" Dimension
- 2 1/16" Max. Space 4" Ball Rule
- 1 3/4" Hole Saw

BAL 2099-24
- 3" "M" Dimension
- N/A Max. Space 4" Ball Rule
- 2 5/8" Hole Saw

BAL 2200-28
- 1 1/16" "M" Dimension
- 1 7/8" Max. Space 4" Ball Rule
- 2 1/8" Hole Saw
NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

BAL 2201-24
- 1 1/4" "M" Dimension
- 1 7/16" Max. Space
- 4" Ball Rule
- 3 3/4” Hole Saw

BAL 2202-19
- 2" "M" Dimension
- 0" Max. Space
- 4" Ball Rule
- 2 1/8" Hole Saw

BAL 2203-30
- 7/16" "M" Dimension
- 3 1/8" Max. Space
- 4" Ball Rule
- 1 1/4" Hole Saw

BAL 2204-24
- 1 7/8" "M" Dimension
- 1/4" Max. Space
- 4" Ball Rule
- 2 1/8" Hole Saw

BAL 2205-28
- 1 9/16" "M" Dimension
- 3/4" Max. Space
- 4" Ball Rule
- 2 1/8" Hole Saw

BAL 2206-10
- 17/32" "M" Dimension
- 2 13/16" Max. Space
- 4" Ball Rule
- 3/4” Hole Saw

BAL 2207-17
- 1" "M" Dimension
- 1 7/8" Max. Space
- 4" Ball Rule
- 1 13/16” Hole Saw

BAL 2208-25
- 17/32" "M" Dimension
- 1 7/16" Max. Space
- 4" Ball Rule
- 1 13/16” Hole Saw

BAL 2209-21
- 27/32" "M" Dimension
- 2 3/16" Max. Space
- 4" Ball Rule
- 1 1/4” Hole Saw

BAL 2210-22
- 15/16" "M" Dimension
- 2" Max. Space
- 4" Ball Rule
- 2 9/16” Hole Saw
NOTE:
PIPE EXTENDS 1" FROM END OF BALUSTERS.
Measurements are SPECIFIC for each baluster.

BAL 2211
- 3/4” “M” Dimension
- 1 13/16” Hole Saw

BAL 2212-35
- 1 1/2” “M” Dimension
- 7/8” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2213-19
- 17/32” “M” Dimension
- 2 1/16” Max. Space
- 4” Ball Rule
- 3/4” Hole Saw

BAL 2214-26
- 23/32” “M” Dimension
- 2 7/16” Max. Space
- 4” Ball Rule
- 3/4” Hole Saw

BAL 2215-29.75
- 1 1/2” “M” Dimension
- 7/8” Max. Space
- 4” Ball Rule
- 2 1/8” Hole Saw

BAL 2216-20
- 25/32” “M” Dimension
- 2 5/16” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2217-28
- 0” “M” Dimension
- 3 7/8” Max. Space
- 4” Ball Rule
- 3/4” Hole Saw

BAL 2218-25
- 7/8” “M” Dimension
- 2 1/8” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

BAL 2219-17
- 1 3/16” “M” Dimension
- 1 1/2” Max. Space
- 4” Ball Rule
- 3/4” Hole Saw

BAL 2220-28
- 0” “M” Dimension
- 3 7/8” Max. Space
- 4” Ball Rule
- 2 9/16” Hole Saw
**NEWCASTLE**

**BALUSTRADE SYSTEMS**

**NOTICE:**

PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

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**BAL 2221-19**
- 1 9/32” “M” Dimension
- 1 5/16” Max. Space
- 4” Ball Rule
- 1 1/4” Hole Saw

**BAL 2222-30**
- 3/8” “M” Dimension
- 3 1/8” Max. Space
- 4” Ball Rule
- 2 1/8” Hole Saw

**BAL 2223-25**
- 2” “M” Dimension
- N/A Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

**BAL 2224-22**
- 21/32” “M” Dimension
- 2 9/16” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

**BAL 2225-24**
- 0” “M” Dimension
- 3 7/8” Max. Space
- 4” Ball Rule
- 3/4” Hole Saw

**BAL 2225-27**
- 1 1/2” “M” Dimension
- 1 1/2” Max. Space
- 1 3/4” Hole Saw

**BAL 2226-19**
- 29/32” “M” Dimension
- 2 1/16” Max. Space
- 4” Ball Rule
- 1 1/4” Hole Saw

**BAL 2227-36**
- 9/16” “M” Dimension
- 2 3/4” Max. Space
- 4” Ball Rule
- 1 1/4” Hole Saw

**BAL 2228-11**
- 7/8” “M” Dimension
- 2 1/8” Max. Space
- 4” Ball Rule
- 1 1/4” Hole Saw

**BAL 2229-13**
- 5/16” “M” Dimension
- 3 1/4” Max. Space
- 4” Ball Rule
- 1 13/16” Hole Saw

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**22**
NOTE:

PIPE EXTENDS 1" FROM END OF BALUSTERS. Measurements are SPECIFIC for each baluster.
BALUSTRADE SYSTEMS

NOTICE:

PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

- BAL 2240-28
  - 7/8" "M" Dimension
  - 2 1/8" Max. Space
  - 4" Ball Rule
  - 3/4" Hole Saw

- BAL 2241-31
  - 15/16" "M" Dimension
  - 2" Max. Space
  - 4" Ball Rule
  - 1 1/2" Hole Saw

- BAL 2241-31 EXT39
  - 15/16" "M" Dimension
  - 2" Max. Space
  - 4" Ball Rule
  - 3/4" Hole Saw

- BAL 2242-23
  - 1 3/16" "M" Dimension
  - 2 1/4" Max. Space
  - 4" Ball Rule
  - 3/4" Hole Saw

- BAL 2243-21
  - 1 7/32" "M" Dimension
  - 1 7/16" Max. Space
  - 4" Ball Rule
  - 2 9/16" Hole Saw

- BAL 2244-21
  - 1 1/16" "M" Dimension
  - 2 1/2" Max. Space
  - 4" Ball Rule
  - 3/4" Hole Saw

- BAL 2245-29
  - 1 17/32" "M" Dimension
  - 1 3/16" Max. Space
  - 4" Ball Rule
  - 2 9/16" Hole Saw

- BAL 2246-21
  - 0" "M" Dimension
  - 3 7/8" Max. Space
  - 4" Ball Rule
  - 2 1/8" Hole Saw

- BAL 2247-22
  - 31/32" "M" Dimension
  - 1 15/16" Max. Space
  - 4" Ball Rule
  - 3/4" Hole Saw

Photo above illustrates the use of Spectis balusters BAL 2207-26CF, railings RAL 2100T-CF & RAL 21008-CF, newel post NP 2208-CF and cap NC 2349-CF.
NOTE:

PIPE EXTENDS 1” FROM END OF BALUSTERS. Measurements are SPECIFIC for each baluster.

Photo above illustrates the use of the following Spectis products: balusters BAL 2019, rails RAL 2110T & B, custom newel post and cap.

Photo above illustrates the use of the following Spectis products: decorative panels RP 3902.

DECORATIVE PANELS

RP 2418
- 1 3/8” Projection
- 18” Height
- 24” Width
- Decorative Only

RP 3900
- 1 3/4” Projection
- 28” Square
- Decorative Only

RP 3907
- 2” Projection
- 22” Square
- Decorative Only

RP 3901
- 1 1/2” Projection
- 27 3/4” Square
- Decorative Only

RP 3902
- 1” Projection
- 28” Square
- Decorative Only

RP 3909
- 2” Projection
- 38 3/4” Square
- Decorative Only

RP 3908
- 4” Projection
- 40 1/2” Height
- 42” Width
- Decorative Only

RP 3911
- 2” Projection
- 32” Height
- 44” Width
- Decorative Only
**NOTICE:**
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

**RAILINGS**

**RAL 2100T**
- 4” I.D. PVC Pipe
- 8’ • 10’ • 12’ Lengths

**RAL 2100B**
- 4” I.D. PVC Pipe
- FOSSIL STONE • 12’ Length

**RAL 2100T-FS**
- 4” I.D. PVC Pipe
- FOSSIL STONE
- 12’ Length

**RAL 2100B-FS**
- 4” I.D. PVC Pipe
- FOSSIL STONE
- 12’ Length

**RAL 2100T-CF**
- 4” I.D. PVC Pipe
- CONCRETE FINISH

**RAL 2100B-CF**
- 4” I.D. PVC Pipe
- CONCRETE FINISH

**RAL 2102T**
- 2 7/8” I.D.
- Aluminum Pipe • 13’ Length

**RAL 2102B**
- 4” I.D. PVC Pipe • 13’ Length

**RAL 2102T-FS**
- 4” I.D. PVC Pipe
- FOSSIL STONE
- 12’ Length

**RAL 2102B-FS**
- 4” I.D. PVC Pipe
- FOSSIL STONE
- 12’ Length

**RAL 2102T-CF**
- 4” I.D. PVC Pipe
- CONCRETE FINISH

**RAL 2102B-CF**
- 4” I.D. PVC Pipe
- CONCRETE FINISH

**RAL 2104T**
- 1 3/4” I.D. Aluminum Pipe
- 8’ • 10’ • 12’ Lengths

**RAL 2104B**
- 1 3/4” I.D. Aluminum Pipe
- 8’ • 10’ • 12’ Lengths

**RAL 2105T**
- 2 3/16” I.D. Aluminum Pipe
- 8’ • 10’ • 12’ Lengths

**RAL 2105B**
- 2 3/16” I.D. Aluminum Pipe
- 8’ • 10’ • 12’ Lengths

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- BAL 2000-2S assembled using RAL 2100T & 2100B spaced at the 4”Ball Rule, exceeds BOCA requirements for guard railing design in a 10’ assembly. Call for information.
- PIPE EXTENDS 1” FROM END OF BALUSTERS.
- Balusters and railings are reinforced with PVC, steel, aluminum or fiberglass.
- See pages 229-231 for complete balustrade installation instructions.
BALUSTRADE SYSTEMS

RAILINGS

RAL 2110T
RAL 2110B
• 2 3/16" I.D. Aluminum Pipe
• 12' Length

RAL 2111T
RAL 2111B
• 2 7/8" I.D. Aluminum Pipe
• 12' Length

RAL 2113T-SS
RAL 2113B-SS
• 12' Length • STUCCO STONE
• 4" I.D. PVC Pipe

RAL 2114T
RAL 2114B
• 12' Length • 1" I.D. Aluminum Pipe

RAL 2119T
RAL 2119B
• 3" I.D. PVC Pipe
• 8' • 10' • 12' Lengths

RAL 2121T
RAL 2121B
• 2 3/16" I.D. Aluminum Pipe
• 8' • 10' • 12' Lengths

RAL 2125T
RAL 2125B
• 1 3/4" I.D. Aluminum Pipe
• 12' Length

PREDRILLED RAIL
* Optional
Railings can be predrilled for balusters.
**NOTICE:**

PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

---

**RAILINGS**

**RAL 2103B**
- **12’ Length**
- **No Pipe**
- **Decorative Only**

**RAL 2106T**
- **12’ Length**
- **No Pipe**
- **Decorative Only**

**RAL 2107T**
- **2 3/16” I.D. Aluminum Pipe**
- **12’ Length**

**RAL 2108T-FS**
- **1 1/2” I.D. PVC Pipe**
- **FOSSIL STONE**
- **8’ 9”• 12’ Length**

**RAL 2112T**
- **12’ Length**
- **No Pipe**
- **Decorative Only**

**RAL 2115T**
- **10’ Length**
- **No Pipe**
- **Decorative Only**

**RAL 2116T**
- **12’ Length**
- **2 3/16” I.D. Aluminum Pipe**

**RAL 2117T**
- **8’ • 12’ Length**
- **No Pipe**
- **Decorative Only**

**RAL 2120B**
- **1 3/4” I.D. Aluminum Pipe**
- **8’ • 10’ • 12’ Lengths**

**RAL 2122B**
- **1” I.D. Aluminum Pipe**
- **8’ • 10’ • 12’ Lengths**

**RAL 2124B**
- **8’ Length**
- **4” PVC Pipe**

**RAL 2126T**
- **12’ Length**
- **2” PVC Pipe**

---

**CURVED RAIL**

Curved railings available by quotation. Curved rails are measured to the centre line. Use newel posts every 8 feet. Use support blocks at the centre point between newel posts.

---

**FACTORY ASSEMBLED BALUSTER & RAIL**

(Optional)

---

**FACTORY PAINTED**

---

**NOTE:** RAILS ARE TO BE TERMINATED AT NEWEL POSTS, WALLS, OR COLUMNS AND NOT TO EACH OTHER. ANY OTHER APPLICATION WILL NOT BE COVERED BY WARRANTY.

I.D. refers to inside diameter. On spans of more than 8 feet, Spectis recommends installing support blocks. On curved rails a support block should be installed every 4 feet of arc. Refer to page 37. Hardware is available to terminate railings. Refer to page 37.
NEWEL POSTS
CAPS SOLD SEPARATELY

NP 2200

7 1/4"

5” I.D. PVC Pipe

NP 2201

12"

6” I.D. PVC Pipe

NP 2206

8"

6” I.D. PVC Pipe

NP 2207

5 1/2"

4” I.D. PVC Pipe

NP 2220

13"

6” I.D. PVC Pipe

NP 2208FS

NP 2208CF

12"

12"

FOSSIL STONE OR CONCRETE FINISH

6” I.D. PVC Pipe

NP 2209FS

12"

7 3/4"

FOSSIL STONE

6” I.D. PVC Pipe

Panel - 6 7/8” x 34 7/8”

NP 2210

6” I.D. PVC Pipe

Panel - 7 3/4” x 32 1/2”

NP 2211FS

FOSSIL STONE

5” I.D. PVC Pipe

Panel - 5 1/2” x 32 1/2”

Newel Posts

S

Straight

C

Corner

E

End

A

Angle

- Newel Posts available as S, C, E or A styles as shown above.
- Newel Caps are a separate piece. See pages 34-35 for selection.
- Newel Posts can be cut to desired height.
- See page 37 for Newel Post Hardware.
- I.D. refers to inside diameter/O.D. refers to outside diameter.

NP 2200, NP 2201, NP 2206, NP 2207 & NP 2220 CAN BE DRESSED UP WITH APPLIED MOULDINGS. THE HEIGHT OF THE NEWEL POST MUST BE SPECIFIED ON THE ORDER.

MD 1128

MD 1043

MD 1172
**NEWEL POSTS**

**CAPS SOLD SEPARATELY**

**NP 2212**
- 6" I.D. PVC Pipe
- 48"
- 30"

**NP 2214**
- 4" I.D. PVC Pipe
- 32 3/4"
- 29 1/2"

**NP 2215**
- 6" I.D. PVC Pipe
- 9"

**NP 2216**
- 6" I.D. PVC Pipe
- 14"
- 8"

**NP 2218**
- 4" I.D. PVC Pipe
- Panel - 5 5/8" x 34 7/8"
- 9 5/8"
- 5 1/2"
- 48"

**NEWEL POSTS**

- Newel Posts available as S, C, E or A styles as shown above.
- Newel Caps are a separate piece. See pages 34-35 for selection.
- Newel Posts can be cut to desired height.
- See page 37 for Newel Post Hardware.
- I.D. refers to inside diameter/O.D. refers to outside diameter.
Photo above illustrates the use of the following Spectis products: balusters BAL 2220-28, railings RAL 2110T & B, custom newel post and cap.

**NEWEL POSTS**

**CAPS SOLD SEPARATELY**
**Notice:**

PL premium adhesive must be used on all bedding/butt joints.

---

**Newel Posts**

- Newel Posts available as S, C, E or A styles as shown above.
- Newel Caps are a separate piece. See pages 34-35 for selection.
- Newel Posts can be cut to desired height.
- See page 37 for Newel Post Hardware.
- I.D. refers to inside diameter/O.D. refers to outside diameter.

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP 2228</td>
<td>14&quot; x 48&quot;</td>
</tr>
<tr>
<td>NP 2229</td>
<td>7 3/4&quot; x 12&quot;</td>
</tr>
<tr>
<td>NP 2230</td>
<td>42&quot;</td>
</tr>
<tr>
<td>NP 2231</td>
<td>12&quot;</td>
</tr>
<tr>
<td>NP 2232</td>
<td>24&quot;</td>
</tr>
<tr>
<td>NP 2233</td>
<td>34&quot;</td>
</tr>
</tbody>
</table>

*Photo above illustrates the use of a number of custom Spectis products.*
BALUSTRADE SYSTEMS

NP 2233-42
- 8 7/8"
- 6" I.D. PVC Pipe
- Panel - 4 13/16" x 26 3/4"

NP 2233-50
- 8 7/8"
- 6" I.D. PVC Pipe
- Panel - 4 13/16" x 30 1/4"

NP 2234
- 6 3/4"
- 3" I.D. PVC Pipe

NP 2235 with BA5
- 14"
- 6" I.D. PVC Pipe
- Panel - 4 13/16" x 30 1/4"

NP 2236
- 16"
- 6" I.D. PVC Pipe
- Panel - 9 3/4" x 10 5/8"

NP 2237
- 9 1/2"
- 5" I.D. PVC Pipe

NP 2238
- 10 1/2"
- 6" I.D. PVC Pipe
- Panel - 5 3/4" x 32 1/2"

NEWEL POSTS
CAPS SOLD SEPARATELY
NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

Photo above illustrates the use of the following Spectis products: balusters BAL 2019, rails RAL 2105T & B, custom newel post and cap.
NC 2328
• 17” Square
• 3” Height

NC 2328
• 17” Square
• 3” Height

NC 2330
• 2 1/4” Height

NC 2333
• 4 3/8” Height

NC 2338
• 5” Height

NC 2339
• 20” Square
• 1” Height

NC 2340
• 29” Square
• 7” Height

NC 2341
• 7 1/2” Square
• 1 3/8” Height

NC 2342
• 14” Square
• 5” Height

NC 2343
• 13 1/8” x 48”
• 3” Height

NC 2344
• 7 3/4” Square
• 1 1/2” Height

NC 2346
• 27 1/8” Square
• 4 7/8” Height

NC 2347
• 5 1/2” Square
• 3 3/4” Height

NC 2348
• 10” Square
• 1” Height

NC 2349
• 10 3/4” Square
• 2 1/4” Height

NC 2350
• 6” Square
• 2 1/8” Height

NC 2351
• 13 1/2” Square
• 2 1/4” Height

NC 2352
• 16” Length
• 11 3/4” Width
• 2 1/4” Height

NC 2353
• 10 3/4” Square
• 2 1/4” Height

NC 2354
• 13 1/2” Square
• 2 1/4” Height

NC 2355
• 6” Square
• 2 1/8” Height

NC 2356
• 6” Square
• 2 1/8” Height

NEWEL CAPS
NOTICE:
PL PREMIUM ADHESIVE MUST BE USED ON ALL BEDDING/BUTT JOINTS.

4” BALL RULE
To meet most building code regulations a 4” ball can’t pass through the widest opening between balusters. Purchaser must check for system suitability in their area. Spectis makes no guarantee of suitability on any specific application.

Photo above illustrates the use of the following Spectis products: decorative custom gable end, baluster BAL 2000-25 and rail RAL 2100 top & bottom.

Photo above illustrates the use of the following Spectis products: balusters BAL 2027-26 and rails RAL 2100T & B.

Photo above illustrates the following Spectis products: baluster BAL 2059-27, rails RAL 2100 top & bottom, newel post NP 2212 and newel cap NC 2319.

Photo above illustrates the use of the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

Photo above illustrates the use of the following Spectis products: BAL 2027, BAL 2046, RAL 2100T & B, NP 2211 and NC 2332 – lighting installed by customer.

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

© Tom Redfield Productions

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

© Tom Redfield Productions

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

4” BALL RULE
To meet most building code regulations a 4” ball can’t pass through the widest opening between balusters. Purchaser must check for system suitability in their area. Spectis makes no guarantee of suitability on any specific application.

Photo above illustrates the use of the following Spectis products: decorative custom gable end, baluster BAL 2000-25 and rail RAL 2100 top & bottom.

Photo above illustrates the use of the following Spectis products: balusters BAL 2027-26 and rails RAL 2100T & B.

Photo above illustrates the following Spectis products: baluster BAL 2059-27, rails RAL 2100 top & bottom, newel post NP 2212 and newel cap NC 2319.

Photo above illustrates the use of the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

Photo above illustrates the use of the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

© Tom Redfield Productions

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

© Tom Redfield Productions

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

© Tom Redfield Productions

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.

© Tom Redfield Productions

Photo above illustrates the following Spectis products: rail RAL 2101 top & bottom, newel post NP 2201 and newel cap NC 2317.
BALUSTRADE SYSTEM INSTALLATION KITS

NEWEL POST INSTALLATION KITS

<table>
<thead>
<tr>
<th>KIT NUMBER</th>
<th>FOR NEWEL POSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN 01-C*</td>
<td>NP 2201, NP 2208, NP 2209</td>
</tr>
<tr>
<td>KIN 01-W*</td>
<td>NP 2210, NP 2216, NP 2225, NP 2226, NP 2227, NP 2228, NP 2229, NP 2231, NP 2235, NP 2238</td>
</tr>
<tr>
<td>KIN 02-C*</td>
<td>NP 2207, NP 2214, NP 2234</td>
</tr>
<tr>
<td>KIN 02-W*</td>
<td>NP 2237</td>
</tr>
<tr>
<td>KIN 03-C*</td>
<td>NP 2215, NP 2219, NP 2223</td>
</tr>
<tr>
<td>KIN 03-W*</td>
<td>NP 2226, NP 2227, NP 2228, NP 2229, NP 2231, NP 2235, NP 2238</td>
</tr>
<tr>
<td>KIN 04-C*</td>
<td>NP 2206, NP 2233</td>
</tr>
<tr>
<td>KIN 04-W*</td>
<td>NP 2207, NP 2208, NP 2209</td>
</tr>
<tr>
<td>KIN 05-C*</td>
<td>NP 2210, NP 2216, NP 2225, NP 2226, NP 2227, NP 2228, NP 2229, NP 2231, NP 2235, NP 2238</td>
</tr>
<tr>
<td>KIN 05-W*</td>
<td>NP 2214, NP 2219, NP 2223</td>
</tr>
</tbody>
</table>

C* = concrete installation  W* = wood

RAILING HARDWARE

KIR 01 • four 1/4" prepunched aluminum brackets • four 5/16" x 2 1/2" bolts w/nuts and lock washers • sixteen #14 x 2" wood screws

KIR 02 • four 1 1/4" prepunched aluminum brackets • four 5/16" x 2 1/2" bolts w/nuts and lock washers • four #14 x 2" wood screws

KIR 03 • four 1 3/4" prepunched aluminum brackets • four 5/16" x 2 1/2" bolts w/nuts and lock washers • four #14 x 2" wood screws

RAILING INSTALLATION KITS

<table>
<thead>
<tr>
<th>KIT NUMBER</th>
<th>FOR RAILINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIR 01</td>
<td>RAL 2100, RAL 2101, RAL 2103, RAL 2105, RAL 2106, RAL 2107, RAL 2108, RAL 2111, RAL 2112, RAL 2113, RAL 2117, RAL 2119, RAL 2124, RAL 2126</td>
</tr>
<tr>
<td>KIR 02</td>
<td>RAL 2102, RAL 2104, RAL 2105, RAL 2110, RAL 2116, RAL 2120, RAL 2121, RAL 2122, RAL 2123, RAL 2125</td>
</tr>
<tr>
<td>KIR 03</td>
<td>RAL 2114, RAL 2115</td>
</tr>
</tbody>
</table>

NEWEL POST HARDWARE

KIN 01-C • one 1/2" concrete anchor • one 8" C-channel • one 52" x 1/2" threaded rod

KIN 01-W • one floor flange • one 8" C-channel • four #14 x 2" wood screws • one 52" x 1/2" threaded rod

KIN 02-C • one 1/2" concrete anchor • one 4 1/4" C-channel • one 52" x 1/2" threaded rod

KIN 02-W • one floor flange • one 4 1/4" C-channel • four #14 x 2" wood screws • one 52" x 1/2" threaded rod

KIN 03-C • one 1/2" concrete anchor • one 5 1/4" C-channel • one 52" x 1/2" threaded rod

KIN 03-W • one floor flange • one 5 1/4" C-channel • four #14 x 2" wood screws • one 52" x 1/2" threaded rod

KIN 04-C • one 1/2" concrete anchor • one 7 1/2" C-channel • one 52" x 1/2" threaded rod

KIN 04-W • one floor flange • one 7 1/2" C-channel • four #14 x 2" wood screws • one 52" x 1/2" threaded rod

KIN 05-C • two 1/2" concrete anchor • two 17 1/2" C-channel • two 34" x 1/2" threaded rod

KIN 05-W • two floor flange • two 17 1/2" C-channel • four #14 x 2" wood screws • two 34" x 1/2" threaded rod

KIN 06-C • one 1/2" concrete anchor • one 6 1/2" C-channel • one 52" x 1/2" threaded rod

KIN 06-W • one floor flange • one 6 1/2" C-channel • four #14 x 2" wood screws • one 52" x 1/2" threaded rod

RAILING SUPPORT BLOCKS

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>HEIGHT</th>
<th>WIDTH</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUP 01</td>
<td>4”</td>
<td>3 5/8”</td>
<td>4”</td>
</tr>
<tr>
<td>SUP 02</td>
<td>2”</td>
<td>3 5/8”</td>
<td>4”</td>
</tr>
<tr>
<td>SUP 03</td>
<td>4”</td>
<td>6”</td>
<td>6”</td>
</tr>
<tr>
<td>SUP 04</td>
<td>2”</td>
<td>6”</td>
<td>6”</td>
</tr>
<tr>
<td>SUP 05</td>
<td>4”</td>
<td>7”</td>
<td>8”</td>
</tr>
<tr>
<td>SUP 06</td>
<td>2”</td>
<td>7”</td>
<td>8”</td>
</tr>
<tr>
<td>SUP 07</td>
<td>4”</td>
<td>12”</td>
<td>12”</td>
</tr>
<tr>
<td>SUP 08</td>
<td>2”</td>
<td>12”</td>
<td>12”</td>
</tr>
</tbody>
</table>

RAL 2104, RAL 2102, RAL 2105, RAL 2100, RAL 2103, RAL 2101

See pages 229-231 for complete balustrade installation instructions.
SECTION 09641 - LAMINATE FLOORING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Div. 1 – General Requirements is made a part of this section.

B. Submittals: Product Data and material Samples.

PART 2 - PRODUCTS

A. Laminate Wood Flooring

1. Pergo Presto Collection
   a. Color / Finish: from manufactures available line.
   b. Thickness: 8mm.
   c. Width: 7-5/8 inch
   d. Length: 47-1/2 inch
   e. Edges: SmartLock patented dual-locking, flueless click joint installation
   f. Embossed surface with Lustergard Plus surface protection
   g. 25 year residential warranty

2. Bruce American Home Collection
   a. Color / Finish: from manufactures available line.
   b. Thickness: 8mm.
   c. Width: 7.32 inch
   d. Length: 50.59 inch
   e. Edges: Square Edge / Square Ends
   f. Bruce Hi-Definition Print / Magnum HDF Core
   g. 25 year residential warranty

3. Approved equal

2.2 ACCESSORY MATERIALS.

A. Flooring Underlayment: Two in one premium hard surface flooring underlayment required under laminate flooring in accordance with the manufacturer’s specification.

B. Wood Trim: In same species and grade as laminate flooring, unless otherwise indicated.

   2. Base Shoe Molding: accessory standard.

2.3 INSTALLATION
A. Comply with flooring manufacturer's written instructions.

B. Provide expansion space at walls and other obstructions and terminations of flooring in accordance with manufacturer’s written instructions.

C. Felt Underlayment: Required under all laminate flooring in accordance with manufacturer’s installation instructions.

D. Vapor Retarder: Where wood flooring is installed on concrete slabs, install underlayment sheets according to flooring manufacturer's written instructions.

E. Wood Trim: Nail baseboard to wall and nail shoe molding or other trim to baseboard; do not nail to flooring. Coordinate finish of paint or stain to wall trim and shoe molding with Owner.

END OF SECTION 09640
SECTION 09642 - WOOD FLOOR REFINISHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Finishing requirements for the following types of wood floors.
      a. New and existing wood strip flooring.
      b. New and existing wood parquet flooring.

1.2 SECTION REQUIREMENTS

A. The Conditions state that the Contract Documents are complementary.

B. Temporary facilities and controls are specified in Section 01500. Cooperate in ensuring adequate protection.

C. General material, equipment, and workmanship standards are specified in Section 01600.

D. Painting is specified in Section 09910.

1.3 SUBMITTALS

A. Submit product data on finishing products and systems.

B. Submit record of moisture readings.

1.4 ENVIRONMENTAL CONDITIONS

A. At time of wood flooring refinishing, building shall be dry and closed in. Temperature during and after installation shall be between 70° and 90° F. Flooring moisture content at time of installation shall have reached equilibrium. Take moisture readings of typical wood flooring and submit record for Architect's review.

PART 2 - PRODUCTS

2.1 SEALING AND FINISHING MATERIALS

A. Urethane Finish System; Acceptable Manufacturers:

1. LEED EQc4: Low-Emitting Materials:
a. Finish must not exceed the VOC and chemical component limits set forth by Green Seal's Standard GS11.

2. Emulsion by Basics; gloss or semi-gloss finish as specified by location.

3. Waterborne Urethane by Benjamin Moore; gloss or semi-gloss finish as specified by location.

B. Finish Coats: Formulated for multicoat application on wood flooring. Apply three coats on new wood floor installations or existing wood floors that are screened or sanded in accordance with manufacturer's instructions, buffing after each coat.

1. Allow finish to cure for 7 days prior to subjecting to traffic.

C. Apply three coats minimum on existing wood floors that are screened in accordance with manufacturer's instructions, buffing after each coat.

1. Allow finish to cure for 7 days prior to subjecting to traffic.

D. Stain: Penetrating type which is nonfading wood stain of the color required to match Owner’s selection from manufacturer’s samples.

1. LEED EQc4: Low Emitting Materials

2. Stain must not exceed the VOC and chemical component limits must not exceed the Green Seal Standard GS11 requirements.

E. Wood Filler: Formulated to fill and repair seams, defects, and open-grain hardwood floors; compatible with finish system components and recommended by filler and finish manufacturers for use indicated. If required to match approved samples, provide pigmented filler.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine wood flooring to be refinished. Report defects which are likely to have adverse effects on flooring to Owner in writing.

B. Remove surface mounted fasteners, other residual remains of previous floor coverings over original wood flooring.

C. Replace missing floor boards salvaged material matching original patterns, species, and sizes. Conceal fastenings as required. Refasten loose boards where necessary. Plug abandoned holes where piping or conduit was removed. Apply wood filler if required to repair minor defects.

D. Sand/screen flooring level and smooth. Finish sanding with #120 grit. Vacuum floor, and request inspection by Architect. Do not proceed without Owner’s written approval.

E. If finishing is delayed after sanding is complete, cover sanded/screened and prepared floors with 1/8” masonite hardboard protection course, with joints and edges taped until all other trades have completed work in the spaces and they can be safely finished for Owner's use.

3.2 SANDING AND FINISHING

A. Sand flooring with drum sander, edger, butter and hand scraper.
B. Use coarse, medium and fine grade sandpaper.

C. After sanding with drum sander, buff entire floor using 100 grit screen back or equal grit sandpaper, with a heavy duty buffing machine. Screen with 120 to 150 grit screen.

D. Vacuum or tack floor before first coat of finish.

E. Floor shall present a smooth surface without drum stop marks, gouges, streaks or shiners.

F. Apply stain if needed. Owner to select color from manufacturer’s samples.

G. Apply floor sealer (1 coat) in accordance with manufacturer's instructions, including machine buffing.

H. Apply floor finish in 3 coats in accordance with manufacturer's instructions, buffing after each coat.

I. Allow finish to cure for 7 days prior to subjecting to traffic.

J. Clean up all unused materials and debris and remove same from the premises.

3.3 SCREENING AND FINISHING

A. Machine-screen entire floor area to remove all surface dirt, grease, wax, etc. Follow ‘Urethane Finish System’ surface preparation requirements. Vacuum and tack with a clean cloth immediately before applying finish.

B. Apply stain if needed to match existing floor.

C. Apply floor finish components in two coats, minimum, and follow all recommendations by finish manufacturer for application indicated.

3.4 PROTECTION

A. Protect wood flooring during remainder of construction period to allow finish to cure and to ensure that flooring and finish are without damage or deterioration at time of project turnover.

B. Clean up all unused materials and debris and remove same from the premises.

END OF SECTION 09640
SECTION 09651 - RESILIENT FLOOR TILE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1:- General Requirements is made a part of this section.

B. Other Division 9 sections for floor finishes related to this section but not the work of this section.

C. Division 3 Concrete; not the work of this section.

D. Division 6 Wood and Plastics; not the work of this section.

E. Division 7 Thermal and Moisture Protection; not the work of this section.

F. Submittals: Product Data and Samples.

G. Fire Test Response: Resilient tile has critical radiant flux classification of Class I, not less than 0.45 W/sq. cm per ASTM E 648.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE

A. Products:
   1. Contractor shall provide pricing for StoneWalk and Essentials flooring.

   2. The Mohawk Group StoneWalk Non-PVC Tile:
      a. Color: Provide manufacturer’s color samples.
      b. ASTM F 1066, Class 2 (modified for NONE vinyl compound)
      c. Thickness: 0.080”
      d. Size: 12” x 12”
      e. VOC: None
      g. Smoke Development: ASTM E 662, Class 1.
      h. Static Load Limit: ASTM F 970-00, 2000 PSI.
      i. Resistance to chemicals: ASTM F 925.
      j. Limited Wear Warranty: 5 Years.

   3. Mannington Commercial Essentials Vinyl Composition Tile with Recycled Vinyl Content:
      a. Color and Pattern: #137 Sand Drift (Submit manufacturers standard color selection for review and final approval).
      b. ASTM F 1066, Class 2 (through-pattern tile).
      c. Thickness: 0.125 inch.
      d. Size: 12” x 12”
4. Armstrong Commercial Flooring; Migrations with BioStride BioBased Tile
   a. Color: Color selected from the range currently available from Armstrong World Industries, Inc.
   b. Thickness: Having a nominal total thickness of 0.125”.
   c. Size: 12 in. x 12 in. composed of polyester resin binder, fillers and pigments with colors and texture dispersed uniformly throughout its thickness.
   d. ASTM F 1066, Class 2 through-pattern
   e. Thickness: 0.125 inch.
   f. Size: 12” x 12”
5. Approved Equal.

B. Trowelable Leveling and Patching Compounds: Provide USGBC approved latex-modified, portland cement- or blended hydraulic cement-based formulation provided by flooring manufacturer for applications indicated.

C. Adhesives: Provide USGBC approved water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

D. Provide transition/reducing strips tapered to meet abutting materials.

E. Metal Edge Strips: Extruded aluminum in mill finish unless otherwise specified. Provide in maximum available lengths to minimize joints and of required thickness to protect exposed edges of the flooring. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage.

F. Thresholds: Wood, metal, and/or marble to match existing or as directed by Owner.

G. Sealer and Wax: Contractor to submit cut sheets of Zinc Free Floor Finish by EcoLab, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare concrete substrates according to ASTM F 710. Verify that substrates are dry and free of curing compounds, sealers, and hardeners. Ensure that surface is smooth, level and free from defects. Flash patch substrate as required to ensure a smooth, level surface.

B. Lay out tiles so tile widths at opposite edges of room are equal and are at least one-half of a tile.

C. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged. Lay tiles as directed by the owner either with grain running in one direction or in basket-weave pattern with grain direction alternating in adjacent tiles. Obtain owner approval prior to the start of work.

3.2 CLEANING AND PROTECTION

A. Prior to cleaning and sealing newly installed floors, ensure that adhesives have cured properly in accordance with the manufacturer’s written instructions.
B. Seal and wax floors with three (3) coats Zinc Free Floor Finish by EcoLab, Inc.

END OF SECTION 09651
SECTION 09652 - SHEET VINYL FLOOR COVERINGS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

   A. Division 1 - General Requirements is made a part of this section.

1.2 Submittals: Product Data and Samples.

PART 2 - PRODUCTS

2.1 SHEET VINYL FLOOR COVERING

   A. Products:

      1. **Mannington Realities Brazilian Cherry – Bedrooms**
         a. Product Number: 5634
         b. Colorway Name: Natural
         c. Pattern Type: Wood
         d. Pattern Scale: Small
         e. Gloss Level: Low
         f. Nature Form: Yes
         g. Guardian Protection: Yes
         h. Never Yellow: Yes
         i. Recycled Content: Yes
         j. FloorScore Certified: Yes
         k. Installation Type: Full spread, Loose lay (no glue) or Perimeter (glue only perimeter)

      2. **Mannington Jumpstart Montana Ridge – Kitchens**
         a. Product Number: 71101
         b. Colorway Name: Porcelain
         c. Pattern Scale: Medium
         d. Repeat Length: 36
         e. Repeat Width: 36
         f. Nature Form: Yes
         g. Never Yellow: Yes
         h. Guardian Protection: Yes
         i. Scratchresist: Yes
         j. Recycled Content: Yes
         k. FloorScore Certified: Yes
         l. Installation Type: Full spread, Loose lay (no glue) or Perimeter (glue only perimeter)

      3. **Tarkett Infinity Sheet Vinyl - Bathrooms**
         a. Pattern/Style: Avenue
         b. Color: Arizona Dust
         c. Sheet Width: 12 feet wide
         d. Finish: Urethane
         e. Warranty: 20+ years.
         f. Design Repeat: 36” x 36”. Do not reverse.
         g. Tarkett Vinyl Sheet is produced with low or no VOC water-based.
4. Approved Equal.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Low VOC, solvent free adhesive. Latex-modified, portland cement- or blended hydraulic cement-based formulation provided or approved by flooring manufacturer for applications indicated.

B. Adhesives: Low VOC, solvent free adhesive. Water-resistant type recommended by manufacturer to suit sheet vinyl floor covering and substrate conditions indicated.

C. Metal Edge Strips Thresholds: Extruded aluminum in maximum available lengths to minimize joints.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare concrete substrates according to ASTM F 710. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

B. Flash patch all cracks, voids, seams and depressions as required to obtain a smooth, even substrate.

C. Laying the underlayment panels should begin in one corner of the room. Lay all underlayment panels in the same direction. Underlayment panel edges and subfloor edges should be offset at least 8". A space of 1/4" to 3/8" shall be left between the panels and the wall around the perimeter of the room. Stagger panel joints so that four corners do not meet. Cross joints should be staggered at least 16". The panel edges shall be lightly butted together.

D. New underlayment should not be installed over heavily cushioned flooring. These may not provide a firm base for underlayment board application resulting in an up and down or scissoring action at the seams. Telegraphing of underlayment joints and nail pops may also occur.

E. Nails: Cement coated or resin coated fasteners can stain resilient flooring. Use non-coated ring-shank or screw type underlay flooring nails. The length of the nail shall not exceed the total thickness of the subfloor and underlayment. Space nails 2" to 4" on center at panel edges and 6" on center throughout the field.

F. Staples: Stapling underlayment panels using a staple with a divergent chisel point is recommended. Staples should be spaced 1"-2" along the edge and 3"-4" on center throughout the field.

G. Begin fastening at one corner of underlayment panels and work diagonally across panels (fan nail). Fasteners shall be set flush or just slightly below the surface of the underlayment.

H. The underlayment must be dry, clean, smooth, level and structurally sound. The underlayment shall be swept and/or vacuumed to remove any dust and debris. Any surface materials present such as paint, wax, grease, oil, adhesive residues, crayon, pen marking, etc. that may prevent a proper bond or migrate to the surface of the flooring causing discoloration, must be removed.

I. Fill and level underlayment joints and all other irregularities with a high quality, non-shrinking, latex fortified, hydraulic cement patching compound.
J. Note: Tarkett does not recommend or warrant the use of any products containing gypsum as a satisfactory patching compound for the installation of Tarkett resilient floorings. Tarkett will not accept responsibility for flooring failures related to the use of gypsum type patching compounds.

K. Maintain uniformity of sheet vinyl floor covering direction, and match edges for color shading at seams.

L. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in substrates.

M. Installation shall meet or exceed all manufacturers’ requirements.

END OF SECTION 09652
SECTION 09653 - RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data and Samples.

PART 2 - PRODUCTS

2.1 WALL BASE

A. Products:

1. Johnsonite Rubber Wall Base (DC):
   a. Color and Pattern: Provide sample of manufacturer’s standard colors for final selection and approval.
   b. ASTM F-1861, Type TP, Group 1 (solid) Standard Specification for Resilient Wall Base
   c. Style: Cove (with top-set toe) unless otherwise noted as straight
   d. Minimum Thickness: 0.125 inch.
   e. Height: 4 inches unless otherwise noted as 6 inches
   f. Lengths:
      1) 4” Height: Cut lengths 48 inches long or 120 foot coils.
      2) 6” Height: Packaged in 100’ lengths.
   g. Inside and outside corners with 4” returns.
   h. Product Performance and Technical Data
      1) Hardness: ASTM D 2240: 85 Shore A.
      2) Flexibility: Will not crack, break, or show any signs of fatigue when bent around a 1/4" diameter cylinder.
      3) Fire Resistance: ASTM E 84/NFPA 255 (Flame/Smoke) – Class A, < 450 and ASTM E 648 (NFPA 253); Critical Radiant Flux – Class 1.

2. Johnsonite Vinyl Wall Base (CB or CBT for toeless):
   a. Color and Pattern: Provide sample of manufacturer’s standard colors for final selection and approval.
   b. ASTM F-1861, Type TP, Group 1 (solid) Standard Specification for Resilient Wall Base
   c. Style: Cove (with top-set toe) unless otherwise noted as straight
   d. Minimum Thickness: 0.125 inch.
   e. Height: 4 inches unless otherwise noted as 6 inches
   f. Lengths:
      1) 4” Height: Cut lengths 48 inches long or 120 foot coils.
      2) 6” Height: Packaged in 100’ lengths.
   g. Inside and outside corners with 4” returns.
h. Product Performance and Technical Data
   1) Hardness: ASTM D 2240: 90 Shore A.
   2) Flexibility: Will not crack, break, or show any signs of fatigue when bent around a 1/4" diameter cylinder.

2.2 RESILIENT STAIR ACCESSORIES

A. Products:
   1. Johnsonite Vinyl Stair Treads

B. Color and Pattern: VIHT (Visually Impaired) - Safe-T-Rib Vinyl Stair Treads, 2" hinged square nose (Sq) configuration or 1-5/8" diameter round nose (Rd) configuration 1/4" to 1/8" tapered 12-1/4" tread depth, 2" wide (VI) contrasting color grit tape insert. Color shall be black unless specified otherwise.

   1. Provide samples of manufacturer’s standard colors for final approval.
   2. Size: Lengths and depths to fit each stair tread in one piece or as specified.

C. Product Performance and Technical Data
   1. Hardness: ASTM D 2240 - Not less than 85 Shore A.
   2. Abrasion Resistance: ASTM D 3389 - 0.22 mg/cycle.
   4. Standards and ADA recommendations of .6 for flat surfaces.

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement- or blended hydraulic cement-based formulation provided or approved by flooring manufacturer for applications indicated.

B. Adhesives: Water-based type recommended by manufacturer to suit products and substrate conditions.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare concrete substrates according to ASTM F 710. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

B. Adhesively install resilient wall base and accessories.

C. Install wall base in maximum lengths possible. Apply to walls, columns, pilasters, casework, and other permanent fixtures in rooms or areas where base is required.
D. Sand stair treads and risers as required removing the existing surface finish. Refinish treads and risers as specified prior to installing vinyl stair treads. Obtain owner approval of refinished treads and risers prior to vinyl tread installation.

E. Install reducer strips at edges of floor coverings that would otherwise be exposed.

END OF SECTION 09653
SECTION 09680 - CARPET

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1: General Requirements are apart of this section.
B. Submittals: Product Data, Samples.
C. Comply with CRI 104, Section 6.1, "Site Conditions; Temperature and Humidity."

PART 2 - PRODUCTS

2.1 Vestibule / Entry Carpet

A. Product in Woodframe Houses (unless otherwise noted by Owner):

   a. Color: Charcoal #07
   b. Transition strip: Ramp-flex transition strips #NOCRS as manufactured by Matsinc.
   c. Fiber Content: 100% solution dyed UV stabilized polypropylene fiber
   d. Total Weight: 78 oz for finished carpet.
   e. Primary Backing: high density rubber.
   f. Width: 6’-7” & 13’-2” (Order width based on individual project requirements).
   g. Recycled Content: 15% post-consumer

B. Products in Administrative, Academic, Dormitories and Program Houses:

1. InterfaceFLOR Entry Level
   b. Modular: 50 cm x 50 cm
   c. Backing System: GlasBac Tile
   d. Yarn System: Invista Type 6,6 Nylon with InterfaceFLOR approved Type 6,6 Nylon
   e. Color System: 100% Solution Dye
   f. Construction: Tufted Textured Loop
   g. Lifetime Antimicrobial: intersept
   h. Soil/Stain Protection: Protekt2 with Zonyl 8779 Fluorochemical
   i. Yarn Weight: 28 oz
   j. Total Recycled Content: 40% - 43%
   k. CRI Green Label Plus: GLP8020
   l. Installation Method: Non-directional

2. Lees Step Up DD763
   a. Gauge: 5/32”
   b. Face Yarn: Fortis Nylon 6,6 scraper yarn
   c. Dye System: Yarn dyed
   d. Fiber Technology: Sentry Soil Protection
e. Backing Material: Fiberglass Reinforced Thermoplastic
f. Face Yarn Weight; 38 oz/sy
g. Modular: 24” x 24”
h. Installation Method: Quarter Turn or Monolithic
i. IAQ Green Label Plus: 1098

2.2 COMMON AREA CARPET

A. Products:
   1. InterfaceFlor Carpet Squares
   2. Shaw Broadloom
   3. Approved Equal (Carpet shall be constructed of first quality materials and tested to comply fully with the requirements and be certified by the CRI Green Label indoor air quality carpet testing program for volatile organic compounds. The commercial carpet must contain at least 25% recycled content and be recycled).

B. Yarn Weight: 28 oz. – 32 oz.

C. Broadloom Surface Appearance: Textured Heathered Loop

D. Carpet Square Surface Appearance: Tufted Cut and Loop

E. Broadloom Carpet Primary Backing: Woven Polypropylene

F. Broadloom Carpet Secondary Backing: Woven Polypropylene

G. Carpet Square Backing: Glasbac RE

H. Broadloom Width: 12’

I. Carpet Squares: Per selected Product.

2.3 CARPET CUSHION (compatible with double glue installation)

A. Traffic Classification: CCC Class II, heavy traffic.

B. Fiber Cushion:
   1. Resinated recycled textile.
   2. Weight: 32 oz./sq. yd.
   3. Submit compatible foam cushion to Owner for approval

PART 3 - EXECUTION

3.1 INSTALLATION
A. Vestibule/Entry carpets to be installed at all main entrances, vestibules and halls as noted for each project scope. Common Area carpet shall be installed at all common areas as noted on the contract drawings and as outlined in each project scope.

B. Comply with CRI 104, Section 8:
   1. Direct Glue-Down method for vestibule entry locations.
   2. Double Glue-Down method for common area locations.

C. Use manufacturers approved adhesives for carpet and transition strips. TacTiles to be used for InterfaceFlor carpet squares.

D. Install transition strips at the end of the carpet runs and at each doorway or entryway location.

E. Maintain uniformity of carpet direction and lay of pile. At doorways, center seams or transition strips under door in closed position.

F. Install pattern parallel to walls and borders.

END OF SECTION 09680
SECTION 09681 – CARPET CLEANING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Cleaning Solution Product Data

PART 2 - PRODUCTS

2.1 CARPET CLEANING SOLUTION

A. Products:
   1. Cleaning product shall be Revitalize Carpet Shampoo “Green” cleaning product by EcoLab.
   2. Proposed cleaning solution and procedure shall be submitted to the Owner for review and approval.

PART 3 - EXECUTION

3.1 CLEANING METHODS

A. Remove all moveable items and furnishings from room to perform cleaning. Ensure items are secure. Reinstall all items after carpet has dried.

B. Vacuum room prior to cleaning.

C. Inspect existing carpet and remove stains by applying Revitalize Carpet Shampoo “Green” cleaning agent directly to the stained area. Hot water extraction methods shall be used to remove the stains. Retreat as required to remove stain.

D. Hot water extraction cleaning methods shall be employed to clean the carpets noted. Revitalize Carpet and Upholstery Extraction Cleaner shall be applied per manufacturer’s recommendations. Extraction equipment shall be portable.

E. Upon completion of the cleaning methods noted above, ensure that the carpet has a clean, uniform appearance. Retreat stains if required.

END OF SECTION 09681
SECTION 09770 – SPECIAL WALL SURFACES

PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
   A. Division 1 - General Requirements is made a part of this section.
   B. Submittals: Product Data

PART 2 - PRODUCTS
2.1 FIBERGLASS REINFORCED PLASTIC (FRP) PANELS
   A. Products:
      1. Kemlite Company, Inc. Glasbord-FSI panels or approved equal
   B. Size: Manufacturer’s standard sizes. Sizes shall be selected based on individual project requirements as required to minimize joints.
   C. Finish: Smooth
   D. Nominal Panel Thickness: 0.075”
   E. Color: White
   F. Flame Spread / Smoke Development Rating: Class A
   G. Attachment Devices:
      1. Kemlite Titebond FRP adhesive
      2. Nylon drive rivets
   H. Accessories:
      1. Vinyl accessory moldings for installing FRP.

2.2 FABRICATION
   A. Fabricate panels with a continuous laminating process to obtain a smooth finish and continuous color throughout.

PART 3 - EXECUTION
3.1 INSTALLATION
   A. Patch and repair any wall or ceiling section that is uneven and ensure that the wall or ceiling surfaces are structurally sound prior to applying the FRP panels.
   B. Prepare any repaired or patched wall/ceiling surface in accordance with the manufacturer’s recommendation.
   C. Install panels level and aligned at top and bottom, vertical and plumb.
Wesleyan University Construction Services

D. FRP panels shall be installed and fastened in accordance with the manufacturers specifications.
E. Use vinyl accessory moldings to obtain a finished look and proper top and corner terminations.

END OF SECTION 09770
A versatile, ultra-durable water-borne acrylic, BREAK-THROUGH®, is formulated to bond to some of the most difficult substrates including fiberglass, laminate, and many plastics. The interior/exterior satin finish offers very fast dry and FASTBLOCK™ technology that ensures outstanding early block resistance for increased productivity with less down time. BREAK-THROUGH provides hardness similar to or better than standard alkyls with a low VOC formula, but maintains flexibility to endure extreme bends and deformation without cracking and peeling. BREAK-THROUGH is ideal for doors, windows, cabinets, shelving, hand rails, fixtures, trim, wood and concrete floors.

**APPLICATION INFORMATION**

**Permissible temperatures during application:**
- Material: 50 to 90°F 10 to 32°C
- Ambient: 50 to 90°F 10 to 32°C
- Substrate: 50 to 90°F 10 to 32°C

**TINTING AND BASE INFORMATION**

Refer to the appropriate color formula book, automatic tinting equipment, and/or computer color matching system for color formulas and tinting instructions. The bases can be tinted with 96 line or 896 colorants.

- V56-410 White and Pastel Base
- V56-420 Midtone*
- V56-430 Deep tone*
- V56-440 Ultra Deep*
- V56-35 Bronze
- V56-90 Wrought Iron Black

*Must be tinted before use.

Some colors, drastic color changes, or porous substrates may require more than one coat to achieve a uniform finish. Safety colors and high chroma colors should be tinted with 896 colorants for optimum performance.

**PRODUCT DATA**

<table>
<thead>
<tr>
<th>PRODUCT TYPE</th>
<th>Water-borne Acrylic</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEEN</td>
<td>Satin: 20 to 25 (60° Gloss Meter)</td>
</tr>
<tr>
<td>VOLUME SOLIDS*</td>
<td>40% +/- 2%</td>
</tr>
<tr>
<td>WEIGHT SOLIDS*</td>
<td>55% +/- 2%</td>
</tr>
<tr>
<td>VOC*</td>
<td>50 g/L (0.4 lbs./gal.)</td>
</tr>
</tbody>
</table>

Colorants added to this product may contain VOCs.

**WEIGHT/GALLOON**: 11.0 lbs. (5.0 kg) +/- 0.2 lbs. (91 g)

*Product data calculated on product V56-410.

**COVERAGE**: Approximately 400 sq. ft./gal. (37 sq. m/3.78L) depending on surface texture and porosity.

- Wet Film Thickness: 4.0 mils
- Wet Microns: 102 microns
- Dry Film Thickness: 1.6 mils
- Dry Microns: 41 microns

Coverage figures do not include loss due to surface irregularities and porosity or material loss due to application method or mixing.

**DRYING TIME**:  Dry time @ 77°F (25°C); 50% relative humidity.
- To Touch: 15 to 20 minutes
- To Handle: 1 hour
- To Recoat: After 2 hours
- For Foot Traffic: 12 hours
- For Forklift Traffic: 36 hours
- To Full Cure: 7 days

Drying times listed may vary depending on temperature, humidity, color and air movement.

**CLEANUP**: Clean tools and spray equipment with warm, soapy water immediately after use.

**FLASH POINT**: Over 200°F (93°C)

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**CONFORMANCE STANDARDS**

- VOC Compliant in all regulated areas
- Can help earn LEED 2009 credits

**APPLICATION INFORMATION**

Stir thoroughly before using and occasionally when in use. Prime all necessary surfaces with an appropriate PPG primer prior to application of the product. When using more than one container of the same color, intermix to ensure color uniformity.

Do not mix with solvent-type paints or with paint solvents. USE WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN. Read all label and Material Safety Data Sheet (MSDS) information prior to use. MSDS are available through our website or by calling 1-800-441-9695.

**Application Equipment**: Apply with a high quality synthetic brush, roller, paint pad, or by spray equipment. Where necessary, apply a second coat.

**Airless Spray**: Pressure 2000 psi, tip 0.009" - 0.013". Best results are achieved using a fine finish tip.

Spray equipment must be handled with due care and in accordance with manufacturer’s recommendation. High-pressure injection of coatings into the skin by airless equipment may cause serious injury.

**Brush**: High quality polyester/nylon brush

**Roller**: 3/16" - 3/8" nap roller cover

**Thinning**: No thinning required for airless or air-assisted airless application. Reduce 5-10% with clean water for conventional spray, HVLP and brush applications.

**DISPOSAL**: Contact your local environmental regulatory agency for guidance on disposal of unused product. Do not pour down a drain or storm sewer.

**FEATURES / BENEFITS**

**Features**
- Low VOC and low odor
- Outstanding block resistance
- Very good adhesion
- Very good hardness
- Quick dry
- Excellent flow & leveling
- Flexible
- Resistant to household chemicals

**Benefits**
- Meets the most stringent regulatory standards
- FASTBLOCK™ technology provides tack free film ideal for doors, windows, cabinets, shelving and tinting instructions. The bases can be tinted with 96 line or 896 colorants for optimum performance.

**PRODUCT TYPE**: Water-borne Acrylic

**SHEEN**: Satin: 20 to 25 (60° Gloss Meter)

**VOLUME SOLIDS***: 40% +/- 2%

**WEIGHT SOLIDS***: 55% +/- 2%

**VOC***: 50 g/L (0.4 lbs./gal.)

Colorants added to this product may contain VOCs.

**WEIGHT/GALLON***: 11.0 lbs. (5.0 kg) +/- 0.2 lbs. (91 g)

*Product data calculated on product V56-410.

**COVERAGE**: Approximately 400 sq. ft./gal. (37 sq. m/3.78L) depending on surface texture and porosity.

- Wet Film Thickness: 4.0 mils
- Wet Microns: 102 microns
- Dry Film Thickness: 1.6 mils
- Dry Microns: 41 microns

Coverage figures do not include loss due to surface irregularities and porosity or material loss due to application method or mixing.

**DRYING TIME**:  Dry time @ 77°F (25°C); 50% relative humidity.
- To Touch: 15 to 20 minutes
- To Handle: 1 hour
- To Recoat: After 2 hours
- For Foot Traffic: 12 hours
- For Forklift Traffic: 36 hours
- To Full Cure: 7 days

Drying times listed may vary depending on temperature, humidity, color and air movement.

**CLEANUP**: Clean tools and spray equipment with warm, soapy water immediately after use.

**FLASH POINT**: Over 200°F (93°C)
**GENERAL SURFACE PREPARATION**

Surfaces to be coated must be dry, clean, sound, and free from all contamination including loose and peeling paint, dirt, grease, oil, wax, concrete curing agents and bond breakers, chalk, efflorescence, mildew, rust, product fines, and dust. Remove loose paint, chalk, and efflorescence by wire brushing, scraping, sanding, and/or pressure washing. Putty all nail holes and caulk all cracks and open seams. Sand all glossy, rough, and patched surfaces. Feather back all rough edges to sound surface by sanding. Prime all bare and porous substrates with an appropriate primer. On exterior surfaces, remove mildew by using PPG MILDEW CHECK® Multi-Purpose Wash, 18-1; or 1 part chlorine bleach to 3 parts water. Before use, be sure to read and follow the instructions and warnings on the label. WARNING! If you scrape, sand, or remove old paint, you may release lead dust or fumes. LEAD IS TOXIC. EXPOSURE TO LEAD DUST OR FUMES CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a properly fitted NIOSH-approved respirator and prevent skin contact to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the USEPA National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead. In Canada contact a regional Health Canada office. Follow these instructions to control exposure to other hazardous substances that may be released during surface preparation.

**Aluminum:** A primer is required for proper adhesion. Any coating applied directly to aluminum should be spot applied, allowed to cure overnight, and then evaluated for adhesion. If adhesion is good, the application may proceed.

**Ferrous Metal:** The surface must be cleaned thoroughly to remove any dust, rust, oil, and surface contaminants, and then primed. No primer is required for interior applications.

**Galvanized Steel:** A primer is required for proper adhesion. Caution must be used when selecting coatings for use on all galvanized metal surfaces. These substrates may have a factory-applied stabilizer, which is used to prevent white rusting during storage and shipping. Such stabilizers must be removed by either brush blasting, sanding or chemical treatment prior to priming.

**Interior Wood:** Unpainted wood or wood in poor condition should be sanded smooth, wiped clean, then primed. Any knots or resinous areas must be primed before painting. For non-bleeding or previously painted wood, no primer is required.

**Concrete:** New concrete should cure for at least 30 days and preferably 90 days prior to priming and painting. The pH of the substrate must be less than 10 before painting, priming If pH is greater than 10, prime with an alkali resistant primer.

**Concrete/Masonry Block:** Mortar should cure for at least 30 days and preferably 90 days prior to priming. Fill block with appropriate block filler. Surfaces previously coated with water thinned cement-based paint must be prepared with extra care. If the material appears to be adhering tightly, a masonry sealer may be applied to seal the surface.

**Gypsum Wallboard/Drywall:** Nails or screws should be countersunk, and they along with any indentations should be mudded flush with the surface, sanded smooth and cleaned to remove any dust, then prime prior to painting the substrate.

**Plaster:** Plaster or other alkaline surfaces should be allowed to cure for at least 30 days prior to priming with an alkali resistant primer.

**Fiberglass:** No primer needed; sanding or scuffing the surface is recommended. Primer and topcoat should be spot applied as directed, allowed to cure overnight, then evaluated for adhesion. If adhesion is good, the application may proceed.

**Laminate:** No primer needed; sanding or scuffing the surface is recommended. Topcoat should be spot applied as directed, allowed to cure overnight, then evaluated for adhesion. If adhesion is good, the application may proceed.

**Vinyl & Architectural Plastics:** Vinyl and similar architectural plastics may present potential adhesion problems. A primer may be required to promote proper adhesion. Consult the manufacturer’s guidelines prior to painting. Primer and Topcoat should be spot applied, allowed to cure overnight, then evaluated for adhesion. If adhesion is good, the application may proceed. Do not paint vinyl or plastic with a color darker than the original to prevent potential warping due to heat absorption.

**RECOMMENDED PRIMERS**

<table>
<thead>
<tr>
<th>Surface Type</th>
<th>PPG Coatings</th>
<th>PPG Canada</th>
<th>Architect/Specifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>6-204, 17-921, 90-712, 90-912</td>
<td>4-603, Self-priming</td>
<td>1-888-PPG-IDEA</td>
</tr>
<tr>
<td>Concrete</td>
<td>4-603, Self-priming</td>
<td>6-150, 6-7-15</td>
<td>1-800-441-9695</td>
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<tr>
<td>Concrete/Masonry Block</td>
<td>6-209, 17-921, 90-712, 90-912</td>
<td>6-2, 6-4, 9-900, 12-900</td>
<td>1-888-807-5123</td>
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<tr>
<td>Ferrous Metal</td>
<td>6-208, 90-712, 90-912</td>
<td>6-2, 6-4, 9-900, 12-900</td>
<td>1-800-441-9695</td>
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<tr>
<td>Fiberglass</td>
<td>Self-priming</td>
<td>Self-priming</td>
<td>1-800-441-9695</td>
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<tr>
<td>Galvanized Steel</td>
<td>6-209, 17-921, 90-712, 90-912</td>
<td>6-2, 6-4, 9-900, 12-900</td>
<td>1-800-441-9695</td>
</tr>
<tr>
<td>Gypsum Wallboard/Drywall</td>
<td>6-2, 6-4, 9-900, 12-900</td>
<td>6-2, 6-4, 9-900, 12-900, 17-921</td>
<td>1-800-441-9695</td>
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<td>Interior Wood</td>
<td>Self-priming</td>
<td>Self-priming</td>
<td>1-800-441-9695</td>
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<td>Laminate</td>
<td>4-603, 17-921</td>
<td>6-2, 6-4, 9-900, 12-900, 17-921</td>
<td>1-800-441-9695</td>
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<td>Plaster</td>
<td>Self-priming</td>
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<td>1-800-441-9695</td>
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<tr>
<td>Vinyl &amp; Architectural Plastics</td>
<td>Self-priming</td>
<td>Self-priming</td>
<td>1-800-441-9695</td>
</tr>
</tbody>
</table>

**PACKAGING**

1-Gallon (3.78 L)

**LIMITATIONS OF USE**

Apply only when air and surface temperatures are above 50°F (10°C) or above and when the air and surface temperatures will remain above 50°F (10°C) for the next 24 hours. Avoid exterior application late in the day when dew and condensation are likely to form or when rain is anticipated. Not recommended for exterior horizontal surfaces unless these surfaces can be protected from dew and rain for 7 days. Wait at least 7 days after painting before cleaning the surface with a non-abrasive, mild cleanser. Not recommended for polypropylene or polyethylene plastics, roofs, garage floors or concrete floors subject to hot tires, continuous water immersion environments, such as bathtubs, sinks, shower basins and pools. Do not use on large wood substrates or the bodies of homes. Not recommended for very flexible substrates subject to abuse; such as canvas, nylon rope or rubber. Not recommended to be blended with the V76 series. PROTECT FROM FREEZING.