The Secretary of the Interior's Standards for Rehabilitation
Introduction to the Standards

The Secretary of the Interior is responsible for establishing standards for all programs under Departmental authority and for advising Federal agencies on the preservation of historic properties listed in or eligible for listing in the National Register of Historic Places.

The Standards for Rehabilitation (codified in 36 CFR 67 for use in the Federal Historic Preservation Tax Incentives program) address the most prevalent treatment. "Rehabilitation" is defined as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values."

Initially developed by the Secretary of the Interior to determine the appropriateness of proposed project work on registered properties within the Historic Preservation Fund grant-in-aid program, the Standards for Rehabilitation have been widely used over the years—particularly to determine if a rehabilitation qualifies as a Certified Rehabilitation for Federal tax purposes. In addition, the Standards have guided Federal agencies in carrying out their historic preservation responsibilities for properties in Federal ownership or control; and State and local officials in reviewing both Federal and nonfederal rehabilitation proposals. They have also been adopted by historic district and planning commissions across the country.

The intent of the Standards is to assist the long-term preservation of a property's significance through the preservation of historic materials and features. The Standards pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and interior of the buildings. They also encompass related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction. To be certified for Federal tax purposes, a rehabilitation project must be determined by the Secretary to be consistent with the historic character of the structure(s), and where applicable, the district in which it is located.

As stated in the definition, the treatment "rehabilitation" assumes that at least some repair or alteration of the historic building will be needed in order to provide for an efficient contemporary use; however, these repairs and alterations must not damage or destroy materials, features or finishes that are important in defining the building's historic character. For example, certain treatments—if improperly applied—may cause or accelerate physical
deterioration of the historic building. This can include using improper repointing or exterior masonry cleaning techniques, or introducing insulation that damages historic fabric. In almost all of these situations, use of these materials and treatments will result in a project that does not meet the Standards. Similarly, exterior additions that duplicate the form, material, and detailing of the structure to the extent that they compromise the historic character of the structure will fail to meet the Standards.

The Secretary of the Interior's Standards for Rehabilitation

The Standards (Department of Interior regulations, 36 CFR 67) pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction. The Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new
work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.
Because it can be easily shaped by sawing, planing, carving, and gouging, wood is used for architectural features such as clapboard, cornices, brackets, entablatures, shutters, columns and balustrades.

These wooden features, both functional and decorative, may be important in defining the historic character of the building and thus their retention, protection, and repair are important in rehabilitation projects. Wood has played a central role in American building during every period and in every style.

Whether as structural membering, exterior cladding, roofing, interior finishes, or decorative features, wood is frequently an essential component of historic and older buildings.

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*Wood*  
Identify, retain, and preserve

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Identifying, retaining, and preserving wood features that are important in defining the overall historic character of the building such as siding, cornices, brackets, window architraves, and doorway pediments; and their paints, finishes, and colors.

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*Wood*  
not recommended....

Removing or radically changing wood features which are important in defining the overall historic character of the building so that, as a result, the character is diminished.
Removing a major portion of the historic wood from a facade instead of repairing or replacing only the deteriorated wood, then reconstructing the facade with new material in order to achieve a uniform or "improved" appearance.

Radically changing the type of finish or its color or accent scheme so that the historic character of the exterior is diminished.

Stripping historically painted surfaces to bare wood, then applying clear finishes or stains in order to create a "natural look."

Stripping paint or varnish to bare wood rather than repairing or reapplying a special finish, i.e., a grain finish to an exterior wood feature such as a front door.

Wood

---Protect and Maintain---

Protecting and maintaining wood features by providing proper drainage so that water is not allowed to stand on flat, horizontal surfaces or accumulate in decorative features.

Applying chemical preservatives to wood features such as beam ends or outriggers that are exposed to decay hazards and are traditionally unpainted.

Retaining coatings such as paint that help protect the wood from moisture and ultraviolet light. Paint removal should be considered only where there is paint surface deterioration and as part of an overall maintenance program which involves repainting or applying other appropriate protective coatings.

Inspecting painted wood surfaces to determine whether repainting is necessary or if cleaning is all that is required.

Removing damaged or deteriorated paint to the next sound layer using the gentlest method possible (handscraping and handsanding), then repainting.

Using with care electric hot-air guns on decorative wood features and electric heat plates on flat wood surfaces when paint is so deteriorated that total removal is necessary prior to repainting.

Using chemical strippers primarily to supplement other methods such as handscraping, handsanding and the above-recommended thermal devices. Detachable wooden elements such as shutters, doors, and columns may--with the proper safeguards--be chemically dip-stripped.
Applying compatible paint coating systems following proper surface preparation.

Repainting with colors that are appropriate to the historic building and district.

Evaluating the overall condition of the wood to determine whether more than protection and maintenance are required, that is, if repairs to wood features will be necessary.

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Failing to identify, evaluate, and treat the causes of wood deterioration, including faulty flashing, leaking gutters, cracks and holes in siding, deteriorated caulking in joints and seams, plant material growing too close to wood surfaces, or insect or fungus infestation.

Using chemical preservatives such as creosote which can change the appearance of wood features unless they were used historically.

Stripping paint or other coatings to reveal bare wood, thus exposing historically coated surfaces to the effects of accelerated weathering.

Removing paint that is firmly adhering to, and thus, protecting wood surfaces.

Using destructive paint removal methods such as a propane or butane torches, sandblasting or waterblasting. These methods can irreversibly damage historic woodwork.

Using thermal devices improperly so that the historic woodwork is scorched.

Failing to neutralize the wood thoroughly after using chemicals so that new paint does not adhere.

Allowing detachable wood features to soak too long in a caustic solution so that the wood grain is raised and the surface roughened.

Failing to follow manufacturers’ product and application instructions when repainting exterior woodwork.

Using new colors that are inappropriate to the historic building or district.

Failing to undertake adequate measures to assure the protection of wood features.

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**Wood Repair**

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Repairing wood features by patching, piecing-in, consolidating, or otherwise reinforcing the wood using recognized preservation methods.

Repair may also include the
limited replacement in kind—
or with compatible substitute
material—of those extensively
deteriorated or missing parts
of features where there are
surviving prototypes such as
brackets, molding, or sections
of siding.

not recommended....

Replacing an entire wood feature such as a cornice or wall when repair of the
wood and limited replacement of deteriorated or missing parts are appropriate.

Using substitute material for the replacement part that does not convey the
visual appearance of the surviving parts of the wood feature or that is physically
or chemically incompatible.

**Wood**

.....Replace

not recommended....

Replacing in kind an entire wood feature
that is too deteriorated to repair—if the
overall form and detailing are still evident—
using the physical evidence as a model to
reproduce the feature. Examples of wood
features include a cornice, entablature or
balustrade.

Replacing rotted wood column base
with new wood.

If using the same kind of material is not
technically or economically feasible, then a
compatible substitute material may be
considered.

not recommended....

Removing a feature that is unreparable and not replacing it; or replacing it with
a new feature that does not convey the same visual appearance.

**Design for Missing Historic Features**

The following work is highlighted to indicate that it represents the particularly
complex technical or design aspects of rehabilitation projects and should only
be considered after the preservation concerns listed above have been
addressed.

recommended....

Designing and installing a new wood feature such as a cornice or
doorway when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the size, scale, material, and color of the historic building.

not recommended.....

Creating a false historical appearance because the replaced wood feature is based on insufficient historical, pictorial, and physical documentation.

Introducing a new wood feature that is incompatible in size, scale, material and color.
SECTION 01010

SUMMARY OF WORK

PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere.

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

B. The following is a brief summary of the Work.

The project consists of primarily restoration and painting of the existing wood trim, pilasters, cornice, and balustrade. The projects also includes replacement of slate roof shingles, repointing of the masonry chimney, recoating of the low slope roof area, patching of the built-in gutter, and testing of the roof drain system.

Restoration work involves working on surfaces that contain lead based paint and as such all contractors shall be certified to work with lead based painted materials (refer to Wesleyan University General Conditions for project requirements).

The General Contractor will provide a full-time on the job supervisor/coordinator at all times during the course of the work.

Refer to the drawings and specifications for a more complete indication of the scope of work required.

END OF SECTION 01010
SECTION 01026
UNIT PRICES

PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:
   1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

1.2 – SUMMARY

A. This section specifies administrative and procedural requirements for unit prices.
   1. A unit price is an amount stated on the Bid Form or in the specifications as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the quantities of Work required by the Contract Documents are increased or decreased.
   2. Unit prices include all necessary material, overhead and profit.
   3. Refer to individual drawings for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified on the drawings.

B. Schedule: A “Unit Price Schedule” is included at the end of this section. Specification Sections referenced in the Schedule contain requirements for materials and methods described under each unit price.
   1. The Owner reserves the right to reject the Contractor’s measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner’s expense.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

PART 4 – SCHEDULES

4.1 – UNIT PRICE SCHEDULE

A. Item No. 1 – Soffit board replacement:
   1. Description: Replace soffit board deemed to be deteriorated upon review and approval form owner and architect.
   2. Unit of measurement: Board foot.
SECTION 01026

UNIT PRICES

B. Item No. 2 – Slate shingle replacement:

1. Description: Replace broken slate shingles as required

2. Unit of measurement: Per slate shingle.

END OF SECTION 01026
SECTION 04515
MASONRY RESTORATION

PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.

3. General material, equipment, and workmanship standards are specified in Division 1.

B. In general, masonry work covered in this section includes repointing of the existing masonry chimney. If additional work is required in other areas, a unit cost shall be used as the basis of compensation. The contractor shall provide a unit cost per square foot of area to remove existing mortar and to repoint with new mortar. Unit costs shall include all costs associated with the work including overhead and profit.

1.2 – SUBMITTALS

A. Submittals Requirements and Procedures are specified in Division 1.

B. Submit, at job site, samples of all repointing mortar color and texture.

C. Submit product data for products specified in this section. Submit letters from manufacturers certifying that the products supplied to the Project conform to the product data information for the following products:

1. Premixed mortar, if used or site mixed mortar.

D. Upon Architect's request, submit copies of materials invoices showing compliance with specifications.

E. Submit exact description of mortar mix and components for mortar if different than specified. Mortar mix for repointing shall match existing in color and texture. List proportions, brand name for manufactured items, and source for other items. Submit this after approval of sample repointing before actual work begins.
F. Submit description of methods to be used for repointing.

1.3 – QUALITY ASSURANCE

A. Restorer for work covered by this Section and shown on the drawings: Company with not less than 5 years successful experience in comparable masonry restoration projects and employing personnel skilled in the restoration processes and operations indicated. Only skilled journeymen masons who are familiar and experienced with the materials and methods specified and are familiar with the design requirements shall be used for masonry restoration.

1.4 – JOB CONDITIONS

A. Protect persons, motor vehicles, mechanical units, building site and surrounding buildings from injury resulting from masonry restoration work.

B. Do not restore masonry or clean when the air temperature is below 40° F. rising or below 50° F. falling, unless work is enclosed and heated. Do not erect masonry when temperature of masonry and masonry units is below freezing.

C. Protect work from freezing for at least 48 hours after construction.

D. Protect work from rain, snow, and dirt. Cover top of masonry work when it is not being worked on.

E. If removal of old mortar makes the masonry more vulnerable to water entry, point such joints before the next rain is predicted or before the end of the day, whichever is sooner. If mortar match is difficult, apply new mortar with joints raked for later surface pointing with approved color mortar. Same procedure applies to precast concrete patch work.

1.5 – SEQUENCE OF THE WORK

A. In general proceed in the following order:

1. Rout out existing mortar from mortar joints.

2. Remove existing sealants and tar from masonry.

3. Repoint brick chimney as specified in this Section.
SECTION 04515
MASONRY RESTORATION

1.6 – DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in unopened containers bearing manufacturer's identification. Secure covers when materials are not being taken form containers. Store materials in secure areas.

PART 2 – PRODUCTS

2.1 – MATERIALS

A. Portland cement: ASTM C150, Type I, light color. Use one brand and type of cement for entire Project unless existing mortar tests demand otherwise.

B. Hydrated lime: ASTM C207, Type S.

C. Aggregate: ASTM C144. For brick masonry, coarseness, range, and color shall match existing as close as possible.

D. Water: Fit to drink.

E. Pigments: Non-fading mineral pigments. The following are approved:
   1. L.M. Scofield Co. N.Y. office phone is (212) 557-0406.
   2. Frank D. Davis Co. Eastern office phone is (301) 776-2400.
   3. "SGS Mortar Colors": Soloman Grind-Chem Services, Inc.

F. Masonry cleaners:

   1. For excess mortar from repointed surfaces: Sure Klean 101 Lime Solvent or Sure Klean 600 Detergent by ProSoCo, Inc. or 202 New Masonry Detergent or 200 Lime Solv by Diedrich Technologies.

2.2 – MIXES

A. Mortar for repointing shall be ASTM C270, Type N. Summary of proportions by volume:

   1 part Portland cement
   1 part hydrated lime (Type N and pointing mortar)
   Aggregate: 2-1/4 to 3 times combined volume of cement or cement and lime

B. The mortar should be softer than the units being repointed and no harder than the original mortar.

C. Measure materials with box, not shovel. Add water as required to make plastic mix.

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D. For pointing mortar, add just enough water to make a damp mixture and let stand 1 to 2 hours in a cool place. Remix with enough water to make a workable mix.

E. Do not use masonry cement.

F. Option for repointing mortar may be a pre-mixed, pre-colored cement-lime based mixture formulated to comply with the requirements of ASTM C-270 Type N mortar.

G. Mortar shall match existing mortar in color and texture and shall be no harder than the original mortar. "Existing mortar" means original mortar, not subsequent patching. Add white cement, dark cement, and vary aggregate first to achieve a match. Use pigment only if aggregate and cement cannot be matched.

PART 3 – EXECUTION

3.1 – RESTORATION AND INSTALLATION

A. Restore existing masonry to sound, water resistant condition as nearly equal to original condition and appearance as possible.

B. Restore masonry as follows:

1. Repoint all mortar joints as indicated on the drawings. Remove surface mortar at least 3/4" deep and repoint joint to match existing exactly. Apply pointing mortar no more than 1/4" deep each layer, and apply successive layers as soon as the former layer is thumbprint-hard.

2. If mortar is substantially cracked, soft, or otherwise unsound, remove mortar back to sound material. If sound mortar is not reached for at least three quarters of the brick depth, remove brick, clean out to inner wythe and reset brick. Apply pointing mortar no more than 1/4" deep each layer, and apply successive layers as soon as the former layer is thumbprint-hard.

3. Cut out old mortar by hand with chisel and mallet or with power tools. Masons must be skilled in the use of cutting power tools. Do not cut into bricks or widen joints more than their original width. If in the Architect's judgement, the joints are not being properly cut, change power tool operator(s) or continue with hand tools at no additional cost to Owner.

4. Cure mortar by maintaining in damp condition for not less than 72 hours.

5. Clean masonry upon completion of repointing following manufacturer's instructions.
PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.

3. General material, equipment, and workmanship standards are specified in Division 1.

4. Unit prices are specified in Section 01026.

5. Paint is specified in Section 09900.

1.2 – DESCRIPTION OF WORK

A. Restoring wood pilasters, cornice and trim, and roof balustrade. Restoring will include the use of epoxy consolidants, replacing portions of trim pieces, cutting out and providing dutchman.

1.3 – REFERENCE STANDARD

A. The Secretary of the Interiors “Standards for Rehabilitation” will be used as a reference standard.

1.4 – QUALITY ASSURANCE

A. Qualifications:

1. Carpenters/woodworkers: Work must be performed by firms and individuals having not less than five years successful experience in comparable wood restoration projects and employing personnel skilled in the restoration processes and operations indicated.

B. Source of materials: Obtain the materials specified in this section from sources or vendors who are thoroughly familiar with the use and quality of their products.

C. Regulatory requirements: Manufacturer’s materials and products specified in this section must certify that they meet or exceed all applicable regulatory and safety rules and guidelines for handling and using their materials and products.

1.5 – SUBMITTALS
SECTION 06900
WOOD RESTORATION

A. Submittals Requirements and Procedures are specified in Division 1.

B. Submit documentation from the suppliers as to the origin of the specific wood, species and moisture content. Wood found not to be suitable because of general appearance, quality, species or improper moisture content will be rejected.

C. Submit manufacturer’s data, specifications, and instructions for use and handling for all epoxy products and total wood protection products.

1.6 – ENVIRONMENTAL CONDITIONS

A. Do not remove exterior elements of structures when rain is forecasted or in progress. Cover and protect all exposed elements of the structure on a routine basis to prevent direct contact with excessive moisture.

B. Follow manufacturer’s instructions for precautions and effects of products and procedures on adjacent building materials, components and surrounding vegetation and soil.

1.7 – DELIVERY AND HANDLING

A. Deliver materials to site in manufacturer’s original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.

B. Handle materials in accordance with manufacturer’s recommendations and safety guidelines.

1.8 – STORAGE AND PROTECTION

A. Every effort must be made to use and reuse materials that are original to the structure. When removed from their rightful place, these materials must be stored under cover inside the building where they cannot be damaged.

B. If many pieces are to be removed, they must be marked inconspicuously in a consistent manner as to their original location.

C. New material must be kept dry during delivery, storage and handling. Do not allow them to be stored in contact with damp surfaces.

PART 2 – PRODUCTS

2.1 – MATERIALS

A. Non-structural framing:
SECTION 06900

WOOD RESTORATION

1. Native, seasoned (19% moisture content max.) wood to match and replicate existing members in size and shape. If existing wood species cannot be matched, use mahogany if existing is a hardwood and clear cedar if existing is a softwood.

B. Epoxy:

1. Epoxy materials of a type recommended for use in the restoration of wood products.
   a. Epoxy consolidant.
   b. Epoxy adhesive.
   c. Epoxy filler or patching material for general use.

2. Approved manufacturers:
   a. Conservation Services
      7 Goodale Road
      Newton, NJ 07860
      (973) 579-1112

      Manufacturer for ConServ Flexible Epoxy Consolidant 100, Flexible Epoxy Patch 200, Epoxy Adhesive 500 and Structural Epoxy 600.

   b. Abatron
      5501-95th Avenue
      Kenosha, WI 53144
      (800) 445-1754

      Manufacturers of Liquidwood – 1 (Consolidant), Woodepoxy – 2 (Adhesive paste).

   c. West System
      102 Patterson Ave.
      P.O. Box 665
      Bay City, MI 48707-0665
      (866)-937-8797 / 989-684-7286 / Fax 989-684-1374

      Manufacturers of West System 105 epoxy resin, 205 fast hardener, 401 High Density gap filler, 407 Low Density surface filler, and Six 10 epoxy adhesive.

   d. Other manufacturer's may be submitted for review and approval.

SECTION 06900
WOOD RESTORATION

PART 3 – EXECUTION

3.1 – PREPARATION

A. Take care to minimize any damage to the entire structure, inside and out. If pieces and parts must be removed on a temporary basis, remove such pieces in such a way so that they can be put back in place with minimum visual impact.

B. Historic structure precautions:

1. No smoking is allowed by all personnel around historic structures.

2. If historic materials cannot be saved, the replacement piece must be an accurate duplicate of the original and installed using the exact manner as the original. If the original manner of installation is unknown, follow recognized standards.

3. All materials that are removed should be inconspicuously marked with the date and a symbol designating repair or maintenance.

4. Concealed carpentry need to duplicate the concealed historic material but must be of similar thickness to provide equivalent support, durability, and strength. If the historic work has a unique feature in the concealed carpentry, duplicate it.

C. Protection:

1. Protect all adjacent surfaces from spills with plastic sheeting. If any epoxy happens to spill, wipe it up immediately before it sets or it will not come up.

2. All workers must be protected from the effects of dusts and chemicals during the cleaning operations. The supervisor should ensure that all workers wear adequate, approved protective clothing and are provided with protective equipment during these operations and as required at other times.

3. Provide masking or covering on adjacent surfaces and permanent equipment. Secure coverings without the use of adhesive type tape or nails. Impervious sheeting which produces condensation should not be used.

D. Surface preparation for epoxy:

1. Dry affected wood member completely. Be prepared to use several means and methods and time to dry out wood members. If this precaution is not taken, the epoxy can actually trap moisture in wood fibers and accelerate the decay process.

2. Organization and cleanliness are keys to proper epoxy repair. Have all materials at hand before the mixing process begins.
3.2 – ERECTION, INSTALLATION, APPLICATION

A. Execute non-structural and finish carpentry according to established good practice.
   1. Anchor work firmly to structure.
   2. Use adhesive as well as fasteners whenever possible and when appropriate.
   3. Replicate existing joinery details where appropriate.
   5. Use non-corrosive fasteners – see Section 01600.
   7. Contractor is at liberty to introduce other means and methods to accomplish any and all tasks but must first present such other means and methods to the Architect and Owner for approval before execution. All means and methods must comply with the “Standards for Rehabilitation”.

B. Fabrication and replacement “Dutchmen” may be done in a woodshop or on-site. Remove original wood piece or component from structure and use as guide for replication. Fasten “Dutchmen” to original architectural component using non-corrosive fasteners, epoxy adhesives, dowels, or a combination of methods and or other approved methods.

C. Generally use epoxy materials as follows:
   1. Drill ¼" or 3/16" holes in affected wood to receive epoxy consolidant. Holes should be drilled at an angle and spaced approximately 2" on center in staggered rows. The top of one hole should line up with the bottom of the next hole. Be sure not to drill through the entire surface for consolidant will leak out from behind. Dam any surface cracks with oil clay so that epoxy will not leak.
   2. Following manufacturer's instructions, carefully squirt the consolidant into the pre-drilled holes. The aim is to completely saturate the wood. Move from hole to hole refilling until the wood can hold no more. More than one application may be needed.
   3. If severed pieces need to be re-attached, glue them in place with a mixture of consolidant and filler.
   4. After the consolidant has cured, fill the voids in the surface with epoxy filler. If the voids are large, apply filler in succession, 1" of depth at a time. This cuts down on the possibility of problems associated with heat build-up.
SECTION 06900

WOOD RESTORATION

5. Mix the two part epoxy filler similar to the consolidant. When mixed, the filler should have the consistency of a glazing compound that can be worked with a putty knife. Apply the filler to the surface. Build up filler layers slightly above the wood surface to allow for planing and sanding smooth after it has cured.

6. Fill gaps in mitered joints, and deep checks in wood with epoxy gap fillers/adhesives.

7. Fill surface gouges, or build up trim profiles using a low density epoxy filler to allow for sanding and shaping.

D. It is recognized that wood repair, restoration and epoxy work cannot be accomplished without first removing the existing paint finishes. Coordinate with other trades (painters) and cooperate with the necessary procedures of restoration to achieve successful restoration.

END OF SECTION 06900
SECTION 07320
SLATE SHINGLES

PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.

3. General material, equipment, and workmanship standards are specified in Division 1.

4. Unit Prices are specified in Section 01026.

5. Sheet metal flashings are specified in section 07600.

B. Description of Work:

1. Replace missing or broken slate along hip rafters where indicated on the drawings.

1.2 – SUBMITTALS

A. Submittals Requirements and Procedures are specified in Division 1.

B. Submit samples of slate shingles for Architect’s selection. Submit manufacturer’s product data.

C. Submit fastener samples.

D. Submit product data sheets and list of other products to be used.

1.3 – REFERENCE STANDARDS

A. The National Roofing Contractors Association Roofing and Waterproofing Manual, "Steep Roofing" section, is hereby incorporated by reference. Contractor shall be familiar with this reference, and a copy shall be on the job.


C. Where these Specifications and Drawings are more strict than the reference standard listed in A and B above, follow the stricter requirements.

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SECTION 07320
SLATE SHINGLES

1.5 – TEMPORARY PROTECTION

A. Protect existing building from water damage from the time roof repairs and replacement begin until new or repaired roof is waterproof. Methods include the following:

1. Schedule work so that no more area of existing roofing is removed than can be made waterproof the same day, before rain.

2. Provide temporary waterproof protection over openings.

3. Cover portions of the roof which are not waterproof with strong, waterproof, well-secured tarpaulins.

4. If, in spite of precautions, leaking occurs, respond to notification on an emergency basis. Cooperate with Owner in stopping leaks and minimizing damage.

PART 2 – PRODUCTS

2.1 – MATERIALS

A. Slates: Semi-weathering gray-green slates to match existing in color, thickness, and shape. Existing slates which have not been damaged and which have not deteriorated may be reused; if so they should be used all together to cover separate planes of the roof, not mixed with new slates.

1. Furnish additional slates for replacement use: Additional slates shall have some sizes and range as slates used for roofing.

B. Underlayment (if required): Asphalt or modified bitumen-saturated and coated fiberglass base sheet without perforations or holes, equivalent to one of the following.

   CertainTeed "The WinterGuard".
   Siplast "Paradiene 20".
   Tamko "Nail Fast".

C. Fasteners: Annular grooved or helical grooved deformed shank broad-headed stainless steel slate roofing nails long enough to penetrate roof sheathing 1/2" to 3/4".

D. Flashing cement: Trowel-grade non-asbestos mineral-fibered asphalt roofing mastic, ASTM D-2822, Type I and ASTM D-4586, Type I. One product which conforms to the requirements of this paragraph is Karnak 10AF Flashing Cement.
PART 3 – EXECUTION

3.1 – APPLICATION

A. Carefully remove existing slate shingles as required to accommodate roof alterations indicated.

B. Apply materials generally in the following order:

1. Apply underlayment over all exposed roof surfaces. Lap joints 12", the upper over the lower. Apply patches where underlayment is cut, broken, or fitted around penetrations. Tape patches and all penetration and edge joints. At ridges, lap underlayment from both sides over ridge and 12" down the other side.

2. Apply slates to match existing exposure and lapping and according to reference standard recommendations.

3. At intersections between sloped roof and stone surfaces, install metal step flashing as recommended by SMACNA. Lower flashings shall extend 6" or more out between slates, and shall extend 5" or more up wall, behind counter flashing.

4. Cut, bend and fit metal flashing to suit conditions with minimum metal exposure. If fasteners are used, set fasteners in mastic. Ideally, keep use of sealants to a minimum. Make new repair work watertight as possible with underlayment, flashings and slate.

END OF SECTION 07320
SECTION 07560
MEMBRANE ROOFING REPAIRS

PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.

3. General material, equipment, and workmanship standards are specified in Division 1.

4. Flashing and sheet metal is specified in Section 07600.

B. Repair the built-in gutter as indicated on the drawings and repair low slope built-up roof as required prior to recoating the roof with aluminum coating. For bidding purposes, assume a total of (10) one square foot repairs will be required.

1.2 – SUBMITTALS

A. Submittals Requirements and Procedures are specified in Division 1.

B. Submit product list and methods intended for use. If Contractor intends to use exactly the products listed in Part 2 below, say so in writing. If Contractor intends to use alternate systems and products, make written application for approval.

1.4 – REFERENCES


1.5 – TEMPORARY PROTECTION

A. Protect existing building from water damage from the time roof repairs begin until repaired roof is waterproof. Methods include the following:

1. Schedule work so that no more area of existing roofing is cut than can be made waterproof the same day, before rain.

2. Use protection such as plywood when working over existing roofing. Do not roll or drag equipment over roof surface, and do not permit repetitive foot traffic over roof surfaces.
SECTION 07560
MEMBRANE ROOFING REPAIRS

3. Protect drains from being blocked. Keep drains covered while work is going on. When work is not going on, place strainers on drains and clean debris from roof.

4. At the end of each day flash edges and provide cutoffs.

5. Provide temporary waterproof protection over openings.

6. If, in spite of precautions, leaking occurs, respond to notification on an emergency basis. Cooperate with Owner in stopping leaks and minimizing damage.

PART 2 – PRODUCTS

2.1 – MATERIALS AND SYSTEMS

A. The products listed below are manufactured by Koppers Architectural and Construction Materials. Equivalent products by other manufacturers may be used if approved by Architect.

B. Asphalt roof resaturant: Koppers Roof Resaturant 425.

C. Asphalt roof cement: Koppers Hydroshield Mastic 451.

D. Coated glass fabric: Koppers Glasfab.

E. Aggregate: Match existing adjacent aggregate. Existing aggregate may be reused if screened or washed to remove silt and other dirt.


H. Roofing felt: fiberglass coated base sheet or Owens-Corning Fiberglass Shingle Underlayment.

NOTE TO SPECIFIER: ASPHALT ABOVE; TAR BELOW

A. Flashing Cement: Karnak 19AF.

B. Aluminum Roof Coating: Karnak 98AF Fibered Aluminum Roof Coating.

C. Primer: Karnak 100Af Non-fibered emulsion.


D. Roof resaturant: Karnak 198AF Asphalt roof resaturant
PART 3 – EXECUTION

3.1 – ROOF REPAIRS

A. Before roof repair work begins verify that all drains function properly. Perform hose test. If drains do not function, notify Architect, who may request added work under a Change Order to clear drains.

B. Just before Substantial Completion verify that all drains function properly. Either observe during substantial rain or perform hose test. Notify Architect so that he/she can be present during tests. If drains were clear before work began and are not clear just before Substantial Completion, clear drains and retest.

C. Notify Architect 72 hours before starting roof repair work.

D. Repair built-in gutter as indicated on the drawings.

E. Repair unsound blisters as follows:

1. Blisters are identified by their elevated surfaces and soft, spongy feel.

2. Sound blisters which need not be repaired have no bare spots, cracks, or other deteriorated conditions.

3. Unsound blisters have bare spots, cracks, or other deteriorated conditions.

4. Spud aggregate from the immediate area of the blisters, and sweep working area clean of dust, dirt, and other debris.

5. Make an "X" cut across the blister extending through all elevated plies, and lay the segments back. Leave the blister open long enough to allow drying.

6. Trowel roof cement under each segment, being careful to obtain complete coverage. Press each segment into place. If necessary for bonding, apply weight.

7. Apply resaturant at the rate of 7 gallons per 100 square feet (1/2 pint per square foot) over the bare area and extending at least 4" onto the embedded aggregate. Brush a 4" strip of tar-coated glass fabric onto the resaturant over the "X" cut.

9. If surface at blister is bare, follow specifications for bare spots above.

F. Repair ruptures as follows:

1. Ruptures are breaks in the membrane or part of it.

2. Repair ruptured blisters as specified under blisters above.
3. Spud aggregate from the immediate area of the ruptures, and sweep working area clean of dust, dirt, and other debris.

4. Trowel a thin, complete coat of roof cement over the entire cleaned area.

5. Firmly embed one ply of glass fabric onto the cement, and then trowel another thin coat of cement over the fabric.

6. Apply resaturant at the rate of 7 gallons per 100 square feet (1/2 pint per square foot) over the ruptured area and extending at least 4" onto the embedded aggregate.

G. Repair splits as follows:

1. Splits are long breaks in the membrane or part of it.

2. Spud an area at least 12" wide of the split clean of all aggregate, and sweep the working area clean of dust, dirt, and other debris. Extend spudding and cleaning 24" beyond split at both ends.

3. Install a 6" wide strip of roofing felt dry, centered over the split. Apply thin coat of tar roof cement uniformly over the dry felt and extending to embedded aggregate in all directions.

4. Firmly embed one ply of glass fabric into the cement, and trowel another uniform coat of cement over the fabric. Do not leave any fabric exposed.

5. Apply resaturant at the rate of 7 gallons per 100 square feet (1/2 pint per square foot) over the bare area and extending at least 4" onto the embedded aggregate.

H. Apply (1) coat of non-fibered emulsion primer prior to applying (1) coat of fibered aluminum roof coating over low slope roof area after repairs have been made. Allow primer to cure for 3-5 days before applying aluminum coating. Apply aluminum coating at a rate of 1.5 gallons per 100 square feet.

END OF SECTION 07560
SECTION 07600
FLASHING AND SHEET METAL

PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.

3. General material, equipment, and workmanship standards are specified in Division 1.

1.2 – SUBMITTALS

A. Submittals Requirements and Procedures are specified in Division 1.

B. Submit samples of exposed formed sections, if requested.

C. Submit special details, if any.

PART 2 – PRODUCTS

2.1 – MATERIALS

A. Zinc coated copper: ASTM B370, 16 oz. Use zinc coated copper for all two-part counter flashing in conjunction with terminated roof edges and other metal fabrications as indicated on the drawing.

B. Copper: ASTM B370, 20 oz. minimum. Use copper for all patching and repairing of existing copper and in proximity to existing copper.

C. Cement: Fibrated asphalt flashing cement conforming to the requirements of ASTM D2822, Type II.

D. Fasteners: Use broad-head deformed shank roofing nails for nailing, and use screws, pop-rivets, and other fasteners where appropriate. Use copper or brass fasteners to fasten copper, and zinc-coated copper. Use double galvanized or aluminum fasteners to fasten aluminum and zinc alloy. Use of improper fasteners shall be cause for rejection of the work.

E. Solder: ASTM B32, of grade recommended for metal being soldered.
SECTION 07600
FLASHING AND SHEET METAL

E. Use the following metals in the following locations:

1. Use zinc-coated copper to patch existing lead-coated copper, and use plain copper to patch existing plain copper. Plain copper will be used for all new flashing work unless otherwise directed.

F. Weights and thicknesses shall be as recommended by SMACNA unless specified otherwise, the weights and thicknesses shall be as follows:

1. Copper and lead-coated copper: 20 oz. for crickets and where so indicated and specified, and 16 oz. elsewhere.

G. Fasteners: Use broad-head deformed shank roofing nails for nailing, and use screws, pop-rivets, and other fasteners where appropriate. Rivets shall have non-ferrous mandrels. Use copper or brass fasteners to fasten copper, lead-coated copper, and lead. Use Type 304 stainless steel fasteners to fasten stainless steel. Use of improper fasteners shall be cause for rejection of the work.

H. Solder: ASTM B32, of grade recommended in reference for metal being soldered.

I. Expansion and other joint cover sealant: Pecora BA-98 non-skinning butyl sealant or Tremco non-hardening butyl curtainwall sealant.

2.2 – FABRICATION


PART 3 – EXECUTION

3.1 – INSTALLATION

A. Coordinate sheet metal work with work specified in other sections covering related and adjoining work.

B. Install sheet metal flashings as shown on drawings and according to NRCA and SMACNA references. Where soldering is required "tin" surfaces (unless surfaces are coated), heat metal, and "sweat" solder into joints, fully filling them.

C. Provide expansion joints no more than 8' apart, evenly spaced when exposed to public view. Set expansion joint covers and internal splice plates in bed of sealant, fully filling space.

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not apply sealant to exposed surfaces of sheet metal unless detailed otherwise.

1. Where metal flashings are installed over wall flashings lap them 4" and set laps in sealant.

3.2 – REPAIRS TO EXISTING SHEET METAL

A. Install sheet metal flashings to match existing and according to NRCA and SMACNA references.

B. Carefully examine all sheet metal flashings and roof accessories. Perform repairs indicated on the drawings, including the following:

1. Refasten loose parts, and replace missing fasteners.

2. Remove metal which is eroded to less than half its original thickness, metal which is torn, folded, or otherwise deteriorated beyond reasonable repair. Provide new metal to replace metal which is removed.

3. Provide new metal where existing is missing.

END OF SECTION 07600
PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.

3. General material, equipment, and workmanship standards are specified in Division 1.

4. Wood restoration is specified in Section 04515.

5. Flashing and sheet metal is specified in Section 07600.

6. Painting is specified in Section 09900.

1.2 – SUBMITTALS

A. Submittals Requirements and Procedures are specified in Division 1.

B. Submit manufacturer's product data and color samples (complete color set of actual materials). Data shall indicate conformity to reference specifications listed below. Include requirements for primers, if any. Include manufacturer's application instructions.

1.4 – QUALITY ASSURANCE

A. Approved manufacturers in addition to those listed below:

Pecora Corporation
Dow Corning Co.
General Electric Co.

PART 2 – PRODUCTS

2.1 – MATERIALS

A. Sealant for non-moving exterior joints: One part, neutral-curing, ultra-low modulus, non-staining silicone sealant meeting TT-S-230C, Class A, ASTM C-920, Class 100 Type S, Grade NS.

B. Sealant for bedding metal coping expansion joint cover: Non-staining butyl sealant.

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SECTION 07900

JOINT SEALANTS

C. Primers: As recommended by sealant manufacturer for sealant and building surfaces where used.

D. Joint backing: Waxed closed-cell ethafoam. For solid-backed joints, use polyethylene bond breaker tape. For exterior silicone sealant, if specified, use open cell polyurethane foam approved and recommended by sealant manufacturer.

E. Sealant color: As selected by Architect.

PART 3 – EXECUTION

3.1 – PREPARATION

A. Remove existing sealant, caulking compound, mortar, and other materials from existing joints to be sealed. Remove as much of existing materials as may practically be removed with sharp knife and rave hook.

B. Clean surfaces to which sealant is to be applied. Brush off dust. Remove loose materials. Wash off grease, oil, and other contaminants. Apply primers unless manufacturer specifically recommends against their use. If primer is applied to exposed surfaces outside sealed joints, remove it immediately with toluene, "Zip Jelly", or other solvent recommended by primer manufacturer.

3.2 – APPLICATION

A. Apply sealant only to dry surfaces on relatively dry day, at temperature of 40° F. or above.

B. Seal the following joints:

1. Openings in exterior walls, coping joints, joints between different materials and components. Where both sides are exposed, seal both inside and outside.
   a. Use silicone sealant and backer rod or bond breaker tape.

2. Seal above reglets and flashings inserted into and attached to masonry and concrete.
   a. Use sealant as specified in 1 above.

3. Seal other joints as indicated on drawings.

   Note: If the word "Caulk" appears on drawings, it means "Seal".

C. Apply joint backing to joints open in back or over 1/2" deep. Compress backing so as to

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JOINT SEALANTS

form a firm stop which will resist sealant pressure. If joint is not open in back, apply bond breaker tape.

1. Sealant joint dimensions shall be as follows unless indicated otherwise:

   For joints up to 1/2" wide, depth = 1/4" deep.

   For joints wider than 1/2", depth = 1/2" or depth = 1/2 width, whichever is smaller.

   For fillet beads at joints with little anticipated movement, width = 1/2" diagonally.

2. Use gauge for inserting joint backing to proper depth.

   ![Protrusion to push backer rod to proper depth.]

D. Drive sealant into joints, filling from the bottom up. Tool joints to produce neat, tightly adhering beads.

E. Install impregnated foam sealant according to manufacturer's instructions. Unless shown otherwise position sealant at the inside portion of joints.

F. Where necessary for drainage, install weep tubes. Allow to protrude slightly from joint. Seal tightly around tubes, but leave both ends open.

G. Clean up spills, using solvent recommended by manufacturer.

END OF SECTION 07900
PART 1 – GENERAL

1.1 – DESCRIPTION

A. Related Work Specified Elsewhere:

1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance Fiscal Year 12 General Requirements.

2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.

3. General material, equipment and workmanship standards are specified in Division 1.

1.2 – GENERAL WORK INCLUDED

A. The preparation for repainting wood trim, and balustrade on the exterior will involve the removal of loose (peeling and flaking) paint and the sanding of existing paint to remain.

Although testing the paint for lead content has not been done, the existing paint will be treated as containing lead.

Therefore, all paint removal and clean-up shall be done by persons certified to remove and dispose of lead containing paint in conformance with governmental regulations, requirements and laws regarding and handling of lead paint and disposing of hazardous waste, as well as current applicable industry standards. The Contractor shall be responsible for carrying out this work without additional charges to the bid price.

B. The grounds and the building are open to the public. All work and protective measures shall be done so as not to damage the structure or its historically significant components, or cause harm to the grounds or the public.

1.3 – COMPLIANCE

A. The paint removal shall be done carefully and thoroughly in full compliance with Federal EPA regulations, and Connecticut DEP State Hazardous Waste Regulations, Sec. 22(A) - 449(c), 1-42. OSHA regulations regarding worker safety shall also be fully complied with.

1.4 – REFERENCE STANDARDS

A. Department of Environmental Protection Bureaus of Waste Management. Hazardous waste regulations 22a-449 (c)-100 to 110 and 22a-449 (c)-11. Revised July 17, 1990.


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1.5 – QUALITY ASSURANCE

A. The following paint manufacturers are approved, in addition to certain specialty manufacturers listed in schedule.
   - Benjamin Moore Co.

1.6 – SUBMITTALS

A. Submittals Requirements and Procedures are specified in Division 1.

B. Certify conformity to specified flame spread and lead content ratings of the new paint unless such information is on labels.

1.7 – PRODUCT HANDLING

A. Store products so as to minimize danger of fire and so as to protect building surfaces and equipment from spills. Paint remover, paints and solvents or thinners may not be stored in the building.

1.8 – ENVIRONMENTAL CONDITIONS

A. Do not paint when temperature of air or surfaces being painted is below 40 degrees F. Do not paint when atmosphere is damp. Do not paint damp surfaces.

PART 2 – PRODUCTS

2.1 – MATERIALS

A. Use first quality products of the types specified in schedule. "First quality" means best line of paints produced for normal use by selected manufacturer. Base bids on above specifications.

1. Ship materials in unopened manufacturer's containers.

2. Use thinners recommended by paint manufacturers. In general, use mineral spirits to thin oleoresinous paints.

3. See Section 01600, which specifies that material shall conform to ANSI Z66.1-1964,
"Specifications to Minimize Hazards to Children from Residual Surface Coating Materials."

2.2 – COLORS

A. To match existing and approved by Architect.

PART 3 – EXECUTION

3.1 – CONDITION OF SURFACES

A. The historic character of this building requires careful adherence to the recommended procedures for preparation and repainting contained in the Reference Standards specified in Part 1 above.

3.2 – PREPARATION

A. All surfaces not requiring complete paint removal:

   1. Clean surfaces by washing with TSP, household detergent and chlorine bleach to remove all dirt, stains and mildew or mold and rinse thoroughly. Scrape any loose or peeling paint after application of paint remover. Sand edges, rough spots and patch holes as required. Wipe clean of all dust.

B. Patch, seal and caulk all openings, holes and cracks and countersink "new" nail heads and patch before applying finish coats of paint.

C. Protect adjacent surfaces and items.

3.3 – CONTAINMENT AND SAFETY PRECAUTIONS

A. The Contractor shall insure that the paint removal area is properly contained by installing 6 mil polyethylene sheeting beneath the work area to catch all liquid waste run-off or contaminated debris. The Contractor is responsible for insuring that no hazardous waste water or debris is left on, or absorbed into the ground.

B. The Contractor shall restrict the work area to only authorized persons by whatever means necessary. A minimum perimeter area shall be cordoned off to prevent building and grounds users from access to the work area.

3.4 – DISPOSAL

A. The Contractor shall take every effort to "treat" the lead paint waste so as to render it non-hazardous for disposal purposes. Refer to Wesleyan University general requirements for disposal of lead based paint.
SECTION 09900

PAINTING

3.5 – PAINT

A. Follow manufacturer's directions for application and rate of coverage.

B. Apply paint evenly. Produce uniform surfaces. Avoid runs, sags, brush or roller marks, "Holidays," differences in sheen or color and other blemishes.

C. Architect has specified number of coats of paint based on the assumption that quality of paint, opacity of pigments, extent of thinning and quality of workmanship will be good. If Contractor disputes Architect's scheduled systems, notify Architect in writing before starting work. Otherwise, apply additional coats as required to achieve performance requirements specified in paragraph (B) above.

D. Brush paint into cracks and seams.

E. Cut straight, neat edges. Curved edges shall be uniform and neat.

F. Do not allow paint to get on adjacent surfaces. Clean up spills and spatters as soon as possible, and no later than the end of the day.

G. Allow each coat to dry as recommended by manufacturer before applying following coat. Sand lightly between coats to remove surface irregularities.

3.6 – SCHEDULE

A. Schedule of painting systems.

1. Ferrous metals, whether galvanized or not:
   

2. All exterior wood surfaces for opaque paint finish:

   Primer: Benjamin Moore Super Spec Exterior Alkyd Primer -176. Apply primer to all surfaces before installing wood.


END OF SECTION 09900