PROJECT MANUAL

FOR

Reconstruction of the Essen Log Cabin
Wildwood Village Green
Main Street
Wildwood, MO 63040

Issued for Review
23 April 2024

CITY OF WILDWOOD
16860 Main Street
Wildwood, MO 63040

by

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SECTION 01 01 00 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division
   1. Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Use of the site.
   3. Specification formats and conventions.

B. A list of Drawings is contained on the Drawings Cover Sheet.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Reconstruction of the Essen Log Cabin, Wildwood Village Green
   1. Project Location: West end of Main Street, Wildwood, MO.

B. Owner: City of Wildwood, 16860 Main Street, Wildwood, MO 63040
   1. Project Manager: Robyn Keefe, telephone 638-458-0440, x 2009; email Robyn robyn@cityofwildwood.com.

C. Architect: Patterhn Ives, LLC, 130 South Bemiston Avenue, Saint Louis, MO 63105
   1. Project Manager: Carol Quigley, telephone 484-678-1095; email cquigley@patterhn-ives.com.

D. Summary of Work:
   1. The Essen log cabin was originally constructed c. 1870 just east of highway 109 in Wildwood, Missouri. In 2015, the owners of the cabin approached the City of Wildwood about the possibility of donating the historic cabin to the city so that it would be preserved. Prior to the conclusion of any arrangement with the city, the log crib of the cabin was disassembled and the logs stolen. After discovering the location of the stolen logs, the City of Wildwood took possession of them and placed them in secure storage and began a plan for their reconstruction. In 2019, the logs were moved to the Wildwood parking deck where they could be identified and arranged into their four facades on the flat deck, and surveyed for the extent of their deterioration or damage and missing components of the log crib could be identified. Upon completion of the log survey, a preliminary plan for reconstruction of the cabin was prepared. In 2021, the city selected the southeast corner of the forthcoming Wildwood Village Green for the new site of the reconstructed Essen Log Cabin. The reconstruction of the historic Essen Log Cabin will provide an opportunity for the residents of Wildwood to witness and experience the early dwellings of the region in a quiet natural setting of the village green.
   2. The Project includes the Reconstruction of the historic Essen Log Cabin with original disassembled and stored logs and new historically appropriate concrete and stone foundation, replacement and repaired logs from existing historic fabric, new wood roof and gable wall framing, new cedar shake roofing, new wood board doors and new wood single-

glazed "barn sash". The log cabin is 18-10" x 17'-6" and is listed on the City of Wildwood Historic Resource Inventory.

3. Reconstruction of the original log crib shall include relocation of existing tagged logs to the site, preparation of existing logs including cleaning of debris, consolidation of existing checks and knots, borate treatment of all new and existing logs, dutchman repairs of existing checked or deteriorated logs, replacement of missing log sections fabricated from existing available historic logs in possession of owner or whole logs.
4. The contractor shall secure a building permit for each building from the City of Wildwood.

    a. Contractor's responsibility includes submission of the building permit application to the City. The building permit fee shall be waived by the City.
    b. Completed reconstruction work will result in a Certificate of Occupancy, but the scope of work includes no utilities, plumbing, electrical, or mechanical.

1.4 WORK UNDER OTHER CONTRACTS

A. Owner will mow grass and may perform other landscape maintenance work during the Contract Period.

1.5 USE OF THE SITE

A. General: The Reconstruction of the Essen Log Cabin will be constructed in the southeast corner of the Village Green Project. The Village Green Project will be nearing completion when the Essen Log Cabin Reconstruction begins. Contractor's responsibilities include coordination with the General Contractor for the Village Green Project for the duration of the construction period. Contractor shall have full and exclusive use of the Limit of Work area identified on the Contract Drawings but may coordinate with the Site Contractor to arrange additional shared space.

B. Use of Site: Limit use of the site to areas within Cabin limit of work, unless otherwise coordinated with Site Contractor.
    1. Site access is off Main Street. Contractor will be given keys to the padlocks at the gates to the Village Green project.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering system.
    1. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
    1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
    2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for

clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 01 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Types of allowances include the following:

1. Lump-sum cash allowances.

2. Quantity allowances.

B. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices.
2. Section 014000 "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Owner of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Owner's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Owner from the designated supplier.

1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 LUMP-SUM CASH ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials selected by Owner under allowance and shall include taxes and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1.6 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Lump-Sum Allowance: Include the sum of $6,500.00 for door hardware for exterior doors indicated to be operable and keyed or equipped with padlocks.

1. This allowance includes material cost only, as verified by suppliers' receipts.

2. Cost of ordering hardware, communicating with hardware supplier, delivery and handling, installation, and overhead and profit are part of Contract Price and not part of this allowance.

END OF SECTION 01 21 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Division 1 Section "Allowances" for products selected under an allowance.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use CSI Form 13.1A.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section.

Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

3. Owner's Action: If necessary, Owner will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Owner will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order or Construction Change Directive for minor changes in the Work.
b. Use product specified if Owner does not issue a decision on use of a proposed substitution within time allocated.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Owner will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

    a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    b. Substitution request is fully documented and properly submitted.
    c. Requested substitution will not adversely affect Contractor's construction schedule.
    d. Requested substitution has received necessary approvals of authorities having jurisdiction.
    e. Requested substitution is compatible with other portions of the Work.
    f. Requested substitution has been coordinated with other portions of the Work.
    g. Requested substitution provides specified warranty.
    h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Owner will consider requests for substitution if received within 60 days after date of Agreement. Requests received after that time may be considered or rejected at discretion of Owner.

1. Conditions: Owner will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

    a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    b. Requested substitution does not require extensive revisions to the Contract Documents.
    c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    d. Substitution request is fully documented and properly submitted.
    e. Requested substitution will not adversely affect Contractor's construction schedule.
    f. Requested substitution has received necessary approvals of authorities having jurisdiction.
    g. Requested substitution is compatible with other portions of the Work.
    h. Requested substitution has been coordinated with other portions of the Work.
    i. Requested substitution provides specified warranty.
    j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. See Division 1 Section, "Summary of Work," for use of site.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to Owner, Owner's Rep, Architect, testing agencies, and authorities having jurisdiction.

B. Water Service: Transport water to site for use in construction operations and personnel drinking water.

C. Electric Power Service: Provide temporary electric service or use portable generators for construction power.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fencing of work areas outside of Owner's security fence: Protection of construction is the sole discretion of the Contractor. Provide minimum 4-foot high red plastic fencing around construction area outside of Owner's security fence.

2.2 TEMPORARY FACILITIES

A. Field Office: Contractor may provide its own temporary field office. Location of field office to be coordinated with Owner and General Contractor of the Village Green Project.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work. Coordinate facilities with General Contractor for Village Green Project.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. At Contractor's option, coordinate shared use of temporary sanitary facilities with General Contractor of Village Green Project.

B. Temporary heating: Not required.

C. Electric Power Service: Provide temporary electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations, or use portable electric generator for all electrical power.

D. Telephone Service: Provide superintendent with cellular phone services.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Maintain support facilities until Owner schedules Substantial Completion inspection. Remove before Substantial Completion.

B. Project Signs: Provide Project at east edge of site near parking, minimum 4-feet by 6-feet in size, prepared as a graphic overlay on painted plywood or plastic/aluminum panel, containing name of project, name of owner, name of architect, and name of contractor. Final text will be provided by the Owner. Unauthorized signs are not permitted.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction

D. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes, high-reach platforms, and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

D. Site Enclosure Fence: Refer to Division 1 Section, “Summary of Work” for construction fence requirements.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

F. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in all buildings.
2. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
3. Provide a minimum of one (1) 10# A-B-C fire extinguisher at project site where work is being performed.

3.5 MOISTURE AND MOLD CONTROL

A. Protect building interior from further exposure to weather. Following crib reconstruction, allow air circulation during the construction period.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor.
2. At Substantial Completion, repair site paving and grass areas used during construction period.

END OF SECTION 01 50 00

SECTION 03 30 00 - CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Concrete footings.
   2. Concrete foundation walls.
   3. Concrete slab on grade.

B. Related Section include the following:
   1. Stone veneer is specified in Division 4 Section, “STONE MASONRY VENEER.”

1.3 SUBMITTALS

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

B. Design Mixtures: For each concrete mixture.

C. Shop Drawings: For steel reinforcement.

D. Test reports: Submit slump test results.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

   1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
   2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
   1. Provide epoxy-coated bars at wall termination caps.

B. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from galvanized steel wire into flat sheets.

C. Truss-type reinforcing: Horizontal joint reinforcing, fabricated from 0.01875-inch diameter steel rods, hot-dipped galvanized, meeting the requirements of ASTM A82, width indicated on Drawings.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or II.

B. Normal-Weight Aggregates: ASTM C 33, graded, 1-1/2-inch nominal maximum coarse-aggregate size.

   1. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94 and potable.

D. Air-Entraining Admixture: ASTM C 260.

2.4 CONCRETE MIXTURES

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Proportion normal-weight concrete mixture as follows:

   1. Minimum Compressive Strength: 3000 psi at 28 days.
   2. Maximum Water-Cementitious Materials Ratio: 0.45.
   3. Slump Limit: 5 inches.
   4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery.

C. Concrete color pigment: ASTM C979, equal to Chromix color admixture as made by L.M. Scofield Company, color selected by Owner from manufacturer’s standard colors.

2.5 RELATED MATERIALS

A. Air-Entraining Admixture: ASTM C 260.

2.6 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M[and ASTM C 1116], and furnish batch ticket information.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork according to ACI 301 to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

3.4 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

   1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

C. Cold-Weather Placement: Comply with ACI 306.1.

D. Hot-Weather Placement: Comply with ACI 301.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or one control joint in each direction of the slab on grade.

3.6 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

END OF SECTION 03 30 00

SECTION 04 21 99 – BRICK MASONRY RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION

A. This Section includes the following:
   1. Pointing of brick masonry.
   2. Setting of brick masonry chimney.

B. Related Sections include the following:
   1. Stone masonry is specified in Division 04 Section, “Stone Masonry.”

1.3 SUBMITTALS

A. Product data for the following:
   1. Bricks: Manufacturer’s specifications for each type of brick required.

B. Samples for the following:
   1. Bricks: submit 2 sample bricks that match existing bricks. Bricks may be either new bricks or salvaged bricks if accepted by Owner.
   2. Pointing mortars: submit samples in advance of preparation of test panel. Samples may be cast in 8 or 12 ounce styrofoam cups or other suitable container which allows easy removal from the container for splitting.

1.4 QUALITY ASSURANCE

A. Test Panels: Prepare sample panel for the following work, to be used as a quality standard for the work of this Section. Do not remove approved test panels after acceptance by the Architect. Allow time in construction schedule to prepare, cure, and gain approval of sample panels. Allow time to repeat sample panels which are rejected or require adjustments.
   1. Pointing: Prepare test panel consisting of 1' X 1' areas of brick pointing to establish workmanship, mortar color, and tooling to be used.

B. Approved sample panels shall serve as a quality standard for all other similar work. Rejected panels shall be removed and repeated as required until work matches sample provided, as determined by the Architect.

PART 2 - PRODUCTS

2.1 BRICK

A. Face brick: provide one of the following:
   1. Use existing face bricks, salvaged from new openings cut in existing walls.
   2. Provide new bricks matching the existing face brick in size, color and texture. Use FBS, Grade SW in conformance with ASTM C216.

2.2 MASONRY ACCESSORIES, PRIMER, AND CLEANERS

A. Anchors and ties: Provide straps, bars, bolts, and rods fabricated from not less than 16 gauge Type 303/304 stainless steel and 1/4 inch diameter rod stock, unless otherwise indicated.

B. Metal ties: Corrugated type 302 or 304 stainless steel ties not less than 22 gauge and not less than 7/8" wide and 7" minimum length, with one end crimped for attachment to substrate and outside end to within 3/4" of face of masonry veneer.
   1. Fasteners to attachment to in-place masonry or concrete: Stainless steel concrete screws.

C. Masonry cleaners for final cleaning: On the basis of approved test panels and as recommended by chemical cleaner manufacturer for each type of masonry and type of mortar, final clean exterior masonry using masonry cleaning compound specifically formulated to remove mortar laitance from new brick masonry and new pointing work, as made by one of the following:
   1. ProSoCo, Inc.
   2. Hydrochemical Techniques, Inc.
   3. Diedrich Chemical Co.

2.3 MORTAR MATERIALS AND MIXES

A. Mortar mixes and mortar materials - general: match mortar sample provided by Architect in color, texture, tooling.

B. Mortar materials - Standards:
   1. Portland Cement: ASTM C150, Type I or II, gray or white, as indicated in mortar schedule below.
   2. Hydrated Lime: ASTM C207, Type S or SA.
   3. Sand: ASTM C144.
      a. Include in bid price the cost of providing a blend of mortar sands.

C. Mortar Mixes: Provide the following mortar mixes for initial test panels. Final mixes will be dependent on the Contractor's successful test panels, as judged by the Architect. Mixes apply to setting of birck units.
   1. Type N Mortar for pointing brickwork, as follows:
      One (1) part by volume Portland cement
      One (1) part by volume hydrated lime
      Six (6) parts by volume sand consisting of a blend of white bar sand and brown bar sand

D. Mortar Mixing:
   1. Mix mortars in accordance with ASTM C270.
   2. Measure materials by volume or equivalent weight. Do not measure by shovel.
   3. Mix ingredients in clean mechanical batch mortar mixer 3-5 minutes.
   4. Let mortar sit 20 minutes prior to use to allow for initial shrinkage. Do not re-temper partially hardened material

PART 3 - EXECUTION

3.1 MORTAR CURING - GENERAL

A. Hot weather requirements - general: Provide all special precautions and procedures required to control mortar curing during hot weather. Comply with recommendations of "All-Weather

Construction" Technical Note (Rev. March 1992) as published by the Brick Institute of America.

1. No mortar shall be placed in full sun at surface temperatures above 80 degrees F unless shading of the walls is provided and the masonry wall temperature is kept below this point.
2. Maintain temperature of mortar between 70 degrees F and 90 degrees F. Use all measures required to achieve this temperature range, including storing mortar sand under shaded cover, and chilling mixing water with ice.
3. Wet salvaged stone units indicated to be rebuilt prior to installation, and wet stone units in place prior to repointing. However, do not repoint stone units with water puddled in joints.
4. Place all masonry units within one minute of spreading mortar.
5. Protect and cure new pointing and rebuilt walls as follows:
   a. For wall temperatures above 100 degrees F with no wind: Provide shading of walls prior to pointing or masonry unit setting, and fog spray and cover walls with canvas tarp or blue or white plastic tarp to control moisture evaporation during the day in which mortar is placed and during the following work day.
      1) Repeat fog spray as often as required, but not less than once per hour during the day in which mortar is placed.
   b. For wall temperatures 80 - 100 degrees F: Fog spray and cover walls with canvas tarp or blue or white plastic tarp to control moisture evaporation, but not less than once per hour during the day in which mortar is placed.
   c. For wall temperatures less than 80 degrees F: No special mortar curing procedures are required.

B. Cold Weather Requirements:
   1. No work in this Section shall be executed when the ambient temperature is less than 40 degrees F. No pointing shall be executed when freezing temperatures are expected within 24 hours.

3.2 POINTING

A. Thoroughly flush area to be pointed to remove all dust and to reduce absorption of water from mortar into masonry.

B. Pack mortar into joints in layers not to exceed 1" depth. Where joints are raked greater than 1" depth, apply pointing mortar in two applications. In the first application, pack joint to within 1" of masonry surface and allow to cure overnight. Apply second application as part of the overall pointing of the area.

C. When mortar reaches thumb-print hardness, tool joint to match joint profile selected by Architect. Strike to form a flat joint profile, slightly recessed from the face of bricks so that the full perimeter edge of each brick is visible.
   1. Do not overwork the face of the joint.
   2. Tool head joints first.
   3. All masons shall use identical jointing tools.
   4. Do not featheredge mortar joints on to face of brick, and do not form concave joints except where indicated.
   5. Pack mortar into joints and tool slightly recessed behind the face of masonry units to match weathered joints. Allow the front edges of masonry units to stand slightly clear of the pointing mortar, so the entire perimeter edge of each masonry unit is visible in the finished work.

SECTION 04 43 19 – STONE MASONRY RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Pointing of stone masonry veneer.
2. Setting of stone masonry veneer from Owner's stockpile.
3. Setting of stone pavers cut from Owner's stockpile.

B. Related Sections include the following:

1. Concrete foundation walls and slab are specified in Division 3 Section, "Concrete."
2. Brick masonry is specified in Division 4 Section, "Brick Masonry Restoration."

1.3 SUBMITTALS

A. Samples: Provide samples for the following:

1. Stone veneer units, 8" maximum thickness, cut from Owner's stockpile.
2. Stone paver units, 2" max thickness, non-orthogonal form, cut from Owner's stockpile.

B. Test Panels for the following:

1. Setting and pointing of stone veneer:
   a. 6 square feet of uncoursed rubble masonry, 3'x2' panel.
   b. Provide as many test panels as required to match specified mortar mixes.

1.4 QUALITY ASSURANCE

A. Contractor performing the work of this section shall be a Masonry Specialist, defined as an individual or firm of established reputation in masonry construction and historic masonry construction (or, if newly organized, whose personnel have previously established a reputation in the field), who or which is regularly engaged in, and which maintains a regular force of workmen skilled in either (as applicable) manufacturing or fabricating items required by the contract, installing items required by the contract, performing on-site treatment of existing masonry materials, or otherwise performing work required by the contract. The individual or firm shall have recent and documented experience in natural stone setting and pointing.

1.5 JOB CONDITIONS

A. Protection of Adjacent Materials:

1. The Contractor shall be responsible for all existing adjacent materials during the execution of the Work. Provide all necessary protection and work procedures to avoid damage to doors, windows, flashings, roofing, and all other existing and new exterior materials assemblies and paving.
2. The Contractor shall repair all damage to adjacent materials caused by the execution of the Work of this section at no expense to the Owner. Damaged materials shall be repaired or replaced by mechanics experienced in the respective type of work, to the satisfaction of the Owner.

PART 2 - PRODUCTS

2.1 MISSOURI LIMESTONE

A. Missouri Limestone: Cut stone veneer from Owner's stockpile of Missouri Limestone. Contractor may, at his option, propose antique stone salvaged from another source.

1. Veneer: From Owner's stockpile of Missouri Limestone, cut stone veneer units maximum thickness for setting on 6" foundation shelf, to be set as uncoursed stone veneer at foundation.
2. Pavers: 2" thick, random form pavers to be Furnished by Owner.
3. Monolithic treads: Stone treads as indicated on Drawings to be Furnished by Owner.

2.2 MORTAR MATERIALS AND MIXES

A. Mortar mixes and mortar materials - general:

1. At stone veneer, Contractor may use the specified, factory-mixed, factory-colored pointing mortar instead of a field-mixed blend.

B. Mortar materials - Standards:

1. Portland Cement: ASTM C150, Type I or II, gray or white, as indicated in mortar schedule below.
2. Hydrated Lime: ASTM C207, Type S or SA.
3. Sand: ASTM C144.
   a. Include in bid price the cost of providing a blend of mortar sands, as required to match Architect's sample.

C. Mortar Mixes for field-mixed mortar: Provide the following mortar mixes for initial test panels. Final mixes will be dependent on the Contractor's successful test panels, as judged by the Owner. Mixes apply to pointing mortars and setting of new masonry veneer units.

1. Mortar for setting limestone masonry:
   1 part by volume Portland Cement
   2 parts by volume Hydrated Lime
   6 parts by volume Sand

2. Field-mixed mortar for pointing limestone masonry:
   1 part by volume Portland Cement
   2 parts by volume Hydrated Lime
   6 parts by volume Sand comprised of a blend of brown bar sand and tan bar sand

Synthetic mineral pigment(s) as required to match sample provided by Architect.

D. Mortar Mixing:

1. Mix mortars in accordance with ASTM C270.
2. Measure materials by volume or equivalent weight. Do not measure by shovel.
3. Mix ingredients in clean mechanical batch mortar mixer 3-5 minutes.
4. Let mortar sit 20 minutes prior to use to allow for initial shrinkage. Do not retemper partially hardened material

E. Mixing: Comply with mortar manufacturer=s requirements.

2.3 ACCESSORY MATERIALS

A. Wires, pins, anchors, bars, threaded rods: Stainless steel, AISI type 302 or 304.

B. Epoxy adhesive for securing dowels: 2-component, 100% solids, high-modulus, epoxy gel.

PART 3 - EXECUTION

3.1 MORTAR CURING - GENERAL

A. Hot weather requirements - general: Provide all special precautions and procedures required to control mortar curing during hot weather. Comply with recommendations of "All-Weather Construction" Technical Note (Rev. March 1992) as published by the Brick Institute of America.

1. No mortar shall be placed in full sun at surface temperatures above 80 degrees F unless shading of the walls is provided and the masonry wall temperature is kept below this point.
2. Maintain temperature of mortar between 70 degrees F and 90 degrees F. Use all measures required to achieve this temperature range, including storing mortar sand under shaded cover, and chilling mixing water with ice.
3. Wet salvaged stone units indicated to be rebuilt prior to installation, and wet stone units in place prior to repointing. However, do not repoint stone units with water puddled in joints.
4. Place all masonry units within one minute of spreading mortar.
5. Protect and cure new pointing and rebuilt walls as follows:
   a. For wall temperatures above 100 degrees F with no wind: Provide shading of walls prior to pointing or masonry unit setting, and fog spray and cover walls with canvas tarp or blue or white plastic tarp to control moisture evaporation during the day in which mortar is placed and during the following work day.
      1) Repeat fog spray as often as required, but not less than once per hour during the day in which mortar is placed.
   b. For wall temperatures 80 - 100 degrees F: Fog spray and cover walls with canvas tarp or light-colored plastic tarp to control moisture evaporation, but not less than once per hour during the day in which mortar is placed.
   c. For wall temperatures less than 80 degrees F: No special mortar curing procedures are required.

B. Cold Weather Requirements:

1. No work in this Section shall be executed when the ambient temperature is less than 40 degrees F. No pointing shall be executed when freezing temperatures are expected within 24 hours.

3.2 POINTING

A. Thoroughly flush area to be repointed to remove all dust and to reduce absorption of water from mortar into masonry.

B. Pack mortar into joints in layers not to exceed 1" depth. Where severely deteriorated joints are raked greater than 1" depth, apply pointing mortar in two applications. In the first application, pack joint to within 1" of masonry surface and allow to cure overnight. Apply second application as part of the overall pointing of the area.

C. When mortar reaches thumb-print hardness, tool joint to match joint profile identified by Architect.

1. Do not overwork the face of the joint.
2. Tool head joints first.
3. All masons shall use identical jointing tools.
4. Do not featheredge mortar joints on to face of stone unit, and do not form concave joints except where indicated.
5. Pack mortar into joints and tool slightly recessed behind the face of masonry units to match weathered joints.

3.3 SETTING OF SALVAGED AND CUT STONE

A. Clean stone surfaces that have become dirty or stained prior to setting. Remove soil, stains, and foreign materials. Clean units by thoroughly scrubbing stones with fiber brushes followed by a thorough drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh filler or abrasives.

B. Stone setting:

1. Set veneer units to within depth of foundation shelf to provide consistent plumbness, levelness, and surface uniformity.
2. Set units in full bed of mortar with vertical joints slushed full, unless otherwise indicated.
   a. For heavy units, place setting buttons of adequate size, in sufficient quantity, and of same thickness as indicated joint width, to prevent mortar from squeezing out and to maintain uniform joint widths. Hold buttons at least one joint width back from face of units.
3. Prepare joint surfaces for pointing with mortar by removing dust and mortar particles. Where depth of setting mortar is greater than surrounding areas, apply first layer of pointing mortar in layers not greater than 3/8 inch until a uniform depth is formed; compact each layer thoroughly and allow to become thumbprint hard before applying next layer.
4. Tool joints to match pointing profile sample provided by Architect.

END OF SECTION 04 43 19

3.3 BRICK MASONRY SETTING

A. Build areas of brickwork indicated on the Drawings, in wall thicknesses indicated.

B. Wet clay brick before installing, using wetting methods which ensure that units are nearly saturated but surface dry when laid.

C. Pattern Bond: Lay exposed masonry in common bond pattern.
   1. Lay up brick masonry level and plumb.

3.4 LAYING BRICK MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

3.5 FINAL CLEANING OF EXTERIOR MASONRY

A. Remove large particles of mortar using wood paddles and scrapers as the work progresses.

B. Allow mortar to cure for 14 to 28 days and spot clean exterior masonry to remove all mortar staining. Extent of cleaning is dependent on neatness during installation.

C. Comply with chemical cleaner manufacturer's recommendations for mortar curing time prior to cleaning.

D. Protect glass, woodwork, and other building materials from cleaning run-off by means of pre-wetting, tarps, and other methods as required to protect from damage caused by cleaning operations. Protect building occupants, pedestrians, automobiles, and landscaping from cleaning-chemical drift.

END OF SECTION 04 21 99

SECTION 04 99 90 - LOG CHINKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION

A. This Section includes the following:

1. New chinking at reconstructed log crib.

1.3 SUBMITTALS

A. Product data for hydraulic lime.

B. Samples for Verification: For the following products, of sizes indicated, to verify product selected.

1. Wood shingles for rigid filler.

2. Oakum.

1.4 QUALITY ASSURANCE

A. Contractor performing the work of this section shall have a minimum of 10 years experience in masonry restoration and repointing, and shall have successfully completed three log chinking projects within the previous 10 years.

B. Test panels:

1. Install a test panel for the following:

a. Preparation of log surfaces to receive chinking: 3 linear feet.

b. Log chinking: 3 linear feet.

2. Approved test panels may become part of the Work. Remove rejected test panels and repeat until approved by Architect.

PART 2 - PRODUCTS

2.1 CHINKING MATERIALS AND MIXES

A. Chinking mixes and mortar materials - general: Provide smooth finish, free of intentional

textures.

B. Chinking materials:

1. Hydraulic lime: NHL 3.5 Natural Hydraulic Lime as made by St. Astier Lime Company and distributed by deGruchy's Lime Works, US; telephone 215-536-6706.

2. Mason's sand: ASTM C144.

3. Water: Clean, potable, from available hose bib.

C. Chinking mortar:

1 part by volume hydraulic lime.
3 Parts by volume sand

2.2 MISCELLANEOUS MATERIALS

B. Chinking fillers:

1. Rigid filler: split wood shingles, ranging in thickness and length.
2. Soft filler: Oakum.

PART 3 - EXECUTION

3.1 CHINKING CURING - GENERAL

A. Hot weather requirements - general: Provide all special precautions and procedures required to control mortar curing during hot weather. Comply with recommendations of "All-Weather Construction" Technical Note (Rev. March 1992) as published by the Brick Institute of America.

1. No mortar shall be placed in full sun at temperatures above 80 degrees F unless shading of the walls is provided and the masonry wall temperature is kept below this point.

2. Maintain temperature of mortar between 70 degrees F and 100 degrees F. Use all measures required to achieve this temperature range, including storing mortar sand under shaded cover, and chilling mixing water with ice.

3. Place all masonry units within one minute of spreading mortar.

4. Protect and cure new pointing and rebuilt walls as follows:

a. For wall temperatures above 100 degrees F with no wind: Fog spray and cover walls with sheet plastic or canvas to control moisture evaporation during the day in which mortar is placed and during the following work day.

1) Repeat fog spray as often as required, but not less than once per

hour during the day in which mortar is placed.

2) Do not use clear or black polyethylene sheeting as protective cover or other color or material which will cause heat build-up under cover (greenhouse effect).

b. For wall temperatures 80 - 100 degrees F with wind of 8 MPH: Fog spray and cover wall walls as specified in 3.01.B.4.a.1) above.

c. For wall temperatures 80 - 100 degrees F with no wind: Fog spray and cover walls with sheet plastic or canvas to control moisture evaporation during the day in which mortar is placed.

1) Repeat fog spray hourly during the day in which mortar is placed.

2) Do not use clear or black polyethylene sheeting as protective cover or other color or material which will cause heat build-up under cover (greenhouse effect).

d. For wall temperatures less than 80 degrees F: No special mortar curing procedures are required.

B. Cold Weather Requirements:

1. No work in this Section shall be executed when the ambient temperature is less than 40 degrees F. No pointing shall be executed when freezing temperatures are expected within 48 hours.

3.2 PREPARATION

A. Protect existing surfaces, including building surfaces, paving, and landscaped areas, from damage caused by falling material.

C. Protect building interior. Protect flooring adjacent to work areas using 1/4-inch masonite or plywood, with taped joints and sheet polythene cover.

D. Contractor may propose additional back-up reinforcing, as a Contractor's option.

3.3 CHINKING

A. Mix hydraulic lime chinking mixture to comply with lime manufacturer's instructions. Mix to relatively low moisture content, to limit shrinkage.

B. Thoroughly flush area to be repointed to remove all dust and to reduce absorption of water from log surfaces.

C. Apply chinking in two coats: a scratch coat and a finish coat.

D. Apply scratch coat using a margin trowel and plaster trowel, as required, compacting chinking mortar into full depth of voids, and pressing into crevices to achieve a maximum

mechanical bond and weathertightness. Control mortar so that mortar is not forced through logs to building interior.

E. Apply finish coat over partially-cured scratch coat and trowel to texture of existing chinking. Press chinking at edges to form a continuous seal.

F. Clean excess from contiguous logs.

3.4 FINAL CLEANING

A. Clean all fallen chinking mortar from vegetation and paved areas. Rake mortar from grass areas.

B. Remove interior protection and vacuum clean.

END OF SECTION 04 99 90

SECTION 06 19 00 - LOG CRIB RESTORATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section includes the following:

1. Reconstruction of existing log cribs.

2. New log joists.

3. Dutchman repairs to existing logs.

4. Replacement full-length logs.

B. Related Sections include the following:

A. Timber Framing Restoration is specified in Section 06 19 50.

B. Furring and exterior siding are specified in Section 06 20 00.

1.2 SUBMITTALS

A. Test panels for Dutchman repairs: Provide a mock-up test panel of each type of Dutchman repair.

B. Product data for the following:

1. Epoxy adhesives and consolidants.

2. Wood preservatives.

1.3 QUALITY ASSURANCE

A. Contractor performing the work of this section shall have a minimum of 10 years experience in log structure restoration and shall have successfully completed three log building restoration projects within the previous 10 years.

PART 2 - PRODUCTS

2.1 LOGS

A. Owner will furnish original logs and recycled logs suitable for use in project, fabricated from wood species compatible with the existing original logs. Recycled logs may be harvested for Dutchman repairs. Any additional logs required shall be recycled and of an age similar to the original.

B. Size variation: Match existing log tier dimensions where tying into existing tiering

(coursing) and for Dutchman repairs to existing logs.

1. Report to Architect the quality and suitability of Owner-furnished logs for use in the project. Do not proceed with log restoration work if Owner-furnished logs are not suitable.

2.2 EPOXY CONSOLIDANTS, ADHESIVES, AND FILLERS

1. Manufacturer: Provide products of Abatron, Inc., Kenosha, WI; West System products as made by Gougeon Brothers, Bay City, MI; or Beta System as distributed by PRG, Rockville, MD.

2. Epoxy consolidant: Low-modulus, low-viscosity epoxy resin equa to Beta Low Viscosity Consolidating Epoxy - E1200 as distributed by PRG.

3. Epoxy adhesive: West System 105/205 resin or Beta E1200 rsin mixed with micro-fibers.

4. Wood fillers: Provide selected fillers recommended by epoxy manufacturer for mixing of epoxy filling compounds, including micro-balloons for filling large voids, micro-fibers for adhesives, and colloidal silica for filling cracks.

2.3 LOG FABRICATION

A. Exposed finish: Saw, hand-hew, or a combination of sawing and hand-hewing to match hewn texture of the existing original logs.

B. Fabrication of corner notches: Saw, hand-hew, or a combination of sawing and hand-hewing. Fit notches carefully to fall within tolerances of original joints.

PART 3 - EXECUTION

3.1 LOG CRIB CONSTRUCTION SEQUENCE

A. Lay out logs on the ground, in tier sequence, for each wall (4 walls total), using the tags secured to existing logs and key drawings included in the construction drawings. Inspect logs for condition, and confirm with the Architect the scope of log restoration work for any deteriorated conditions not indicated on the Drawings.

B. Report any discrepancies in log layout, including mis-labeled logs or logs indicated to be existing but not found. Cooperate with Architect in the identification of un-tagged logs or other wood elements.

C. Fabricate new sill logs using fragments of existing, deteriorated, sill logs as a pattern, and existing or new second-tier logs as the basis for forming a new notch.

D. Set new sill logs on prepared foundation walls. Anchor to foundations as indicated on Drawings.

E. Build up cribs using a combination of new, existing, and restored-existing logs.

F. Replicate existing corner notching. Carefully fabricate joints, snug and secure, without

play. Provide epoxy consolidant at deteriorated corner notching and carve to provide snug and secure joints.

3.2 DUTCHMAN REPAIRS

A. Cut out deteriorated areas indicated on Drawings. Report to Architect any additional deterioration observed at logs indicated to be repaired.

B. Fabricate Dutchman inserts (or log ends) with Owner-furnished antique (air-dried) logs, to fit snugly into prepared voids. When fitting Dutchman inserts and replacement log ends, use greatest care on the interior face of logs, which will be exposed at the cabin interior.

C. Clamp Dutchman to in-place log and drill reinforcing dowel holes. Apply a coat of epoxy consolidant to surfaces to be bonded together and allow to cure. Following cure, apply epoxy adhesive to all surfaces to be bonded. Set oak dowels in drilled holes that have been partially filled with epoxy adhesive. As the dowels are inserted, adhesive should ooze out all joints, fully filling the space between jointed surfaces and drilled holes. Wipe excess from face of log.

D. Fabrication of scarf joints in new log ends: Saw and carefully fit new scarf joints, with maximum 1/8" wide joints between logs where exposed to building interior.

1. Protect log material on both sides of joints with masking tape and sheet plastic to protect contiguous surfaces from adhesive staining.

2. After epoxy adhesive has cured, remove excess by means of grinding and sanding, followed by planing with a drawknife or other suitable planing tool.

END OF SECTION 06 19 00

SECTION 06 19 50 - TIMBER FRAMING RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Timber attic floor framing.

2. Timber gable end wall framing.

3. Roof rafters.

4. Roofing lath.

B. Related Sections include the following:

1. Log crib restoration is specified in Section 06 19 00.

2. Wood siding is specified in Section 06 49 00.

1.2 SUBMITTALS

A. Product data for the following:

1. Epoxy systems, including epoxy consolidant (resin), filler materials, and adhesive.

B. Samples:

1.

2. White oak: Minimum 6 inch by 1 inch by 12 inch section.

1.3 QUALITY ASSURANCE

A. Contractor qualifications: Contractor for the work of this section shall have not less than ten (10) years experience in the restoration of timber frame structures.

PART 2 - PRODUCTS

2.1 LUMBER

A. Timber attic floor joists: white oak, rough-sawn with vertical saw marks, green or recycled, dimensions as indicated on the Drawings.

B. Timber gable end wall framing: white oak, rough-sawn with vertical saw marks, green or recycled.

C. Roof rafters: White oak, air dried or green, rough-sawn with vertical saw marks.

D. Roofing lath: White oak, air dried or green, rough-sawn with vertical saw marks.

2.2 FASTENERS, ADHESIVES, ACCESSORY ITEMS

A. Anchorages and fasteners:

1. Nails for concealed nailing: Common box nails, hot dipped galvanized, ASTM A153.

a. Application: roofing lath.

2. Exposed nails: Common rosehead nails as made by Tremont Nail Company.

a. Application: Exposed nailing of flooring.

3. Bolts, nuts, and anchors: Galvanized steel, ASTM A 123.

4. Steel clips, angles, straps: ASTM A 36 steel hot dip galvanized to comply with ASTM A 123, or Type 302 or 304 stainless steel, at Contractor's option.

B. Epoxy adhesives and fillers:

1. Manufacturer: Provide products of Abatron, Inc., Gilberts, IL, 312-426-2200, or West System products as made by Gougeon Brothers, Bay City, MI, 517-684-1374, or acceptable equal.

2. Epoxy consolidant: Low modulus, low viscosity epoxy resin equal to Liquid Wood as made by Abatron, Inc., or West System 105/205 as made by Gougeon Brothers, Inc.

3. Epoxy adhesive: Specified epoxy resin mixed with micro-fibers.

4. Wood fillers: Provide selected fillers recommended by epoxy manufacturer for mixing of epoxy filling compounds, including micro-balloons for filling large voids, micro-fibers for adhesives, and colloidal silica for filling cracks.

C. Sill flashings: Under all new sills, provide sheet copper flashing, ASTM B370, 16 ounce weight, formed as shown on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set timber framing to required levels and lines, with members plumb, true to line, cut, and fitted. Fit timber framing to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

C. Use galvanized steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

D. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

3.2 SLEEPER, BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces where required.

3.3 GABLE WALL FRAMING

A. General: Provide single bottom plate and single top plates using members of 2”x5-1/2” at 16” O.C. Fasten plates to supporting logs unless otherwise indicated.

B. Provide diagonal bracing at gable end walls.

3.4 RAFTER FRAMING

A. Rafters: Notch to fit exterior wall plates and toe nail or use concealed metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with concealed hangers. Where rafters abut at ridge, provide bridle joints as indicated on Drawings.

B. Provide collar beams (ties) as indicated. Locate below ridge, where indicated on Drawings. Provide half-lap at rafter, pinned with wood dowel.

C. Provide exposed rafter tails as indicated at eaves.

END OF SECTION 06 19 50

SECTION 06 49 00 - ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Board-and-batten doors and trim.
2. Custom wood window and trim.
3. Reproduction door hardware.
4. Attic stair stringers and treads.
5. Attic stair railing.

B. Related Sections include the following:

1. Roof and timber framing are specified in Section 06 19 50.
2. Painting of new wood doors and windows is specified in Section 09 90 00.

1.3 SUBMITTALS

A. Shop drawings for the following:

1. Custom wood window.
2. Board-and-batten doors.
3. Attic stair stringers and treads.
4. Attic stair railing.

B. Product data: Catalogue cuts for each reproduction hardware item.

1.4 QUALITY ASSURANCE

A. Contractor qualifications: Contractor for the work of this Section and custom millwork fabricator shall have a minimum of ten (10) years experience in the fabrication of custom wood doors and windows for building restoration projects and shall have completed a minimum of three (3) projects including custom doors and windows in the previous three (3) years.

B. Architectural woodwork quality standard: To the extent applicable, specified woodwork shall comply with the applicable Quality Standard of the Architectural Woodwork Institute (AWI).

PART 2 - PRODUCTS

2.1 LUMBER

A. Wood species - Exterior woodwork:

1. Horizontal beveled siding: Western red cedar, 1x6 beveled, with 5" exposure, plain sawn.

2. Door and window trim: White oak, air-dried, plain sawn, unplaned.

3. Custom wood window:

a. Frame: White oak, antique or kiln-dried, plain sawn, S4S

b. Sashes: Spanish cedar or South American mahogany.

4. Board-and-batten doors: White oak, antique or kiln-dried, plain sawn, S4S, half-lap or tongue-and-groove edge.

2.2 MISCELLANEOUS MATERIALS

A. Exposed nails, as made by Tremont Nail Co.:

1. Board doors: cut steel, fire-door clinch nails.

2. Horizontal beveled siding: Cut steel, common siding nails.

2.3 FABRICATION

A. Custom wood window:

1. To the extent applicable, comply with AWI Section 1000, Custom Grade.

2. Fabricate frames from solid stock white oak, using traditional mortise-and-tenon joinery and exposed trunnels.

B. Custom board-and-batten doors:

1. Prime white oak boards prior to door fabrication.

2. Fasten battens to vertical boards using clinched nails, with clinched nail ends laying in the direction of the wood grain.

2.4 DOOR HARDWARE

A. Purchase door hardware under the following allowance: SIX THOUSAND DOLLARS ($7,000.00).

B. Typical door hardware is as follows:

1. Hinges: Strap hinges with drive pintles.

2. Latching device on person-doors: Thumb latch and interior padlock hasp.

C. Include in base bid the cost of ordering and installing door hardware.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Quality Standard: Except where indicated otherwise, install woodwork to comply with AWI Section 1700, Custom Grade.

B. Install the work plumb, level, true, and straight, or as required to match existing work. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level for new work.

C. Anchor woodwork to anchors or blocking directly attached to substrates. Secure to grounds, stripping and blocking with exposed, historically accurate fasteners.

D. Scribe and cut work to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

E. Install standing and running trim with minimum number of joints possible, using full-length pieces to the greatest extent possible. Stagger joints in adjacent and related members. Make exterior joints water-resistant by careful fitting.

F. Window and door frame installation: Fabricate and install to conform to openings within existing logs.

END OF SECTION 06 49 00

SECTION 07 31 29 - WOOD SHINGLE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cedar shingle roofing on wood lath.

B. Related Sections:
1. Roof framing is specified in Division 6 Section, “Rough Carpentry.”
2. Rake boards are specified in Division 6 Section, “Exterior Architectural Woodwork.”
3. Metal flashings are specified in Division 7 Section, “Sheet Metal Flashings.”

1.3 DEFINITIONS

A. CSSB: Cedar Shake & Shingle Bureau.

1.4 SUBMITTALS

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

B. Samples for Verification: For the following products, of sizes indicated, to verify product selected.
1. Wood Shingles: Full size.
2. Wood lath: 12” length.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Wood Shingles: One unbroken bundle.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who is an approved affiliate member of CSSB.

B. Source Limitations: Obtain wood shingles from single source from single manufacturer.

C. Preinstallation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit wood shingles and related work to be performed according to manufacturer's written instructions and warranty requirements.

1.8 WARRANTY

A. Special Warranty: CSSB's standard form in which CSSB agrees to repair or replace wood shingles that fail in materials within specified warranty period. Material failures include manufacturing defects that result in leaks.

1. Materials-Only Warranty Period: 20 years for tapersawn shakes, from date of Substantial Completion.

B. Special Project Warranty: Roofing Installer's Warranty, on warranty form at end of this Section, signed by roofing Installer, covering Work of this Section, in which roofing Installer agrees to repair or replace components of wood shingle roofing that fail in materials or workmanship within the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cedar Roof Shingles: Red Cedar Tapersawn Shakes, sawn both sides, Number One Premium Grade, 24-inch length by 5/8-inch butt thickness, 100% edge grain.

1. Provide Cedar Roof Shingles with Certi-Guard Class B fire-retardant treatment.

B. Nails: Stainless steel nails, sized as recommended by CSSB.

C. Felt Underlayment: ASTM D 4869, asphalt-saturated organic felt.

D. Wood Lath Strip: Western red cedar, bald cypress, or Spanish cedar, a minimum of 3-1/2 inches wide by 1-inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. Examine roof lathing and starter boards to verify structural soundness. Renail existing lath where required and provide new lath where existing is deteriorated.
   2. Verify that lathing and starter boards are sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provision has been made for flashings and penetrations through wood roofing where required.

B. Proceed with shake installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. General: Apply underlayment only where required for substrate for flashings and changes in roof plane. Do not use underlayment or interlayment in conjunction with general shingling.

3.3 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Division 7 Section, “Sheet Metal Flashings.”

B. Step Flashings: Install with a head lap of 3 inches and extend both horizontally and vertically. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying shingle or shake. Fasten to roof deck only.

3.4 ROOF-SHINGLE INSTALLATION

A. General: Install wood-shingle roofing according to manufacturer's written instructions and to recommendations in CSSB's "New Roof Construction Manual" and NRCA's "The NRCA Roofing and Waterproofing Manual."

B. Coordinate installation of shingles with flashings to ensure proper sequencing of work.

C. Install triple-layer wood-shingle starter course along lowest roof edge. Extend starter course 1-1/2 inch over fascia and 1-1/2 inches over rake edge.

   1. Offset joints of triple-layer starter course a minimum of 1-1/2 inches.

D. Install first course of wood shingles directly over starter course and in continuous straight-line courses across roof deck. Install second and succeeding courses of wood shingles in continuous straight-line courses across roof deck. Extend 1-1/2 inches over rake edge.

   1. Offset joints between shingles in succeeding courses a minimum of 1-1/2 inches. Limit alignment of vertical joints in every third course to not exceed 10 percent of joints.
   2. Space shingles a minimum of 1/4 inch and a maximum of 3/8 inch apart.

3. Fasten each shingle with two nails spaced 3/4 to 1 inch from edge of shingle and 1-1/2 to 2 inches above butt line of succeeding course. Drive fasteners flush with top surface of shingles without crushing wood.
4. Maintain 7-1/2" weather exposure consistent with wood lath spacing.

E. Ridge and Hip Type: Combed ridge type with protective nailing. Extend last course of front slope beyond last course of rear slope minimum 3".

END OF SECTION 07 31 29

SECTION 07 60 00 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes the following:

1. Copper flashings built into wall assemblies.
2. Chimney stepped base and counter flashings.
3. Ridge flashing.

B. Related Sections include the following:

1. Wood Shake Roofing is specified in Section 07 31 29.

2. Joint sealant material is specified in Section 07 92 00.

1.2 QUALITY ASSURANCE

A. Contractor Qualifications:

1. Contractor for the work of this Section shall be a firm with a minimum of ten (10) years experience in flashing and sheet metal work in conjunction with building restoration and rehabilitation, and shall have completed not less than three (3) flashing and sheet metal projects similar in scope or craftsmanship requirements to this project.

B. Reference standards: Comply with recommended details for highest grade construction of the following:

1. *Copper and Common Sense* by Revere Copper.

2. *Architectural Sheet Metal* by SMACNA (referred to as SMACNA Manual).

3. *Sheet Copper Applications* by the Copper Development Association.

4. *Standard Practice in Sheet Metal Work*, 1929 edition, reprinted by Sheet Metal and Air Conditioning Contactors' National Association, Inc., 1985.

1.3 SUBMITTALS

A. Shop Drawings: Show thickness and dimensions of all parts, fastenings, and anchoring methods, expansion joints and other pertinent information. Submit shop drawings for the following (copies of plates from referenced standards will be acceptable if applicable to job conditions):

1. Ridge detail at cedar shake roofing.

2. Sheet metal flashing at sill plate.

3. Sheet metal flashing at stone veneer.

4. Other details requested by the Architect.

B. Samples:

1. 8" x 8" sample of each type and gauge of metal.

PART 2 - PRODUCTS

2.1 SHEET METAL

A. Sheet copper: ASTM B370, temper H00 (cold-rolled) except where temper 060 is required for forming or performance. Provide at the following applications and weights:

1. Wall and roof flashing applications: 16 oz.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Solder for use with copper : ASTM B32, 50% virgin lead and 50% block tin. Use rosin only as a flux. Do not use flux containing any acid.

B. Fasteners for use with copper: Copper or hard brass nails, screws, and rivets.

C. Metal accessories: Sheet metal clips, cleats, straps, anchoring devices, and similar accessory units as required for installation of work, size and gauge recommended by reference standard for required performance. Provide in the following materials:

1. For accessories formed from sheet metal, match material of sheet metal being secured.

2. For forged or cast items, provide materials as follows:

a. For use with sheet copper: Copper or hard brass.

2.3 FABRICATION, GENERAL

A. Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA *Architectural Sheet Metal Manual* and *Copper and Common Sense*.

1. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to prevent leakage, damage or deterioration of the work.

2. Form work to fit substrates.

3. Comply with material manufacturer's instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

4. For conditions and intersections not detailed or specified, fabricate work to maintain continuity of appearance and weather-resistant performance, in compliance with reference standards.

B. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams, formed to lap in direction of flow of water. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

1. Lap seams where soldered: Finish not less than 1" wide.

2. Lap seams, not soldered: Overlap 3" unless otherwise noted.

C. Expansion provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant.

PART 3 - EXECUTION

3.1 CONDITION OF SURFACES

A. Examine the sheathing, blocking, reglets, and other construction to receive the work. Do not proceed with installation of sheet metal work until unsatisfactory conditions have been corrected.

B. Substrates shall be clean, smooth and dry, with no projecting nail heads or other obstructions.

3.2 GENERAL REQUIREMENTS

A. Comply with details and profiles as shown and comply with reference standards for installation of the work.

B. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units. Conceal fasteners where possible, and set units true to line and level, or pitched to drain, fitting into existing conditions. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

C. Seams:

1. General: Form to lap in direction of flow of water.

2. Flat-lock seams: Finish not less than 3/4" wide.

3. Lap seams where soldered: Double-lock seams, not less than 1" wide.

4. Lap seams, not soldered: Overlap 3" unless otherwise noted.

D. Reglets: Cut reglets in mortar joints between stone units. Do not saw cut stone units.

3.3 FLASHINGS

A. Provide flashings indicated on drawings. Comply with details indicated in reference standards.

3.4 PROTECTION

A. Protect flashings and sheet metal work during construction to ensure that work will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 07 60 00

SECTION 09 90 00 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section includes the following:

1. Paint new exterior doors and windows.

2. Apply clear wood preservative to all other exposed exterior woodwork.

B. Related Sections include the following:

1. Architectural woodwork is specified in Section 06 49 00.

1.2 SUBMITTALS

A. Product data for each paint system specified, including primers.

B. Samples for Verification Purposes: Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.

1.3 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to those indicated for the Project that have resulted in a construction record of successful in-service performance.

B. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1.5 JOB CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F and 90 deg F.

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F and 95 deg F.

C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products made by one of the following. Products of Sherwin-Williams Company are listed in the paint schedule as reference products. Other equal products by other manufacturers listed below will also be acceptable.

1. Sherwin-Williams Company

2. Benjamin Moore

3. PPG

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience.

B. Material Quality: Provide the manufacturer's best-quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected.

2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of

substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning.

C. Surface Preparation: Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with substrates primed by others.

2. Wood - New: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

b. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood.

D. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.

1. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

2. Use only thinners approved by the paint manufacturer and only within recommended limits.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.

2. Provide finish coats that are compatible with primers used.

3. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.

4. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds,

and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

C. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

D. Application Procedures: Apply paints and coatings by brush and roller, according to the manufacturer's directions.

1. Brushes: Use brushes best suited for the material applied.

2. Rollers: Not allowed.

3. Spray Equipment: Airless spray gun or garden bug sprayer is permitted for application of clear wood preservative.

E. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

3.4 CLEANING

A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore

damaged or defaced painted surfaces.

3.6 EXTERIOR PAINT SCHEDULE

A. Interior and exterior faces of new window, doors, and roof ventilator louvers, including frames and hardware:

1. 1 coat S-W A-100 Exterior Alkyd Wood Primer.

2. 2 coats S-W Duration (Gloss finish).

B. Clear wood preservative at exterior siding:

1. 2 Coats Cuprinol Clear Wood Preservative.

END OF SECTION 09 90 00

SECTION 312000 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to this Section.

1.2 DESCRIPTION OF WORK

A. This Section includes the following:

1. Excavation for cabin reconstruction.

2. Excavation required for concrete slabs on grade.

3. Drainage fill course under slabs on grade.

4. Removal and disposal of all excavated material not required for, or not suitable for, the work.

B. Related Sections include the following:

1. Concrete is specified in Division 3 Section, “Concrete.”

2. Earthwork outside of building lines is specified as part of the work of a separate Site Contract.

1.3 PRODUCT HANDLING

A. Handle and transport all materials to avoid dropping material, and erosion of material, onto public rights of way or any other areas not part of the construction area.

B. Promptly remove any materials deposited or eroded onto areas described above and leave area clean.

C. Maintain segregation of dissimilar materials.

1.4 PROJECT CONDITIONS

A. Existing Utilities:

1. Locate existing underground utilities in areas of work. Provide adequate means of support and protection during earthwork operations.

a. Before beginning any excavation, contact local Utilities Location Service and obtain available information concerning locations of existing utilities.
b. If excavation locates existing utilities which are to remain and if such utilities are

not located as shown on drawings, record locations and identifications of utilities on record drawings.

2. Uncharted, or incorrectly charted, piping or other utilities: If encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

B. Protection of Persons and Property:

1. Perform earthwork operations only after installation of barricades, warning lights and other protective measures as specified and as required by authorities having jurisdiction. Maintain protective measures in fully effective condition throughout the period of earthwork operations.

2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Subbase and Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

B. Trench backfill materials: Comply with utility company requirements, building and plumbing codes, and requirements indicated on Drawings.

C. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57, with 100 percent passing a 1-1/2-inch sieve and not more than 5 percent passing a No. 8 sieve.

D. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 50 sieve.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge

of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 EXCAVATION

A. Excavation is Unclassified, and includes excavation to provide required elevations indicated, regardless of character of materials and obstructions encountered. No compensation will be allowed for classification. The term "earthwork" shall mean all materials encountered including earth, rock, old foundations, pavement, tree stumps, and other buried material.

B. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction. Unauthorized excavation, and remedial work directed shall be at Contractor's expense.

1. Under footings and foundation bases fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable.

2. Backfill and compact other unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed.

D. Additional Excavation: When excavation has reached required subgrade elevations, verify conditions. If unsuitable bearing materials are encountered at indicated subgrade elevations, notify Architect.

E. Excavation for Structures:

1. Conform to diagrammatic elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance to permit construction work and inspection.

2. Do not disturb bottom of excavations for footings and foundations. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades and leave solid base to receive concrete.

3.3 MATERIAL STORAGE

A. Stockpile suitable excavated materials to be re-used until required. Place, grade and shape stockpiles for proper drainage.

B. Locate soil storage away from edge of excavations. Do not store within drip line of trees required to remain. Do not store where erosion could result in siltation of excavations, drainage systems, or off-site areas.

C. Promptly remove from the site all excess materials and materials not accepted for re-use, at no additional expense to Owner.

3.4 FILL AND BACKFILL

A. Verify that subgrade complies with specified characteristics.

B. Place soil material in layers to required subgrade elevations, for each area classification.

C. Backfill excavations as promptly as work permits, but not until completion of the removal of trash and debris.

D. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills.

E. Placement and Compaction:

1. Place backfill and fill in layers not more than 8" in loose depth for material to be compacted by heavy equipment, and not more than 4" in loose depth for material to be compacted by hand-operated tampers.

2. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to specified density for each area classification.

3.5 COMPACTION

A. Compaction Criteria: Compact soil to not less than the following percentages of maximum modified dry density in accordance with ASTM D698:

1. Pavement and Walkway Subgrades, and unpaved areas within 15 feet of buildings: Top 12" of subgrade and each layer of backfill or fill: 95%.

2. Other Unpaved Areas: Top 6" of subgrade and each layer of backfill or fill: 90% for cohesive soils and 93% for cohesionless soils.

B. Procedures:

1. Use hand-held compacting equipment.

2. Seal working surfaces when work is to be suspended and prior to rainfall, using smooth wheel static rollers. Maintain a suitable number of such rollers at the site during compacting operations.

3.6 DRAINAGE FILL COURSE

A. Place under all slabs on grade, under all paving, and elsewhere as indicated.

B. Place drainage fill material indicated on Drawings on prepared subgrade in layers of uniform thickness, to indicated cross- section and thickness. Maintain optimum moisture content for compacting.

C. Place material in a single layer, except when more than 6" thick, place in equal layers, each layer not more than 6" or less than 3" thick when compacted.

3.7 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Remove all excess excavated material, and dispose of same off the Owner's property at no additional expense to Owner.

END OF SECTION 31 20 00