REQUIREMENTS and SPECIFICATIONS

KAUAI VETERAN'S MEMORIAL HOSPITAL
COVID-19 TESTING LAB
TAX MAP KEY: 1-2-603:5
WAIMEA, KAUAI, HAWAII

FOR **HAWAII HEALTH SYSTEMS CORPORATION – KAUAI DIVISION**

JANUARY 19, 2021

Architecture:	G70
Interior Design:	G70
Structural Engineer:	Shigemura, Lau, Sakanashi, Higuchi & Associates
Mechanical / Plumbing / Fire Protection	Insynergy Engineering
Electrical	Insynergy Engineering

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SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

1.02 SUBMITTALS

A. Submit in accordance with SECTION 01330 – SUBMITTALS.

B. MSDS: Submit MSDS for all materials.

C. Superintendent Qualifications: Submit Superintendent's qualifications for HHSC acceptance.

D. Utilities and Toning Information: Submit utility and toning information to HHSC.

1.03 SUMMARY OF PROJECT

A. The work to be done shall include performing all operations and furnishing all equipment, fixtures, appliances, tools, materials, and labor necessary to execute, complete, and deliver all of the work and related items required for the project as called for on the drawings and as hereinafter specified.

B. The Project Site is located at 4643 Waimea Canyon Dr, Waimea, HI 96796.

C. The work will be governed by the Contract Documents.

D. The Contractor shall visit the job site and make certain that he understands the extent of the work and existing job conditions before he submits a formal bid.

E. Owner Furnished Products

1. The owner may furnish certain materials and equipment to complete the project and to be incorporated into various construction contracts.
2. Contractor installing these items at the job site shall schedule delivery, unload, inventory, store and protect Owner furnished items until incorporation into the Work. Contractor shall promptly notify Owner’s Project Manager in writing of any missing or damaged items.
3. Schedule of Owner Furnished Contractor Installed (OFCI) Products:
    a. Signage
    b. Refrigerator.
    c. Freezer
    d. Biosafety Cabinet
4. Provide cost breakdown for these items and included them of the space provided on the Bid Form.

1.04 CODES AND ORDINANCES

The Contractor shall comply with all Federal, State, and local laws, ordinances, rules, and regulations pertaining to the project and shall obtain and pay for all permits, licenses, and certificates and publish or post all notices required.

1.05 SCHEDULING AND COORDINATION

A. The premises and adjoining buildings will be occupied by the patients and staff of Kauai Veteran's Memorial Hospital.

B. Contractor shall submit schedule of work as called for in Section 01330 - SUBMITTALS. Work shall not commence until the Critical Path Method (CPM) schedule has been submitted and approved by HHSC. The Contractor shall be fully responsible for any delays caused by inadequate work schedules.

C. Sequencing and timing construction work is critical to HHSC's ability to remain in operation throughout the construction period. The Contractor shall schedule work and associated operations in such a manner so that no disturbances and hazards will cause disruption of operations of HHSC. Any and all disruptions of access, etc. shall be coordinated in writing with HHSC. Obtain the approval from HHSC and identified in the schedule of work prior to start of any on-site work.

E. The Contractor shall confine all work, equipment, materials, and personnel within the Project Limits so as not to interfere with the operations of HHSC. All construction aids necessary to maintain normal operations of HHSC and to protect the public, students, faculty, and staff shall be the responsibility of the Contractor.

1.06 SPECIFICATION LANGUAGE

These specifications are written in imperative and abbreviated form. This imperative language of the technical sections is directed at the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, perform all indicated requirements whether stated imperatively or otherwise.

1.07 DEFINITIONS

Definitions that govern this project are those specified in the GENERAL PROVISIONS of these contract documents. Additionally, the following words and terms used in these specifications are defined as follows:

1. Approved: As accepted by HHSC.
2. Approved Equal/Equivalent: (see definition of "Pre-Approved").
3. As applicable: As appropriate for the particular condition, situation, or circumstance.
4. As required: As required by regulatory requirements, by referenced standards, by existing conditions, by accepted construction practice, or by the contract documents.
5. Contractor: The prime contractor and/or any or all of its subcontractors as

the context requires.

6. Directed: As instructed by HHSC in writing.
7. Indicated: As shown and/or noted on the drawings.
8. Job Site: See definition of "Site/Site of the Work".
9. Manufacturer: The manufacturer of a product and/or of the main components of group of related products comprising a functional system specified or proposed to be used on the project.
10. Manufacturer's Technical Representative: A person knowledgeable of all significant technical considerations relating to the design, specification, installation, functionality, longevity, and warranty of a manufacturer's product or product system and authorized by the manufacturer to act on its behalf on all technical matters on the project, including approval of plans and specifications, observation, material installation, and certification for warranty.
11. Provide: Furnish and install.
12. Site/Site of the Work: The area to be occupied by the project(s) and all exterior areas occupied or used by the Contractor or his subcontractors during performance of the work, including storage areas, temporary buildings and staging areas.
13. Superintendent: The Contractor's representative who is responsible for continuous field supervision, coordination, and completion of the work.

1.08 PERMITS/FEES

County of Kauai Building Permit waived per HHSC and Code Section 12-2.2 (11) 19. Contractor to process and pick up all other costs of permits and fees required for the construction and completion of the project shall be paid for by the Contractor.

1.09 SAFETY

A. The Contractor shall be responsible for complete compliance with Federal, State, and City and County safety laws and ordinances, and in particular with OSHA and HIOSH requirements with all latest amendments and supplements as applicable to this project. Comply with current IBC as amended, Chapter 33, "Safeguards During Construction", ANSI A10.6, "Safety Requirements for Demolition Operations", NECA's "Temporary Electrical Facilities", and NFPA 241, "Construction, Alteration, and Demolition Operations".

B. The Contractor shall maintain at the Project Site a binder with a copy of the Material Safety Data Sheets (MSDS) of all materials used at the Project Site.

C. Furnish job site fire extinguishers for NFPA recommended exposures for the work being performed. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size as required by location and class of fire exposure.

1.10 CONTRACTOR RESPONSIBILITIES

A. Responsibilities shall include general supervision, management, and control of the work of this project, and other items more specifically noted throughout the specifications.

B. The Contractor shall provide a qualified and competent Superintendent. The Contractor shall submit the qualifications of the Superintendent for verification by HHSC at the pre-award meeting.

C. Superintendent Qualifications:

1. Level IV: The Superintendent must have a minimum of 7 - 10 years of experience as a construction Project Superintendent. The Superintendent must have experience on similar size and type construction contracts which include the major trades that are part of this contract. The Superintendent shall have total responsibility of the project and authority to act on behalf of the company. The Superintendent must have experience with planning, organizing, and controlling construction projects. Provide quality control, supervision, hazard identification, and safety compliance. Possess extensive knowledge and experience in planning, scheduling, communicating, coordinating, managing, and controlling all phases of work for subcontractors and staff. The Superintendent must have comprehensive knowledge of recognizing and understanding plans/drawings. Have a thorough familiarity of construction specifications and proficient in its interpretation. Qualified to establish and maintain a Quality Control Program. Performance responsibilities shall include daily reports, test reports, documentations, submittals, RFI's, Change Orders, inspections, deliveries, meetings, etc.

    a. Quality Control Certification: Completion of CQM (Construction Quality Management).

    b. Safety and Health Certification: Completion of OSHA 30. Safety for work in the construction industry.

2. The Project Superintendent shall be subject to the approval of HHSC. The Contractor must furnish evidence showing the individual(s) meets the qualifications, experience, training, and other criteria required by this Section.

    a. Evidence shall be in the form of submitting past performance projects that include all the trades that are part of this contract. Submit a minimum of 3 past performances within the last 4 years, including the following: project name, contract agency, date of notice to proceed, date of project completion, description of work, contact person, and contact number.

    b. HHSC has the authority to reject the Superintendent based on submitted past performance qualifications. The Contractor must resubmit evidence of another individual (must not be same individual from first submittal). There will be no cost to delay charges to HHSC for the Contractor's rejection and resubmittal of the Superintendent evidence.

    c. HHSC has the authority to remove the Project Superintendent at any

time during construction project. The Contractor is responsible to provide the Superintendent who meets the qualifications, experience, training, and other criteria required by this Section. There will be no cost or delay charges to HHSC for the Contractor's Superintendent removal and replacement.

d. If the Superintendent is not present at the work site during any work being performed by the General Contractor and/or subcontractors, HHSC shall have the right to suspend the work.

e. The Contractor shall be responsible for notifying HHSC in writing of any change in the Superintendent. Before any changes or temporary substitution may occur, the Contractor must submit evidence to HHSC, for its review and approval of the Contractor's Superintendent.

D. Existing Conditions: Before commencing any work on this project, the Contractor shall verify if existing site and building conditions are the same as presented on the drawings and immediately report to HHSC any apparent discrepancies or inconsistencies.

E. Contractors and subcontractors shall be licensed, certified, and qualified by appropriate State and County agencies to perform their specific trade or particular type of work.

F. Laying Out Work

1. Bench Marks and Reference Points: The Contractor shall establish bench marks and other reference points and keep them intact throughout the work of the project. The Contractor shall correctly locate all grades, lines, and levels as required for the construction and completion of the project; be solely responsible for the accuracy and correctness of all lines, levels, and grades; and for establishing the location of utilities at the site.

2. Minor Changes: Minor changes necessary to adjust conditions at the site to conform to the contract documents or vice versa will not be grounds for the Contractor to claim additional charges or additional time.

3. Measurements: Before ordering any material, or doing any work, each Contractor shall verify all measurements at the project site and shall be responsible for the correctness of same. No extra charge or compensation will be allowed because of differences of actual dimensions and the measurements indicated on the drawings.

G. Protection:

1. The Contractor shall be responsible for the protection and safeguarding of all new work until after final inspection and acceptance by HHSC.

2. Whenever new concrete slabs, walks, etc., are a part of the project, the Contractor shall provide job site security for the first 24-hour period after each concrete pour.

H. All workers shall dress neatly and conduct themselves with propriety at all times; loud abusive behavior, sexual harassment, and unacceptable conduct will not be tolerated. Workers found in violation of the above shall be removed from the job site as directed by HHSC.

1.11 SITE UTILITIES AND TONING

A. Cooperate, coordinate, and schedule work to maintain construction progress, and accommodate the operations and work of the Owners of underground or overhead utility lines or other property in removing or altering the lines or providing new services.

B. Should the Contractor discover the existence and location of utilities in the contract drawings are not correct, do not disturb the utilities and immediately notify HHSC.

C. Do not disturb or modify any utilities encountered, whether shown or not on the Contract Drawings, unless otherwise instructed in the drawings and specifications or as directed by HHSC. Repair and restore to pre-damaged condition any utilities or any other property damaged by construction activities.

D. Transfer to Field Record Drawings the location(s) and depth(s) of new and existing utilities that differ from the Contract Drawings. Locate by azimuth and distance and depth(s) from fixed reference points.

E. Toning: Prior to the start of grading, excavation, or trenching work, verify and confirm the presence, location, and depth of existing underground utility lines in the area affected by the project, by "toning" or by other appropriate means acceptable to HHSC. The intent of this advanced toning is to afford HHSC an opportunity to identify utility lines that may or may not be shown on the drawings and issue a directive to address the existing conditions.

1. Perform toning using instruments specifically developed and designed for the detection of underground pipes, cable utilities, and buried warning tapes.

2. Notify HHSC 48 hours in advance before toning operations. Provide information on the proposed toning method and other pertinent information.

F. Recording Toning Information: Upon completion of the toning operation, submit drawings within 5 calendar days that show the location and approximate depth of the existing and newly discovered utility lines. Identify the type of utility lines. Identify where utility lines indicated on the drawings are not shown in their approximate location or where new utility line are found or pointed out in the field. Record all information on the Field Record Drawings as specified in SECTION 01330 - SUBMITTALS.

PART 2 - PRODUCTS

2.01 ASBESTOS PROHIBITION

No asbestos containing materials or equipment shall be used. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

2.02 QUALITY

Materials, equipment, furnishings, fixtures, hereinafter specified in the various divisions and sections of the specifications shall be new, best, commercial grade, class, kind, and type available.

PART 3 - EXECUTION

3.01 INSTALLATION

Materials, equipment, furnishings, and fixtures hereinafter specified in the various divisions and sections of the specifications shall be installed in accordance with manufacturer's current specifications, recommendations, instructions, and directions by workers specially trained and skilled in the performance of the particular type of work, to meet manufacturer’s guarantee or warranty and regulatory agency requirements specified.

3.02 ENVIRONMENTAL

Contractor shall oversee that proper environmental conditions are met regarding temperature, humidity, lighting, and ventilation.

3.03 PREPARATION AND PROTECTION

A. Before starting work on previously erected constructions, Contractor shall make a thorough and complete investigation of such recipient surfaces and determine their suitability to receive required additional construction and finishes. Contractor, at their own expense, shall make whatever repairs and conditioning required to properly prepare such surfaces. Contractor shall coordinate the work to provide suitable surfaces to receive subsequent work.

B. Commencement of work by any trade will be construed as acceptance of existing conditions and surfaces being satisfactory for application of subsequent work. Contractor shall be responsible for finished results and assumption of warranty obligations under the contract.

C. Contractor shall protect existing work in a manner to prevent any damage. Take positive measures to prevent breakage of glass and damage to aluminum finishes.

D. Contractor shall exercise all required precautions necessary to protect all buildings and other construction on property adjacent to that of the work under the contract.

E. Contractor shall provide temporary lockable doors and temporary walls for complete protection of enclosed areas of the building. Throughout entire construction period, the Contractor shall provide adequate measures to fully protect all HHSC property, students, staff, and public.

3.04 CLEAN-UP

Rubbish and debris resulting from work of the various divisions and sections of the specifications shall be collected daily and disposed of by the Contractor in compliance with appropriate government laws. Contractor(s) or trade(s) specifically involved shall remove materials, debris, and rubbish from the site daily and dispose of at legal disposal areas away from the premises. Permission to provide on-site trash containers shall be granted by HHSC and shall be placed where directed by HHSC. On site trash containers shall be placed away from storm drains and shall have covers that are to be kept closed when containers are not in use.

END OF SECTION

SECTION 01035 – MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Change Orders.

B. Related Sections:

1. Division 1 Sections.

1.02 DEFINITIONS

A. Entity: As used herein, to mean each legal entity under contract for the work indicated in the Change Order, whether directly or indirectly, including but not limited to, the Contractor and each Subcontractor, Supplier, Manufacturer, and Fabricator.

B. Primary Document: Document that integrates and summarizes primary information from related set or group of more detailed documents. A submittal may consist of a group or hierarchy of primary documents, with master (overall) Primary Document(s) from Contractor, which integrates and organizes all other organized information in a specific submittal document set. These documents may be any of the “submittal types” required herein; where such a document is used to integrate and summarize a more detailed set of documents.

C. Supporting Documents: Document(s) of significant detail as necessary to fully describe work or portions of work in Change Order; which is generally more detailed for specific information than what is in a related primary document.

1.03 SUBMITTALS

A. Proposal Request (Change Order Proposal): For each proposal, following.

1. Primary Document: From Contractor, submit proposal description with spreadsheets.
2. Supporting Documents: From each involved Entity, submit specific proposal descriptions with spreadsheets related to each Entity’s work.
3. Project Schedule: From Contractor, submit description of impact to Project Schedule, if any.

B. Payment for Approved Change Orders: For each proposal, following.

1. Primary Document: Submit as part of Contractor’s “Application for Payment” on AIA forms G702 and G703; in accordance with Conditions of the Contract.
2. Supporting Documents: From Contractor, each Subcontractor, and each Supplier, submit following.
    a. Spreadsheets.
    b. Time Sheets.

c. Invoices.

1.04 QUALITY ASSURANCE

A. General Submittal Format:

1. Submittal Organization: Submit as follows.
    a. Sets: Integrate individual documents into sets.
    b. Identifications: In addition to other required identifications, each related Change Order document and each related document page to be printed with following.
        i. Change Order Number.
        ii. Page number.
        iii. Date.
    c. Change Order Number: Use Architect's approved number.
    d. Descriptions: Standardize information between different document type submittals to ensure that similar information is readily identified; or devise other methods for relating similar information.
2. Document Types: Refer to "Definitions" paragraphs herein.
3. Acceptance: Format and level of detail to be acceptable to Owner. Revise information, if requested, by Owner.

B. Specific Submittal Types: Comply with following when requested for specific submittals.

1. General: Information to be detailed and itemized in clear and standard accounting format; acceptable to Owner's Representative and Architect.
2. Spreadsheet: In addition to other required data, include direct costs, indirect costs, overhead, profit, and G.I.T. Direct costs to include labor, materials, equipment; relate to specific subcontracts, where applicable. Itemization to include measuring units used for costed item, associated quantities, production rates, man hours, and equipment hours.
3. Time Sheets: Submit following from each entity, for all employees and equipment used for work under each approved Change Order.
    a. Primary Document: Document incorporating employee records and equipment records.
    b. Supporting Documents:
        i. Employee Payroll Records: Include employee names, dates when work performed, and related tasks performed on specific dates; with accounting cost codes, and associated cost accounting.
        ii. Equipment Records: Include equipment used, operator, dates of use, tasks performed on specific dates; with accounting cost codes, and associated cost accounting.
4. Invoices: From each entity, material invoices to be on letterhead, with invoice numbers, dates, itemized materials list descriptions, accounting cost codes

and associated cost accounting. Invoiced work to show work specific to each Change Order.

C. Lien Waivers: Submit releases of each Entity, indicating that each work has been paid for. Releases for Change Order work should be specific to Change Order; not general to or include other work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PROCEDURES

A. Proposal Request:

1. Initiation: May be initiated by Contractor or may be initiated by a request for proposal from the Architect to the Contractor and resulting in Contractor's "Proposal Request" to Architect and Owner's Representative.
2. Architect's Request for Proposal: Request is neither a Change Order nor directive to proceed with the work, but is a request for information on how proposed change may alter the Contract Sum and Project Schedule. Contractor is to provide information in accordance with the request.
3. Time of Submission: Prior to commencing proposed work, but not later than required to allow for proper review by Owner, Owner's Representative, and Architect, and as necessary to allow for timely incorporation into Project Schedule.

B. Change Order: For Owner acceptable Proposal Requests following is to be accomplished.

1. Architect's Responsibility: Issue AIA Document G701, Change Order.
2. Contractor's Responsibility: With Owner, Owner's Representative, and Architect, sign Change Order. Upon receiving Change Order, comply with following.
    a. Progress Schedule: Incorporate into Progress Schedule and submit revised schedule; unless otherwise acceptable to Owner's Representative and Architect.
    b. The Work: Proceed with the work.
    c. Application for Payment: Upon completion of work, submit request for payment as part of first application for payment due after work complete. Application for Payment to distinguish each Change Order work from other work.

END OF SECTION

SECTION 01045 – CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cutting and patching work.

B. Related Sections:

1. Division 1 Sections, general.
2. Division 1 - Quality Control.

1.02 DEFINITION

A. "Cutting and Patching": The phrase as used herein is defined as follows.

1. Cutting and patching includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surface to their original condition.
2. Cutting and patching is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
3. Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching".
4. "Demolition" is recognized as related-but-separate category of work, which may or may not require cutting and patching as defined in this Section.

1.03 SUBMITTALS

A. Methods: Notify Architect when any work is limited by requirements stated under "Quality Assurance" paragraphs. If requested, submit methods of cutting and patching for this Work. Do not begin Work, until successful review accomplished.

1.04 QUALITY ASSURANCE

A. Structural Work: Do not cut and patch any work in a manner that would result in a reduction of its load-carrying capacity or of its load-deflection ratio.

B. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life, or decreased safety.

C. Matching of Exposed-to-View Surfaces: Patching work should not be evident in final exposed-to-view work. Do not cut and patch work which is exposed-to-view in the finished Work and which cannot be restored to satisfactorily match the

surface in which the cutting and patching is done. Quality of match and final appearance of patched work to be determined by Architect.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Except as otherwise indicated or as directed by the Architect, use materials for patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for patching that will result in equal-or-better performance characteristics.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examination: Before cutting, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

3.02 PREPARATION

A. Temporary Supports: When required, to prevent failure or unsafe conditions, provide temporary supports for work to be cut.

B. Protection: Protect other work during cutting and patching to prevent contamination and damage. Provide protection from adverse weather conditions for that part of the Project that may be exposed during cutting and patching operations.

3.03 PERFORMANCE

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

5. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

a. Clean piping, conduit, and similar features before applying paint or other finishing materials.

b. Restore damaged pipe covering to its original condition.

3. Floors, Walls and Ceilings: Where walls or partitions that are removed extend one finished area into another, patch and repair floor, ceiling and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor, ceiling and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

3.04 CLEANING

A. General: Thoroughly clean areas and spaces where work is performed or used as access to work. Remove contaminants from all surfaces without damaging finish of contaminated surfaces.

END OF SECTION

SECTION 01046 – REQUEST FOR INFORMATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Administrative requirements for “RFI’s”.

B. Related Sections:

1. Division 01 Sections.

1.02 DEFINITIONS

A. Request for Information (RFI): Contractor’s written request for information to confirm, reverify, or further clarify intent required by Contract Documents.

1.03 SUBMITTALS

A. Architect’s Form: Submit RFI on Architect’s form. Secure form from Architect where not included with Contract Documents.

1.04 QUALITY ASSURANCE

A. Architect’s Intent: It is a condition to the Contract for the Work, that prior to the signing of the Contract, that the Contractor be fully familiar with and clear to the requirements (Architect’s design intent) for this Project as represented in the Contract Documents. It also a condition to the Contract for the Work, that prior to the signing of the Contract, should there be any aspect of the Contract which is not clear or not complete enough, that the Contractor is to secure the necessary information from the Architect in order to attain the required understanding of the Project. Moreover, it is an Owners and Architects expectation that Contractor have an approach that is within the trades standard of care for ALL elements of the project as a default directive by the owner to require the contractor to provide this base scope approach to fulfill the work in a complete and code compliant solution at no additional cost. The primary reasons for this are as follows.

1. Contract Amount: It is important that the Owner secure a fair and complete cost proposal for the Work; without hidden or additional costs to the Owner.
2. Administrative Costs: Minimize unnecessary costs to administer the Project during the progress of the Work.

B. Architect’s Drawings & Specifications:

1. Design Intent: It is an accepted historical and understood practice in the industry that the Architect’s Drawings and Specifications reasonably and professionally convey his design intent for the Project, without necessarily indicating every single condition for the Work, but to the degree necessary that Contractors can propose a fair and complete cost for the Work, including for the work not indicated, but implied by the Architect’s design intent.
2. RFI’s **-** Basis of Communication: Due to the fact all conditions are not

indicated by the Contract Documents it is understood that additional clarifications will be made necessary during the course of the work by the Contractor in order to fully achieve all aspects of the Architect's design intent and that the RFI procedure becomes the administrative basis by which information is formally communicated between the Architect and the Contractor.

C. Misuse of the RFI Process:

1. Intent: RFI's are not to be used in an adverse and frivolous manner, e.g., as a method of enlisting the Architect's services for finding information already indicated in the Contract Documents, as a means for forwarding non-legitimate claims for increases Contract Amount or Contract Schedule that is already intended by Contract, etc.

2. Administrative Costs: Where misuse does occur, submittals will be returned and Contractor is to pay for administered costs at Owner's, Owner's Representative's, and their Consultant's standard rates; for all who were involved in review of such submittals. An itemized listing will be provided to Contractor in addition to the bill.

D. Contractor Initiation: RFI's must be submitted through the General Contractor, using a mutually accepted form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PROCEDURE

A. Contractor's Responsibilities

1. Examination: Upon discovering a potential aspect of the Work which may require further clarification from the Architect, thoroughly examine the Contract Documents to ensure that the information is not indicated.

2. Submittal:

a. General: Where a reasonable search for needed information has been conducted without success, complete and submit an RFI.

b. Contractor's Interpretation: In space provided or as an attachment, if required, submit Contractor's interpretation of what he believes to be Architect's intent for area or subject requiring clarification.

c. Cost and Schedule Impact: Each and every RFI must indicate whether there will be a potential cost and/or schedule impact linked to it. Cost impacts shall not be listed as un-definable or probable. Reasonable budget allocations shall be included as part of the RFI form or it may be subject to resubmittal.

d. Owner directives for RFI content shall include contractor proposed and/or method included in original bid proposal to complete the work for no additional cost to owner.

e. RFI's are not a method to create conditions subject to submittal of a Proposed Change Order, obvious RFI's shall not be answered.

B. Architect's Responsibilities:

1. Review: Not later than 10 working days after each RFI is received. Return to Contractor a response on the submitted form.

2. Information Indicated in Contract Documents: If any, requested information is found to be already indicated in the Contract Documents, following is to occur.

    a. RFI Form: Architect to record location of the requested information on the submitted RFI form.

    b. Administrative Costs: Owner may deduct the sum of one hundred dollars ($100) minimum, for the Architect's time to administer and process each such RFI. Additional costs may be deducted when itemized by the Architect and submitted to the Owner.

    c. It is universally understood that ALL responses to RFI's by the Architect and/or its consultants that affect scope and/or schedule shall be approved in writing by the Owner and/or its representative prior to inclusion to project scope, no exceptions. Work provided prior to written approval shall be solely at contractors risk and the costs associated with its inclusion. Contractor shall not deny Owner its right of refusal due to work being underway without written authorization.

END OF SECTION

SECTION 01090 - REFERENCES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Use of Standards.
2. Abbreviation/Acronym use and format.
3. Definitions.

B. Related Sections:

1. Division 01 Sections.

1.02 STANDARDS

A. Requirement: Each type of work provided for this Project is required to comply with recognized Industry standards (also may be referred to as “references”) that are applicable to the class of work intended by the Contract Documents. Compliance is required whether such standards are indicated or not and whether such standards are in published form or an unwritten but accepted practice in the Industry for the class of work.

B. Use:

1. General: Where a specific standard is indicated, this is to be interpreted as a method for conveying the design intent and its use expands on or clarifies the requirements and its use is not intended to limit or to negate the specific Industry standards intended to apply to the class of work to be provided.
2. Conflict: Where several Industry standards apply to the Work, and where quality requirements of these applicable standards conflict for the class of work required, it is intended that the standard producing the higher quality work is to apply.

1.03 ABBREVIATIONS/ACRONYMS

A. General: Abbreviations and acronyms are used throughout the Contract Documents. If any abbreviation or acronym is not understood, these should be verified from the Architect.

B. Industry Acronyms: Generally, but not necessarily, these are abbreviations or acronyms of Industry organizations, e.g. ASTM, AWI, WIC, NRCA, SMACNA, etc.

C. Architect Created Acronyms: Where used in Contract Documents the following format is used.

1. Format: Abbreviation of one or several letters, followed by a hyphen, followed by an identification number, e.g. WD-1 for wood type number one or WPM-1 for waterproof membrane type one.

2. Number Sequence and Related Sections: Designations may be used between related specification sections where primary product is similar and therefore numbers are not necessarily sequential within a specific specification section, although the numbering will be sequential between all related sections where similar designations are used.

1.04 DEFINITIONS

A. Related Sections: The listed specification sections under the “Related Sections” paragraphs indicates some of the primary related work which is impacted by the work of the specific specification section in which the list appears. It is not intended as a complete list (which in many cases would otherwise be-enormous) but has been provided to assist the Contractor.

B. Exposure Definitions: Unless otherwise indicated, the following definitions are to apply.

1. Exterior Surfaces: Exposed on the outside envelope of structure or surfaces of other constructed elements and equipment which are exposed to the “outside air”. Covered or protected areas “open to the (outside) air” and not fully enclosed by walls, floors, roofs, windows, and doors, are to be considered as part of the exterior and surfaces occurring in such spaces are to be considered exterior surfaces.

2. Interior Surfaces: Surfaces interior to the fully enclosed envelope of a structure or within the fully enclosed envelope of other constructed elements and equipment. These surfaces are not exposed to the “outside air”.

3. Exposed: Surfaces which are exposed to view from any vantage point, which are not concealed from view due to permanent non-accessible construction or earth, and which is not defined as semi-exposed.

4. Semi-Exposed: Surfaces not readily visible but are accessible and viewable from selected vantage points. These surfaces include those hidden by and hidden on removable or openable doors, panels, and drawers, and surfaces of undersides of shelves, counters, desks, and toe spaces, surfaces which are hidden by moveable equipment/furnishings, and other similar surfaces.

5. Concealed: Surfaces not exposed to view from any vantage point and which is concealed by permanent non-accessible construction, earth, and equipment/furnishings. Such concealed surfaces include those surfaces permanently concealed within inaccessible wall cavities, above inaccessible ceilings, within inaccessible floor construction, within inaccessible shafts, and those buried underground in earth. Include within this definition, surfaces above otherwise semi-exposed accessible suspended acoustical ceilings and the interior portions (except ferrous metal components) of the elevator shaft which are to be considered as concealed spaces.

C. Type: Word is defined to mean any characteristic(s) which makes a product different or unique from another product; including differences which could occur when it is the same product, e.g. products of nature such as those made from wood or stone. Characteristics include, but are not limited to, those of size, shape, profile, finish, texture, color, pattern, chemical/material composition, material performances, etc.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Project meetings.

1.02 PERFORMANCE AND COORDINATION

A. Contractor is in charge of the Work within the Project Contract Limits and shall direct and schedule the Work. Include general supervision, management, and control of the Work of this project, in addition to other areas more specifically noted throughout the Specifications. Final responsibility for performance, interface, and completion of the Work and the Project is the Contractor's.

B. The Contractor is responsible for jobsite Administration. Provide a competent superintendent on the job and provide an adequate staff to execute the Work. In addition, all workers shall dress appropriately and conduct themselves properly at all times. Loud abusive behavior, sexual harassment and misconduct will not be tolerated. Workers found in violation of the above shall be removed from the job site as directed by the Contracting Officer.

C. The State will hold the Contractor liable for all the acts of Subcontractors and shall deal only with the Prime Contractor in matters pertaining to other trades employed on the job.

D. Coordination: Provide project interface and coordination to properly and accurately bring together the several parts, components, systems, and assemblies as required to complete the Work pursuant to the GENERAL CONDITIONS and SPECIAL CONDITIONS.

1. Provide interface and coordination of all trades, crafts and subcontracts. Ensure and make correct and accurate connections of abutting, adjoining, overlapping, and related work. Provide anchors, fasteners, accessories, appurtenances, and incidental items needed to complete the Work, fully, and correctly in accordance with the Contract Documents.

2. Provide additional structural components, bracing, blocking, miscellaneous metal, backing, anchors, fasteners, and installation accessories required to properly anchor, fasten, or attach material, equipment, hardware, systems and assemblies to the structure.

3. Provide excavation, backfilling, trenching and drilling for trades to install their work.

4. Provide concrete foundations, pads, supports, bases, and grouting for trades as needed to install their work.

5. Provide caulking, sealing, and flashing as required to waterproof the building complete and as required to insulate the building thermally and acoustically. Include sealing, flashing, and related work as required to prevent moisture intrusion, air infiltration, and light leakage.

6. Equipment, appliances, fixtures, and systems requiring plumbing and mechanical services, rough-in, and connections, or other utilities and services shall be provided with such services, rough-in, and final connections.

7. Equipment, appliances, fixtures, hardware, and systems requiring electrical services shall be provided with such electrical services, including outlets, switches, overload protection, interlocks, panelboard space, disconnects, circuit breakers, and connections.

8. Materials, equipment, component parts, accessories, incidental items, connections, and services required to complete the Work which are not provided by Subcontractors shall be provided by the Contractor.

9. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1.03 COOPERATION WITH OTHER CONTRACTORS

A. The State reserves the right at any time to contract for or otherwise perform other or additional work within the Project Contract Limits. The Contractor of this project shall to the extent ordered by the Contracting Officer, conduct its work so as not to interfere with or hinder the progress or completion of the work performed by the State or other Contractors.

1.04 COORDINATION WITH OTHER PRIME CONTRACTORS

A. Multiple prime Contractors performing work under separate agreements with the State may be present near the project location, adjacent to and abutting the Project Contract Limits. This Contractor shall coordinate activities, sequence of work, protective barriers and any and all areas of work interfacing with other Prime Contractor's work. Contractor shall provide a continuity of finishes, walks, landscape, etc. at abutting Contract Limits so no additional work will be required. Any damage to other Prime Contractor's Work committed by this Contractor (or its Subcontractor) shall be repaired promptly at no additional cost to the State.

B. Coordinate Subcontractors and keep them informed of any work from the other Projects that may affect the site or the Subcontractor's work. If the Contractor has any questions regarding its coordination responsibilities or needs clarification as to the impact in scheduling of its work and the work of other projects, this Contractor shall notify the Contracting Officer in writing.

C. Subject to approval by the Contracting Officer, this Contractor shall amend and schedule its work and operations to minimize disruptions to the work and operations of other projects.

1. Relocate or remove and replace temporary barriers, fencing supports or bracing to allow work by others to proceed unimpeded. Do not remove required barriers supporting work until specified time or as approved by the Contracting Officer. This does not relieve the Contractor of the responsibility of proper coordination of the work. If directed by the Contracting Officer, leave in place any temporary barriers.

2. Coordinate work that abuts or overlaps work of the other projects with the Contracting Officer and other Prime Contractors to mutual agreement so that work is 100 percent complete with continuity of all materials, systems and finishes.

3. When directed by the Contracting Officer, provide access into the construction zone to allow the other project's Contractor(s) to perform their Work and work that must be interfaced.

4. Contractor shall adjust and coordinate its Work and operations as required by the other projects as part of the Work of this contract without additional cost or delay to the State.

5. When directed by the Contracting Officer provide a combined Contractor's construction schedule.

D. Other Contracts: If known, they are listed in SECTION 01100 - PROJECT REQUIREMENTS.

1.05 SUBMITTALS

A. Photo Documentation: Prior to the start of jobsite work, the Contractor shall photo document the existing conditions at the site and file with the Contracting Officer one complete set of documents.

B. Combined Contractors Construction Schedule: Provide schedule as determined by Contracting Officer for coordination with other prime Contractors.

1.06 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences as directed by the Contracting Officer. at the Contractor's field office, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Contracting Officer of scheduled meeting dates and times.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Contractor record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Contracting Officer, within 7 days of the meeting.

B. Preconstruction Conference: Contracting Officer shall schedule a preconstruction conference before the start of construction, at a time convenient to the Contracting Officer, but no later than 7 days before the Project start date or jobsite start date whichever is later. Conference will be held at the Project site or another convenient location. The Contracting Officer shall conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Contracting Officer, and design consultants; Facility Users; Contractor and its superintendent; major Subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:

   a. Tentative construction schedule.

   b. Phasing.

   c. Critical work sequencing and coordination.

   d. Designation of responsible personnel.

   e. Use of the premises.

   f. Responsibility for temporary facilities and controls.

   g. Parking availability.

   h. Office, work, and storage areas.

   i. Equipment deliveries and priorities.

   j. First aid.

   k. Security.

   l. LEED Requirements (for LEED Projects only) such as:

      1. Construction Waste Management and recycling
      2. Commissioning
      3. Recordkeeping, submittals, etc.

   m. Progress cleaning.

   n. Working hours.

C. Progress Meetings: Conduct progress meetings at intervals not greater than bi-weekly during design and weekly during construction or other intervals as determined by the Contracting Officer. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to Contracting Officer and Design Consultants, each Contractor, Subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

    b. Review present and future needs of each entity present, including the following:
        1) Outstanding Requests for information (clarification).
        2) Interface requirements.
        3) Sequence of operations.
        4) Status of outstanding submittals.
        5) Deliveries.
        6) Off-site fabrication.
        7) Access.
        8) Site utilization.
        9) Temporary facilities and controls.
        10) Work hours.
        11) Hazards and risks.
        12) Progress cleaning.
        13) Quality and work standards.
        14) Force Account work.
        15) Change Orders and Change Proposals.
        16) Documentation of information for payment requests.

c. Corrective Action Plan: Contractor shall provide a plan of corrective action for any item which is delayed or expected to be delayed, then that item impacts the contractual dates.

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

   a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

D. Monthly Progress Report: Contractor shall prepare and submit monthly progress reports covering the current period performance and the next period's plan. The report shall include progress photos, schedule updates, and areas of concern. Progress photos shall include, but not be limited to, the photographic condition of active construction, utility protection, environmental protection, and traffic management. Photo documentation shall also be used for pre-construction surveys.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Schedule of Prices.
   4. Payment Application.

B. Related Sections include the following:
   1. SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION for preparing a combined Contractor's Construction Schedule.
   2. SECTION 01330 - SUBMITTAL PROCEDURES for submitting schedules and reports.

1.02 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path and control the total length of the project. They must start and finish on the planned early start and finish times.
   2. Predecessor activity is an activity that must be completed before a given activity can be started.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of project.

C. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either HHSC or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Schedule of Prices: A statement furnished by Contractor allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Payment Applications.

1.03 SUBMITTALS

A. Required Submittals: Submit 8 sets of the list of the required submittals, by Specification Section, within 15 days after award of the contract or upon earlier written instructions from the Contracting Officer. A general listing is provided under SECTION 01330 - SUBMITTAL PROCEDURES.
   1. The listing shall indicate and include the following:
      a. The number of copies required for submittal.
      b. Planned submittal date.
      c. Approval date required by the Contractor.
      d. A space where the "date of submittal" can be inserted.
      e. A space where the "date of approval" can be inserted.
      f. A space where an "action code" can be inserted.
      g. A space where an action code regarding HHSC's acceptance or rejection of the submittal can be inserted, a space for insertion of the date of such acceptance or rejection, and a space for notation regarding the reason for HHSC's rejection of any such submittal and any conditions related to re-submittal.

B. Construction Schedule: Submit the Construction Schedule for review within 14 days after the award of the contract or upon earlier written instructions from the Contracting Officer.

C. Schedule of Prices: Submit the Schedule of Prices integrated with the Construction Schedule for review within 14 days after the award of the contract or upon earlier written instructions from the Contracting Officer.

D. Payment Application: Submit the payment application at earliest possible date and no sooner than the last day of the month after all payroll affidavits, updated submittal registers, and schedules have been submitted.

1.04 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate Contractors.

B. Construction Schedule: Coordinate Contractor's Construction Schedule with the Schedule of Prices, Submittals Schedule, loaded monthly event activity, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

C. Schedule of Prices: Coordinate preparation of the schedule with preparation of Contractor's Construction Schedule.

PART 2 - PRODUCTS

2.01 SUBMITTALS SCHEDULE

A. Comply with the GENERAL CONDITIONS "SHOP DRAWINGS AND OTHER SUBMITTALS" Article. Furnish required submittals specified in this Section and in the Technical Sections. Submittals include one or more of the following: shop drawings, color samples, material samples, technical data, material safety data information, schedules of materials, schedules of operations, guarantees, certifications, operating and maintenance manuals, and field posted as-built drawings.

B. Preparation: Furnish a schedule of submittals per Contracting Officer.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Prices, and Contractor's Construction Schedule.

2. The schedule shall accommodate a minimum of 21 calendar days for the State's review, as applicable for the Island the project is located.

3. Prepare and submit an updated list to the Contracting Officer at monthly intervals or as directed by the Contracting Officer. The listing shall reflect all approvals received since the last update.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE - PERT CHART CRITICAL PATH METHOD (CPM)

A. The construction schedule shall address the entire project, to the extent required by the Contract Documents, and shall show an expedient and practical execution of work. If requested by the Contracting Officer, the Contractor shall participate in a preliminary meeting to discuss the proposed schedule and requirements prior to submitting the schedule.

B. The Construction Schedule shall indicate the following:

1. Elements of the Project in detail time scaled by month or by week, and a project summary.

2. The order and interdependence of activities and the sequence in which the work is to be accomplished.

3. How the start of a given activity is dependent upon the completion of preceding activities and how its completion restricts the start of following activities.

4. The submittal and approval of shop drawings, samples, procurement of critical materials and equipment, receipt of materials with estimated costs of major items for which payment will be requested in advance of installation, fabrication of special materials and equipment, and their installation and testing.

5. Activities of the State that have an effect on the progress schedule, such as the required delivery dates for State furnished materials and equipment and other similar items.

6. Provide a separate report with the following:
   a. The description of the activity.
   b. The duration of time in calendar days.
   c. For each activity indicate the early start date.
   d. For each activity indicate the early finish date.
   e. For each activity indicate the late start date.
   f. For each activity indicate the late finish date.
   g. Total float time.
   h. Cost of event.
   i. Contract-required dates for completion of all or parts of the Work.
   j. Events are to be used on “Monthly Progress Report” for monthly payment request.

C. Upon completion of the Contracting Officer’s review, the Contractor shall amend the schedule to reflect the comments. If necessary, the Contractor shall participate in a meeting with the Contracting Officer to discuss the proposed schedule and changes required. Submit the revised schedule for review within 7 calendar days after receipt of the comments.

D. Use the reviewed schedule for planning, organizing and directing the work, for reporting progress, and for requesting payment for the work completed. Unless providing an update, do not make changes to the reviewed schedule without the Contracting Officer’s approval.

E. Should changes to the schedule be desired, submit a request in writing to the Contracting Officer and indicate the reasons for the proposed change. If the changes are major, the Contracting Officer may require the Contractor to revise and resubmit the schedule at no additional cost to the State. Contractor shall mitigate the impact of all changes by readjusting the sequence of activities, duration of time, or resources utilizing available float.

   1. A change is major if, in the opinion of the Contracting Officer, the change affects the substantial completion date or other contractual and milestone dates.

   2. Minor changes are those that only affect activities with adequate float time.

F. Once the schedule is reviewed by the Contracting Officer, the Contractor shall submit 6 sets of the revised schedule within 14 calendar days.

G. Throughout the duration of the project, the Contracting Officer may require more detailed breakdowns of activities, logic, and schedule submittals from the Contractor.

H. Updated Schedules: Submit at monthly intervals or as directed by the Contracting Officer. The schedule shall reflect all changes occurring since the last update including the following:

1. Activities started and completed during the previous period.

2. The estimated duration to complete each activity that was started but not completed.

3. Percentage of cost payable for each activity.

4. Modifications and pending proposed changes.

5. Narrative report describing current and anticipated problem areas or delaying factors with their impact together with an explanation of corrective actions taken or proposed.

I. Failure on the part of the Contractor to submit updated schedules may be grounds for the Contracting Officer to withhold progress payments for items noted on the schedule.

J. Contractor shall prosecute the work according to the CPM Schedule. The Contracting Officer shall rely on the reviewed Contractor's CPM Schedule and regular updates for planning and coordination. The Contracting Officer's review of the Contractor's CPM Construction Schedule does not relieve the Contractor of its obligation to complete the work within the allotted contract time. Nor does the review grant, reject or in any other way act on the Contractor's request for adjustments to complete remaining contract work, or for claims of additional compensation. These requests shall be processed in accordance with other relevant provisions of the contract.

K. If the Contracting Officer issues a field order or change order or other directive that affects the sequence or duration of work activities noted on the construction progress schedule, the Contractor shall promptly update the schedule. To accomplish this update, add, delete or revise the work activities noted or change the logic in the schedule to show the Contractor's plan to incorporate the change into the flow of work. All change orders and time extension requests that affect the construction schedule shall be evaluated based on their impact on the approved Construction Schedule.

L. If the current work is behind schedule or projected to be behind schedule, such as negative float on a critical activity or inability to meet the Contract Completion Date, the Contracting Officer may require the Contractor, at the Contractor's cost,

to take remedial measures to get the project back on schedule. This may require increasing the work force, working overtime and weekends, air freighting materials, or other similar actions.

M. If at any time the Contracting Officer determines that any critical activity has fallen behind the CPM schedule by 15 calendar days or more, the Contractor shall submit a remedial plan to recapture the lost scheduled time. Include a revised schedule. Furnish the remedial plan no later that 7 calendar days from Contracting Officer's notification.

N. If an accelerated schedule is proposed, refer to GENERAL CONDITIONS Section 7.22 "CONSTRUCTION SCHEDULE".

2.03 SCHEDULE OF PRICES

A. Furnish a schedule of prices per Contracting Officer.

B. Provide a breakdown of the Contract Sum in enough detail to facilitate developing and the continued evaluation of Payment Applications. Provide several line items for principal subcontract amounts, or for materials or equipment purchased or fabricated and stored, but not yet installed, where appropriate. Round amounts to nearest whole dollar; total shall equal the Contract Price.

C. Each item in the Schedule of Prices and Payment Application shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

2.04 PAYMENT APPLICATION

A. Use the Schedule of Prices as the Monthly Construction Progress Report. Each Payment Application shall be consistent with previous applications and payments. The Contracting Officer shall determine the appropriateness of each payment application item.

B. Payment Application Times: The date for each progress payment is the last day of each month. The period covered by each Payment Application starts on the first day of the month or following the end of the preceding period and ends on the last day of the month.

C. Updating: Update the schedule of prices listed in the Payment application when Change Orders or Contract Modifications result in a change in the Contract Price.

D. Provide a separate line item for each part of the Work where Payment Application may include materials or equipment purchased or fabricated and stored, but not yet installed.

E. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.

F. Provide separate line items for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

G. Payment Application Forms: Use and submit copies of the Payment Application and Construction Progress forms provided by HHSC. Forms are available at HHSC's Public Works Division office or District office. Furnish 7 copies.

H. Application Preparation: Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of the Contractor.
   1. Entries shall match data on the Schedule of Prices and Contractor's Construction Schedule. Use updated schedules if revisions were made. Include amounts of Change Orders and Contract Modifications issued before last day of construction period covered by application.

I. No payment will be made until the following are submitted each month:
   1. Monthly Estimate, 7 copies.
   2. Monthly Progress Report, 7 copies.
   3. Statement of Contract Time, 7 copies.
   4. Updated Submittal Register, 1 copy.
   5. Updated Progress Schedule, 1 copy.
   6. All Daily Reports, 1 copy.
   7. All Payroll Affidavits for work done, 1 copy.

J. Retainage: HHSC will withhold retainage in compliance with the GENERAL CONDITIONS.

K. Transmittal: Submit the signed original and 6 copies of each Payment Application for processing.

2.05 GENERAL CONTRACTOR AND SUBCONTRACTORS DAILY PROGRESS REPORTS

A. The General Contractor is responsible for submitting the General Contractor and Subcontractor Daily Progress Reports (Daily Reports) for the General Contractor, all subcontractors, and any lower-tier subcontractors.

B. The form of the Daily Reports shall be as directed by the Contracting Officer. A separate report shall be made and submitted for the General Contractor (each calendar day) and each subcontractor (each day worked). The report shall include the following information for each employer: Name of General Contractor or Subcontractor, Report Number, Contract Day (consecutive calendar day from Notice to Proceed (NTP) Date), Date worked, work location and description, number of workers, trade/labor classification, and work hours. For General Contractor, only the Contract Day is required because the Report Number will be the same number.

C. The Daily Reports shall be prepared from the project NTP Date. Daily Reports shall continue to be prepared and submitted up to the Project Acceptance Date. After the Project Acceptance Date, Daily Reports will be submitted for days worked only, and continue to date of Contract Completion Notice. Running Contract Day will stop at Project Acceptance Date.

D. Submit/upload copies of the previous day's reports to the appropriate online folder(s) within the State's web based construction management system as directed by the Contracting Officer by 10:00 a.m. of the next working day.

E. Daily Reports can be handwritten in the field, and shall be uploaded by the General Contractor to the State's web based construction management system. The reports shall use the following file naming convention:

CN R# CD# YYMMDD

CN: Company Name of General Contractor or Subcontractor (2 capital letters)
R#: Daily Report number (3 digits, used only by Subcontractor)
CD#: Contract Day (consecutive calendar day from NTP Date, 3 digits)
YYMMDD: Report Date in numerals (year, month, day, 6 digits)

Examples: HS 011 015 170314, for Honolulu Subcontractor, Inc.
HG 015 170314, for Honolulu General Contractor, Inc.

F. A sample Daily Progress Report Form can be found at the end of this Section.

PART 3 - EXECUTION (Not Used)

END OF SECTION

STATE OF HAWAII, DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES DIVISION OF PUBLIC WORKS – CONSTRUCTION MANAGEMENT BRANCH **DAILY PROGRESS REPORT**	**REPORT NO.:**	**001**
	CONTRACT DAY:	**001**
	DATE:	**03/14/2017**

PROJECT:	Waimano Ridge			DAGS Job No.:
	Improvements to Buildings and Site			12-20-0000
Contractor:	Enter General Contractor or Subcontractor Name	State Engineer:		
Certified by:	Enter name of person certifying the report information	State Inspector:		
Weather:		Condition:		

WORK PERFORMED TODAY (by General Contractor or Subcontractor)

Work location & description	Number (Workers)	Trade/Labor Classification	Hours

Observed defective work:

Observed corrected work:

Materials and equipment delivered today:

Testing done today:

Questions or problems:

Remarks:

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Comply with the GENERAL CONDITIONS “Shop Drawings and Other Submittals” section and “Material Samples” section.

B. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

C. Related Sections include the following:
   1. SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION for submitting schedules and reports, including Contractor’s Construction Schedule and the Submittals Schedule.

   3. SECTION 01770 - CLOSEOUT PROCEDURES for submitting warranties, project record documents and operation and maintenance manuals.

1.02 SUBMITTAL PROCEDURES

A. Coordinate Work and Submittals: Contractor shall certify the submittals were reviewed and coordinated.

B. Submittal Certification: Provide in MS Word when submitting electronically. Contracting Officer will provide an electronic copy of the Submittal Certification. Provide a reproduction (or stamp) of the “Submittal Certification” and furnish the required information with all submittals. Include the certification on:
   1. The title sheet of each shop drawing, or on

   2. The cover sheet of submittals in 8-1/2 inch x 11-inch format, or on

   3. One face of a cardstock tag (minimum size 3-inch x 6-inch) tied to each sample. On the sample tag, identify the sample to ensure sample can be matched to the tag if accidentally separated. The opposite face of the tag will be used by the Contracting Officer to receive, review, log stamp and include comments.

C. Variances: The Contractor shall request approval for a variance. Clearly note any proposed deviations or variances from the Specifications, Drawings, and other Contract Documents on the submittal and also in a separately written letter accompanying the submittal.

D. Submittal Certification Form (stamp or digital)

CONTRACTOR'S NAME: _____

PROJECT: _____

JOB NO: _____

As the General Contractor, we checked this submittal and we certify it is correct, complete, and in compliance with Contract Drawings and Specifications. All affected Contractors and suppliers are aware of, and will integrate this submittal into their own work.

SUBMITTAL NUMBER _____ DATE RECEIVED _____

REVISION NUMBER _____ DATE RECEIVED _____

SPECIFICATION SECTION NUMBER /PARAGRAPH NUMBER _____

DRAWING NUMBER _____

SUBCONTRACTOR'S NAME _____

SUPPLIER'S NAME _____

MANUFACTURER'S NAME _____

NOTE: DEVIATIONS FROM THE CONTRACT DOCUMENTS ARE PROPOSED AS FOLLOWS (Indicate "NONE" if there are no deviations)

_____

_____

_____

_____

CERTIFIED BY	

Note: Form can be combined with Design Consultant's Review stamp. This is available from the Contracting Officer.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SUBMITTAL REGISTER AND TRANSMITTAL FORM

A. Contractor shall use submittal register and transmittal forms as directed by the Contracting Officer.

B. The listing of required submittals within this Section is provided for the Contractor's convenience. Review the specification technical sections and prepare a comprehensive listing of required submittals. Furnish submittals to the Contracting Officer for review.

C. Contractor shall separate each submittal item by listing all submittals in the following groups with the items in each group sequentially listed by the specification section they come from:
   1. Administrative
   2. Data
   3. Tests
   4. Closing

D. Contractor shall separate all different types of data as separate line items all with the column requirements.

E. Contractor shall send monthly updates and reconciled copies electronically to the Contracting Officer and the Design Consultant in MS Word or MS Excel or other format as accepted by the Contracting Officer.

SUBMITTAL MATRIX

Section No. – Title	Shop Drawings & Diagrams	Samples	Certificates (Material, Treatment, Applicator, etc.)	Product Data, Manufacturer's Technical Literature	MSDS Sheets	Calculations	Reports (Testing, Maintenance, Inspection, etc.)	Test Plan	O & M Manual	Equipment or Fixture Listing	Schedules (Project Installation)	Maintenance Service Contract	Field Posted As-Built Drawings	Others	Guaranty or Warranty	Manufacturer's Guaranty or Warranty (Greater than one year)
01310 – Project Management and Coordination											■			■		
01320 – Construction Progress Documentation											■			■		
01330 – Submittal Procedures																

Section No. – Title	Shop Drawings & Diagrams	Samples	Certificates (Material, Treatment, Applicator, etc.)	Product Data, Manufacturer's Technical Literature	MSDS Sheets	Calculations	Reports (Testing, Maintenance, Inspection, etc.)	Test Plan	O & M Manual	Equipment or Fixture Listing	Schedules (Project Installation)	Maintenance Service Contract	Field Posted As-Built Drawings	Others	Guaranty or Warranty	Manufacturer's Guaranty or Warranty (Greater than one year)
01450 – Moisture Vapor and Alkalinity Testing							■							■		
01500 – Temporary Facilities and Controls							■							■		
01700 – Execution Requirements														■		
01770 – Closeout Procedures									■				■	■	■	
02070 – Selective Demo											■			■		
06070 – Wood Treatment			■	■												■
06100 – Rough Carpentry			■	■			■							■		
06412 – Architectural Casework	■	■		■										■		■
06615 – Solid Surface Countertops	■	■		■					■					■		■
07270 – Penetration Firestopping	■		■	■			■				■			■		■
07551 – Fluid Applied Flashing	■	■	■	■			■		■					■		■
07600 – Flashing and Sheet Metal	■			■		■	■							■		■

Section No. – Title	Shop Drawings & Diagrams	Samples	Certificates (Material, Treatment, Applicator, etc.)	Product Data, Manufacturer's Technical Literature	MSDS Sheets	Calculations	Reports (Testing, Maintenance, Inspection, etc.)	Test Plan	O & M Manual	Equipment or Fixture Listing	Schedules (Project Installation)	Maintenance Service Contract	Field Posted As-Built Drawings	Others	Guaranty or Warranty	Manufacturer's Guaranty or Warranty (Greater than one year)
07920 - Sealants		■		■	■											■
08110 – Steel Frames	■		■	■							■			■		■
08210 – Wood Doors	■	■	■	■										■		■
08710 – Finish Hardware		■	■	■					■		■			■		■
09250 – Gypsum Board Assemblies	■		■	■	■									■		■
09510 – Suspended Acoustical Ceilings	■	■	■	■										■		■
09651 – Resilient Flooring		■	■	■												■
09900 – Painting		■	■	■	■						■			■	■	
10200 – Metal Louvers	■	■		■			■								■	
10800 – Toilet Accessories		■		■							■					■

END OF SECTION

SECTION 01400 - QUALITY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and for Contractor's Quality Control responsibilities and duties.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

   2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.

   3. Requirements of this section or by HHSC or authorities having jurisdiction, do not limit the Contractor's responsibility to provide quality-control services.

1.02 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Contracting Officer.

C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.04 SUBMITTALS

A. Qualification Data: For QC Manager (alternate QC Manager), inspection and testing agencies, furnish evidence to demonstrate their capabilities and experience. Include proof of qualifications in the form of education, certifications, and license. For the testing agencies, include a recent report on the inspection of the testing agency by a recognized authority.
   1. The Contracting Officer may disapprove any QC Manager (alternate QC Manager), inspection or testing agency or individual employed by the agency when the Contracting Officer determines it is in the best interest of the State. The Contractor is not entitled to any claim or cost increase or time extension due to the Contracting Officer's disapproval of an agency or individual.

C. Reports: Prepare and submit certified written reports that include the following:
   1. Date of issue.

   2. Project title and number.

3. Name, address, and telephone number of testing agency.

4. Dates and locations of samples and tests or inspections.

5. Names of individuals making tests and inspections.

6. Description of the Work and test and inspection method.

7. Identification of product and Specification Section.

8. Complete test or inspection data.

9. Test and inspection results and an interpretation of test results.

10. Ambient conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

12. Name and signature of laboratory inspector.

13. Recommendations on retesting and reinspecting.

14. Combined Contractor Production and Contractor Quality Control Report, (one sheet): By 10:00 AM the next working day after each day that work is performed.

D. Permits, Licenses, and Certificates: Submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.05 SCHEDULE FOR SUBMITTING INFORMATION AND REPORTS

A. Deliver the original and two copies each of the following to HHSC:

1. Combined Contractor Production and Contractor Quality Control Report, (one sheet): By 10:00 AM the next working day after each day that work is performed.

2. Field Test Reports: Within two working days after the test is performed, attached to the Contractor Quality Control Report;

3. Monthly Summary Report of Tests: 2 copies attached to the Contractor Quality Control Report;

4. Testing Plan and Log: 2 copies, at the end of each month;

5. Rework Items List: 2 copies, by the last working day of the month;

6. Quality Control meeting minutes: 2 copies, within 2 working days after the meeting and;

7. Quality Control Certifications: As required by the paragraph titled “Quality Control Certifications.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

C. Professional Architect or Engineer Qualifications: A professional architect or engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing architect or engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

D. Inspection and Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E-548, and that specializes in types of tests and inspections to be performed.

E. Testing laboratory services: Employ and pay for services of an Independent Testing Laboratory to perform inspections and tests required by various specification sections. Perform services in accordance with requirements of governing authorities and with specified standards. Submit reports in duplicate.

1.07 QUALITY CONTROL

A. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
   1. Engage qualified inspection or testing agencies to perform quality-control services unless services are indicated as HHSC’s responsibility.

   2. Notify Contracting Officer and the inspection or testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

   3. Submit certified written reports of each quality-control service.

   4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor’s responsibility.

   5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Manufacturer’s Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

C. Retesting and Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with HHSC and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify the Contracting Officer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

   2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

   3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

   4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.

   5. Do not perform any duties of Contractor.

E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.

   2. Incidental labor and facilities necessary to facilitate tests and inspections.

   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

   4. Facilities for storage and field-curing of test samples.

   5. Preliminary design mix proposed for use for material mixes that require control by testing agency.

   6. Security and protection for samples and for testing and inspecting equipment at Project site.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.08 QUALITY CONTROL MANAGER

A. Duties: Provide a Quality Control Manager at the work site to implement and manage the QC Program. In addition to implementing and managing the QC Program, the QC Manager may perform the duties of the Project Superintendent.

The QC Manager is required to; [attend the Coordination and Mutual Understanding Meeting,] conduct the QC meetings, perform submittal review, ensure testing is performed and provide QC certifications and documentation required in this Contact. The QC Manager is responsible for managing and coordinating [the QC specialists,] Testing Laboratory personnel and any other inspection and testing personnel required by this Contract.

Technical Service Office.

B. Qualifications: An individual with a minimum of [10] years experience as [a superintendent, inspector, QC Manager, project manager, or construction manager] on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must have experience in the areas of hazard identification and safety compliance. It is desirable that the QC Manager completed the course "Construction Quality Management for Contractors" offered by the Navy or the Army Corps of Engineers or other similar course.

C. Approval: QC Manager shall be subject to the approval of the Contracting Officer. Unless the Contractor has a QC Manager on staff, the Contractor shall provide the names of at least three individuals, and shall rank the individuals based on the Contractor's preference to work with or hire. The Contracting Officer may approve all or any one of the individuals. If any individual is presently working for the Contractor as a QC Manager, the Contractor may choose to submit only one individual, and that individual is subject to approval.

1. Furnish evidence showing the individual(s) meets the qualifications, experience, training and other criteria required by this section.

1.09 RECORD (As-Builts) DRAWINGS

A. The QC Manager is required to ensure the record drawings and jobsite record sets are kept current on a daily basis in accordance with Section 01770 – Closeout Procedures.

1.10 NOTIFICATION OF NON-COMPLIANCE

A. Contractor will be notified of any detected non-compliance items. Take immediate corrective action after receipt of such notice.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

A. General: On completion testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.02 HHSC'S AUTHORITY

A. Review and removal of Quality Control Personnel:

1. All Quality Control organization personnel are subject to review by Contracting Officer; and the Contracting Officer may interview any member of the Quality Control organization at any time in order to verify the submitted qualifications.

2. The Contracting Officer has the authority to have the QC Manager replaced at any time for cause. Justifications may include, but are not limited to: not being on site when QC Manager's duties are required, or wrongfully approving substandard and noncompliant work.

3. The Contractor is not entitled to any claim or cost increase or time extension due to the Contracting Officer's disapproval of an agency or individual.

END OF SECTION

SECTION 01450 - MOISTURE VAPOR AND ALKALINITY TESTING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes additional administrative and procedural requirements for quality assurance.

B. Scope of Work
   1. Provide concrete moisture vapor emission and alkalinity testing of all concrete scheduled to receive floor coverings, Portland cement toppings, Portland cement underlayments or resinous coatings.

   2. Test concrete placed on grade.

   3. Test concrete surfaces scheduled to receive paint or coatings.

1.02 RELATED SECTIONS

A. SECTION 09650 - RESILIENT FLOORING

B. SECTION 09900 - PAINTING

1.03 REFERENCES

A. ASTM F 1869 - Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

B. ASTM F 710 - Standard Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.

1.04 SUBMITTALS

A Testing Agency qualifications.

B. Report all test results in chart form listing test dates, start/stop time, start/stop weight, weight gain in grams, moisture vapor emission value and alkalinity levels.

C. List test locations on chart and show same on 8-1/2 inch x 11-inch site map (when such map is made available to testing agency).

D. Deliver results for distribution to Contracting Officer and General Contractor. Furnish 3 copies to the Contracting Officer.

1.05 QUALITY ASSURANCE

A. Independent Testing Agency or Manufacturer’s Approved Contractor
   1. Certified by Test Kit Manufacturer for product use.

   2. Other agency with verifiable experience.

B. Commercially produced Moisture Vapor Emission Test Kits
   1. Test dish including calcium chloride must be commercially packaged and delivered to test site in sealed factory wrapping.

2. Test done from same source as dish.

3. Test kit must comply with ASTM standards of size and weight.

C. Wide range pH paper, and distilled or de-ionized water.

1.06 ENVIRONMENTAL CONDITIONS

A. Testing shall take place after allowing concrete to dry for a minimum of 90 days. Testing to be scheduled no less than 1 nor more than 3 weeks prior to scheduled flooring installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Calcium Chloride Test as manufactured by Vaprecision (800) 449-6194, or equal.

B. Alkalinity test paper as manufactured by Micro Essential Laboratory, or equal.

PART 3 - EXECUTION

3.01 QUANTIFICATION OF CONCRETE MOISTURE VAPOR EMISSION

A. Test concrete floors in accordance with ASTM F 1869.

B. The test site shall be maintained at the same temperature and humidity conditions as those anticipated during normal occupancy. These temperatures and humidity levels shall be maintained for 48 hours prior and during test period. If meeting this criteria is not possible, then minimum conditions shall be 75+ 10 degrees F and 50+ 10 percent relative humidity. When a building is not under HVAC control, a recording hygrometer or data logger shall be in place recording conditions during the test period. A transcript of this information must be included with the test report.

C. The number of vapor emission test sites is determined by the square footage of the facility. The minimum number of tests to be placed is equal to 3 in the first 1,000 square feet and one per each additional 1,000 square feet. For slabs on grade, locate additional tests adjacent to penetrations and through slab joints at the rate of one per 1,000 square feet.

D. Tests sites are to be cleaned of all adhesive residue, curing compounds, paints, sealers, floor coverings, and similar materials 24 hours prior to the placement of test kits.

E. Weigh test dish on site prior to start of test. Scale must report weight to 0.1 gram. Record weight and start time.

F. Expose Calcium Chloride and set dish on concrete surface.

G. Install test containment dome and allow test to proceed for 60 - 72 hours.

H. Retrieve test dish by carefully cutting through containment dome. Close and reseal test dish.

I. Weigh test dish on site recording weight and stop time.

J. Calculate and report results as “pounds of emission per 1,000 square feet per 24 hours”.

3.02 QUANTIFYING ALKALINITY LEVEL

A. Test concrete floors in accordance with ASTM F 710.

B. At each vapor emission test site, after removal of test containment dome, perform alkalinity test.
   1. Place several drops of water onto the concrete surface to form a puddle approximately one-inch in diameter.

   2. Allow the water to set for approximately 60 seconds.

   3. Dip the pH paper into the water and remove immediately, compare color to chart provided by paper supplier to determine alkalinity reading.

C. Record and report all results.

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

B. Temporary utilities may include but are not limited to, the following:
   1. Sewers.
   2. Storm drainage.
   3. Water service and distribution.
   4. Sanitary facilities, including toilets, wash facilities, and drinking water facilities.
   5. Ventilation.
   6. Electric power service.
   7. Lighting.
   8. Telephone service.
   9. Internet Service

C. Support facilities may include, but are not limited to, the following:
   1. Project signs.
   2. Field offices.
   3. Storage and fabrication sheds.
   4. Trash, refuse disposal.

D. Security and protection facilities and measures may include, but are not limited to, the following:
   1. Environmental protection.
   2. Stormwater control.
   3. Tree and plant protection.
   4. Site enclosure fence.
   5. Barricades, warning signs, and lights.
   6. Pest control.
   7. Security enclosure and lockup appropriate to conduct of construction and related activities within an active secure mental health treatment campus
   8. Temporary enclosures.
   9. Temporary partitions.
   10. Fire protection.
   11. Other temporary security measures as required for conduct of construction and related activities within an active hospital
   12. Infection control barriers

E. Related Sections: Refer to Divisions 2 through 16 for other temporary requirements including ventilation, humidity requirements and products in those Sections.

1.02 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to HHSC and shall be included in the Contract Price. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
   1. Other Contractors with agreements with HHSC working within the contract limits.
   2. Occupants of Project.
   3. Testing agencies.
   4. Contracting Officer and personnel of authorities having jurisdiction.

1.03 SUBMITTALS

A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

B. Landfill Disposal Receipts: Submit copies of receipts issued by a landfill facility. Include receipts with Contractor Daily Progress Report

1.04 QUALITY ASSURANCE

A. Standards: Comply with IBC Chapter 33, “Safeguards During Construction”, ANSI A10.6, NECA’s “Standard for Installing and Maintaining Temporary Electric Power at Construction Sites”, and NFPA 241, "Standard for Safeguarding Construction, Alteration, and Demolition Operations".
   1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
   2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70, “National Electrical Code”.
      a. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

A. Temporary Utilities: At earliest feasible time, when acceptable to the Contracting Officer, change over from use of temporary service to use of permanent service.
   1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Contracting Officer’s acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
   1. Keep temporary services and facilities clean and neat.
   2. Relocate temporary services and facilities as required by progress of the Work.

1.06 PREPARATION AND PROTECTION

A. Protection of Property: Continually maintain adequate protection of the Work from damage and protect all property, including but not limited to buildings, equipment, furniture, grounds, vegetation, material, utility systems located at and adjoining the job site. Repair, replace or pay the expense to repair damages resulting from Contractor's fault or negligence.

B. Before starting work to be applied to previously erected constructions, make a thorough and complete investigation of the recipient surfaces and determine their suitability to receive required additional construction and finishes. Make any repair that is required to properly prepare surfaces, and coordinate the Work to provide a suitable surface to receive following Work.

C. Commencing work by any trade implies acceptance of existing conditions and surfaces as satisfactory for the application of subsequent work, and full responsibility for finished results and assumption of warranty obligations under the Contract.

D. Protect existing (including interiors) work to prevent damage by vandals or the elements. Provide temporary protection. Use curtains, barricades, or other appropriate methods. Take positive measures to prevent breakage of glass and damage to plastic, aluminum and other finishes.

E. Repairs and Replacements: Promptly replace and repair damages to the approval of the Contracting Officer. Additional time required to secure replacements and to make repairs does not justify a time extension.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Contracting Officer. Provide materials suitable for use intended.

B. Gypsum Board: Minimum 1/2-inch thick by 48-inches wide by maximum available lengths; regular type [fire rated Type X] panels with tapered edges complying with ASTM C 36.

C. Paint: Comply with requirements in SECTION 09901 - PAINTING

D. Tarpaulins: Fire resistive labeled with flame spread rating of 15 or less.

E. Water: Potable.

PART 3 - EXECUTION

3.01 TEMPORARY UTILITY INSTALLATION

A. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

B. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnecting means, automatic ground fault interrupters, and main distribution switchgear. Make arrangements with utility companies for temporary use of electricity for construction use. Pay for all expenses pertaining thereto. Use of State facilities electrical power services will be permitted as long as such use is approved by the Contracting Officer and equipment is maintained in a condition acceptable to the Contracting Officer.

C. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment. Protect wiring, in conduits or other, measures when exposed to possible damage or traffic areas.

D. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.

E. Telephone Service: Provide a portable wireless telephone with voice-mail or messaging service for superintendent's use in making and receiving telephone calls when at the construction site.

3.02 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access or where shown on Contract Drawings or as directed by the Contracting Officer.
   2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate to support loads and to withstand exposure to traffic during construction period. Locate temporary roads and paved areas as indicated on Drawings.
   1. Provide a reasonably level, graded, well drained subgrade of satisfactory soil material, compacted to not less than 95 percent of maximum dry density in the top 6 inches.
   2. Provide gravel paving course of subbase material not less than 3-inches thick; roller compacted to a level, smooth, dense surface.
   3. Provide dust control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.

D. Site Drainage:
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.
   2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.

E. Project Sign and Temporary Sign(s):
   1. Provide and install project identification sign and other signs as listed. Sign designs are attached to Part 3 of this Section:
      a. Project Sign
      b. Warning Sign
   2. Install signs where directed by the Contracting Officer or where indicated to inform public and persons seeking entrance to the Project. Do not permit installation of unauthorized signs.
   3. Provide temporary signs to provide directional information to constructional personnel and visitors.
   4. Construct signs with durable materials, properly supported or mounted, and visible.

F. Trash, Refuse Disposal:
   1. Department of Health – Illegal Dumping Notice. See attachment to Part 3 of this section.
      a. This Notice to be printed out on 8.5x11" paper.
      b. This Notice to be posted at the job site field office and/or in locations visible to all contractors, subcontractors, suppliers, vendors, etc. throughout the duration of the project.
   2. Illegal Dumping of solid waste could subject the Contractor to fines and could lead to felony prosecution in accordance with Chapter 342H, HRS. For more information, see the following web site: http://www.hawaii.gov/health/environmental/waste/sw/pdf/Illdump.pdf
   3. Provide waste collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste.
   4. Do not burn debris or waste materials on the project site.
   5. Do not bury debris or waste material on the project site unless specifically allowed elsewhere in these specifications as backfill material.
   6. Haul unusable debris and waste material to an appropriate off site dump area.
      a. Water down debris and waste materials during loading operations or provide other measures to prevent dust or other airborne contaminants.
      b. Vacuum, wet mop, or damp sweep when cleaning rubbish and fines which can become airborne from floors or other paved areas. Do not dry sweep.
      c. Use enclosed chutes or containers to conveying debris from above the ground floor level.
   7. Clean up shall include the collection of all waste paper and wrapping materials, cans, bottles, construction waste materials and other objectionable materials,

and removal as required. Frequency of clean up shall coincide with rubbish producing events.

G. Janitorial Services: Provide janitorial services on a weekly basis for the Contracting Officer's field office, first aid stations, toilets, wash facilities, lunchrooms, and similar areas.

H. Existing Elevator Usage: Use of existing elevators will be permitted, as long as elevators are cleaned and maintained in a condition acceptable to State and User. At Substantial Completion, restore elevators to condition existing before initial use.
   1. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

I. Existing Stair Usage: Use of existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to State and User. At Substantial Completion, restore stairs to condition existing before initial use.
   1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.03 ENVIRONMENTAL CONTROLS

A. General: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Dust Control:
   1. Prevent dust from becoming airborne at all times including non working hours, weekends and holidays in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 60.1 Air Pollution Control.
   2. Contractor is responsible for and shall determine the method of dust control. Subject to the Contractor's choice, the use of water or environmentally friendly chemicals may be used over surfaces that create airborne dust.
   3. Contractor is responsible for all damage claims due to their negligence to control dust.

C. Noise Control
   1. Keep noise within acceptable levels at all times in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 46 Community Noise Control. Obtain and pay for the Community Noise Permit when construction equipment or other devices emit noise at levels exceeding the allowable limits.

2. Ensure mufflers and other devises are provided on equipment, internal combustion engines and compressors to reduce loud disruptive noise levels and maintain equipment to reduce noise to acceptable levels.

3. Unless specified elsewhere, do not start construction equipment that meet allowable noise limits prior to 6:45 A.M. or equipment exceeding allowable noise levels prior to 7:00 A.M.

D. Erosion Control
1. During grading operations, maintain the grade to prevent damage to adjoining property from water and eroding soil.
2. Install temporary berms, cut off ditches and other provisions needed for construction methods and operations. Should there be a question if the temporary measures are insufficient to prevent erosion, the Contracting Officer shall make the final determination.
3. Construct and maintain drainage outlets and silting basins where shown on the Drawings and when required to minimize erosion and pollution of waterways during construction.

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

3.04 VIOLATION OF ENVIRONMENTAL PROVISIONS

A. Violations of any of the above environmental control requirements or any other pollution control requirements; which may also be specified in the other Specifications sections, shall be resolved under the SUSPENSION and CORRECTIVE WORK Section of the GENERAL CONDITIONS.

3.05 BARRICADES AND ENCLOSURES

A. Security Enclosure and Lockup:
1. Install substantial temporary enclosure around partially completed areas of construction.
2. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

B. Temporary Enclosures:
1. 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.
2. Where cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

C. Opening Protection

1. Vertical Openings: Close openings with plywood or similar materials.
2. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load bearing, wood framed construction.
3. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire retardant treated material for framing and main sheathing.

D. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
1. Construct dustproof partitions of not less than nominal 4 inch studs, 5/8 inch gypsum wallboard with joints taped on occupied side, and 1/2 inch fire retardant plywood on construction side.

3.06 TEMPORARY FIRE PROTECTION

A. Install and maintain temporary fire protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
   a. Field Offices: Class A stored pressure water type extinguishers.
   b. Other Locations: Class ABC dry chemical extinguishers or a combination of extinguishers of NFPA recommended classes for exposures.
   c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire exposure areas.
4. Supervise welding operations, combustion type temporary heating units, and similar sources of fire ignition.
5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
6. Develop and supervise an overall fire prevention and first aid fire 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.
7. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
8. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.07 OPERATION, TERMINATION, AND REMOVAL

A. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by heat [or freezing] temperatures and similar elements.

B. Termination and Removal: Remove each temporary facility when need for its service has ended, or 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 the property of Contractor. The Department reserves the right to take possession of Project identification signs.

3.08 ATTACHMENTS

A. Warning Sign: Requirements for Warning Sign.

B. Department of Health – Illegal Dumping Notice

END OF SECTION

REQUIREMENTS FOR WARNING SIGN

1. General Requirements: Furnish all labor, materials and equipments necessary to construct and install warning signs as specified hereinafter.
2. Materials
   a. Backing: Backing shall be 6061-T6 aluminum 0.032-inch minimum thickness.
   b. Paint: Paint shall be satin finish, exterior grade or factory baked enamel or a combination thereof.
3. Colors: Signs shall have white background. Remaining items shall be similar to Rust-Oleum Federal Safety Red.
4. Requirements for Warning Sign: Message configuration and dimensions shall be in accordance with the attached illustration.
5. Installation
   a. Signs shall be located at 50-foot intervals around roped off work area or at all entrances in the case of interior work.
   b. Signs shall be attached to the rope barrier, rope barrier supports, individual sign supports or buildings. Do not use nails to attach signs to building(s).
6. Clean-up: Remove all signs upon completion of project. Repair any damages caused by sign mounting and removal.

DEPARTMENT OF HEALTH
ILLEGAL DUMPING NOTICE

The law requires you to dispose solid waste only at recycling or disposal facilities permitted by the Department of Health.

"Solid waste" includes municipal refuse, construction and demolition waste, household waste, tires, car batteries, derelict vehicles, green wastes, furniture, and appliances.

Illegal dumping of solid waste
or allowing illegal disposal of solid waste on your property even if contractual or other arrangements are made could subject you to fines from $10,000 to $25,000 per occurrence
and could lead to felony prosecution
in accordance with Chapter 342H, HRS.

Contact the Department of Health,
Solid Waste Section at 586-4226
to report illegal dumping activities
or if you have further questions.

SECTION 01575 - TEMPORARY CONTROLS - AIR QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the steps that the Contractor shall perform to control odors or dusts generated by the equipment, materials, or actions of the construction process that may affect the quality of air to non-Contractor personnel.

1.02 REFERENCES

A. “Indoor Air Quality” published by the Sheetmetal and Air Conditioning Contractor’s National Association (SMACNA).

B. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) standards as follows: 62; 55; 52; and 1.

C. “Indoor Air Quality in Public Buildings”, Volumes I and II, by Sheldon L, Handy RW, Hartwell TD, et al:, (Public Access Buildings Study).

D. National Particleboard Association (NPA) Standard for Formaldehyde Emission for Particleboard: NPA6.

1.03 DEFINITIONS

A. “A/C” (Air Cond.) means any or all of the equipment used to air condition a building or space.

B. “Air changes per hour” shall mean a number calculated by the maximum work area length in feet times the maximum work area width in feet times the maximum work area height in feet divided by 60 times the cubic feet per minute of air movement (L x W x H)/(60 x CFM).

C. “Odor” means something that can be detected by a person’s sense of smell whether objectionable or not to the person.

D. “Perceivable” means able to attain an awareness solely through the use of the human senses such as smell, sight, hearing, taste, and touch.

E. “VOC” means volatile organic compound, a compound containing a chemical constituent with a boiling point of less than 100 Deg C (volatile) and that contains carbon (organic).

F. “VOC emission rate” means the total amount of hydrocarbons emitted per area and unit of time as determined from the product and test method data supplied by the manufacturer or from data in the EPA Public Access Buildings Study.

1.04 SUBMITTALS

A. Submit a certification, which may be a copy of the product label or Material Safety Data Sheets (MSDS), of the VOC emission rate for all VOC containing

products. MSDS sheets and labels are acceptable only if the VOC data is available and highlighted.

B. Submit VOC emission rates for all products containing any VOC compounds. Maintain a copy of the VOC certifications and emission rates (in a 3-ring binder) at the job site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide temporary equipment including fans, blowers, tape, ducts, temporary wall materials and other similar items.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. If all particleboard products used in the Project meet NPA 6 Standard, and all other VOC-containing materials have certified VOC emission rates less than 100 micrograms/m²h, the requirements of PART 3 - EXECUTION are not required for VOC control.

B. Ensure the all work areas are isolated from those areas in which persons not employed by the Contractor will be present during construction, including those interconnected by air conditioning systems, adjacent buildings, and public areas.

1. Install isolation barriers so that odors and dust from the work areas are not perceivable in any surrounding occupied area, then remove the barriers before the final acceptance of the project; or

2. Provide local fresh and exhaust air that will be adequate to ensure odors and dust from the work areas are not perceivable in any surrounding occupied area. Meet the following minimum criteria:
   a. At least 4 air changes per hour continued from the start of any emission producing work until four hours after the conclusion of any emission producing work; and

   b. Exhaust the ventilating air to the outside of the building, at least 25 feet downwind of any opening to the building, surrounding buildings, or similar occupied areas, and at least 100 feet downwind of any building air supply intakes.

C. Upon notification by the Contracting Officer of an odor or dust complaint, immediately stop all odors and dust producing tasks, and then execute the requirements of subparagraph 3.01. B. 2. within 4 hours after Contracting Officer's notification.
   1. Compliance with subparagraph 3.01 B. 1. is not considered sufficient isolation in this instance.

   2. If the items in subparagraph 3.01 B. 2. were previously implemented without satisfactory results, increase the air changes to 8 per hour.

3. The requirements in paragraph 3.01 D. may be performed in lieu of the requirements stated in paragraph 3.01 C. with prior permission from the Contracting Officer or shall be performed if requested by the Contracting Officer.

D. When the conditions described in subparagraphs 3.01 B. 1., 3.01 B. 2., or paragraph 3.01 C., are unable to maintain an air quality acceptable to 80 percent of the surrounding occupants, perform the following at no extra cost to the State:
   1. Immediately discontinue the use of the offending product(s) upon notification by the Contracting Officer;

   2. Perform the odor or dust generating task(s) during a non-occupied time such as evenings, weekends and holidays;

   3. Thoroughly clean any odor or dust affected area and equipment prior to occupancy; and

   4. Complete the odor or dust generating task(s) at least 16 hours prior to occupancy.

3.02 VENTILATION AFTER CONSTRUCTION

A. In all work areas of air conditioned new buildings perform a ventilation activity after construction has been completed but prior to occupancy according to the following:
   1. Notify the Contracting Officer prior to starting the work involved with these steps or immediately if any step cannot be successfully completed;

   2. Perform the normal start up procedures for all ventilation equipment;

   3. Inspect areas adjacent to air intakes for the existence of air containing odors and eliminate the cause of any odors before proceeding;

   4. Ensure that the air conditioning or ventilation outside make-up air dampers are operable, then set them to remain in the wide open position to provide for the maximum possible flow of outside air into the building;

   5. Set the mechanical cooling equipment such as chilled water and air conditioning compressors as appropriate to off so that the temperature will stay as high as possible;

   6. Open windows and doors (interior) for maximum ventilation of the work area. Use care to maintain security and to prevent infiltration of dirt, debris, dust, or impact on surrounding occupied areas. Maintain protection from the elements of weather, and site cleanliness;

   7. Turn on all of the available lights and heat producing equipment;

   8. Run all of the air handling units and ventilation fans continuously for 72 hours; and

9. Continue the ventilation procedure beyond the 72 hours if the Contracting Officer determines it necessary. Provide additional exhaust fans if directed by the Contracting Officer. Ventilation beyond 72 hours is considered additional work provided the Contractor followed the steps required in this paragraph 3.02 A.

10. When the Contracting Officer determines that the ventilation is sufficient, replace all air conditioning and ventilation air filters. Readjust the building's equipment to the design settings and perform the start up steps required after such adjustments are made.

B. In all work areas of a non-air conditioned new building, ventilate the building after completing construction and prior to occupancy. Perform ventilation as follows:
   1. Notify the Contracting Officer prior to starting the ventilation work or immediately if any step cannot be successfully completed;

   2. Inspect areas adjacent to portable fans for the existence of or potential air containing odors. Eliminate the cause of any odor or potential odor;

   3. Open windows and doors (interior and exterior) for maximum ventilation of the work area. Use care to maintain security and to prevent infiltration of dirt, debris, dust, or impact on surrounding occupied areas. Maintain protection from the elements of weather, and site cleanliness;

   4. Turn on all of the available lights and heat producing equipment;

   5. Ventilate the work area using portable supply and exhaust fans capable of providing one complete work area air change per hour for 72 hours; and

   6. Continue the ventilation procedure beyond the 72 hours if the Contracting Officer determines it necessary. Provide additional exhaust fans if directed by the Contracting Officer. Ventilation beyond 72 hours is considered additional work provided the Contractor followed the steps required in this paragraph 3.02 B.

   7. When the Contracting Officer determines that the ventilation is sufficient, remove the portable equipment.

C. In all work areas in an existing building, ventilate the building after completing construction and prior to occupancy. Perform ventilation as follows:
   1. Use the steps in paragraph 3.02 A. when the work area is air conditioned by air handling equipment that can be completely isolated from all air conditioning and ventilation systems supplying occupied areas;

   2. Otherwise, use the steps in paragraph 3.02 B.

END OF SECTION

SECTION 01600 – MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. General requirements for products.

B. Related Sections:

1. Division 01 Sections, general.

1.02 DEFINITIONS

A. Manufacturer: Where not otherwise indicated within a specifications section, reference to the “manufacturer” shall refer to the primary product manufacturer of that section.

1.03 SYSTEM DESCRIPTION

A. Performance: Each product provided shall perform to the Contract requirements under the anticipated conditions of use and installation. Performance evaluation of any product to include the performance of the product by itself and its performance relative to the total assembly for which it is a part.

1.04 SUBMITTALS:

A. General: Refer to Division 1 requirements and individual specification sections.

B. List of Products:

1. Format: Prepare a typewritten list of the principal products in a form acceptable to the Architect. For each product, provide and organize information in columns for each of the following headings.
    a. Related unit-of-work specification section number.
    b. Generic name as used in contract documents or where not indicated as commonly accepted.
    c. Proprietary name and product designation number.
    d. Manufacturer’s name, address, phone number, Project assigned representative.
    e. Supplier’s name, address, phone number, company representative for Project.
    f. Installer’s name, address, phone number, primary trade of workmen, and Project assigned representative.
    g. Projected delivery date and time span of delivery period.
2. Initial Submittal: Submit within 30 calendar days from date of commencement

of the Work. Submit a list of those products that must be established early in the Contract Period. The complete list may also be submitted at the Contractor's option.

3. Completed List: Submit within 45 calendar days from date of commencement of the Work.
4. Qualifications to List: For each list submitted, provide typewritten explanations of omissions of data and explanations of why any products deviate from Contract requirements.
5. Architect's Review/Action: Review list within 10 working days. For each item, indicate one of following written responses.
    a. "No Reasonable Objection": Indicates that products may be incorporated into the Work subject to compliance with Contract requirements.
    b. "Objection": Indicates that products may not be incorporated into the Work. Architect to provide qualifying explanation for rejection.
    c. "Deferred Action": Indicates that products require further data for proper evaluation by Architect. Contractor shall secure data as required and submit this to the Architect. Architect to act on "deferred action" items in timely manner.
6. Coordination: Incorporate delivery date and time span of delivery data for products in progress schedules. Refer to Section 01040 - COORDINATION.

1.05 QUALITY ASSURANCE

A. Product Appearance:
    1. Intent: Appearance of products for any work exposed to view in final finished work is critical to Design intent of Architect.
    2. Requirement: Secure written verification of finishes, e.g. colors, patterns, textures, matching, etc., before any purchase, fabrication, and installation of any such products.

B. Manufacturer, Supplier, Fabricator, Installer Experience: Except as otherwise indicated or acceptable to the Architect, any entity furnishing, installing, or furnishing/installing products shall not have less than three (3) years minimum current experience with the required products and services being provided. Such services and products shall have also been provided for not less than three (3) current successful projects of similar scope.

C. Product Source Control: Maintain the original products furnished for this Project throughout the Contract Period. Do not change to other generically similar products, unless otherwise acceptable to the Architect.

D. Stored Products: Assume full responsibility for protection and safekeeping of products stored on and off premises during Contract Period. Maintain insurance as required for full replacement value of all products as stored and in locations stored.

E. Deviations from Contract Requirements: Refer to Section 01010 - SUMMARY OF WORK.

F. Fire Rated Assemblies: Where fire rated assemblies are indicated, provide composite assemblies that strictly conform to each Product Manufacturer's laboratory tested assemblies that conform to the Contract requirements, are in compliance with the applicable codes, and are acceptable to the Authorities.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Available Manufacturers: Comparable products of other Manufacturers may be incorporated into the Work when such products comply with the following.

1. Are acceptable to the Architect.
2. Contract requirements do not specifically indicate "no substitution", or "provide one of the following only", or other similar language to this effect.

2.02 PRODUCTS, GENERAL

A. Compliance with Requirements: All products provided for this Project to comply with Contract requirements.

B. Assembly of Products: Each interfacing product in an assembly shall be verified for its Project appropriateness relative to its use and appropriateness-to-any interfacing product in the assembly. Do not provide products which do not comply with this requirement and are not acceptable to the Manufacturer's of the interfacing products.

C. Dimensional Coordination: Where dimensional tolerances indicated on Contract Drawings differ from products to be provided, notify Architect of such differences

D. Environmental Requirements: Maintain types of environmental conditions required for each product as recommended by the Product Manufacturer for the specific Project conditions.

2.03 SPECIAL PRODUCT REQUIREMENT:

A. Galvanizing of Ferrous Products:

1. Intent: Provide hot dipped galvanized ferrous products wherever any one of the following conditions exist.
    a. Where product is exposed on an "exterior surface".
    b. Where product is exposed or in contact with moisture retaining or transmitting substrates, e.g. exterior facing (includes interior face of) concrete and masonry structures, slabs on grade, roof insulation, roof concrete deck fill, etc.
    c. Where product is within and located anywhere within same enclosure or room where water is contained, where high humidity is present, or where enclosure will be subjected to water spray. These enclosures include, but are not necessarily limited to, the restrooms. Include products within cavities above "lay-in acoustical suspended ceilings".
2. Galvanizing: Provide hot dipped galvanized coatings complying with ASTM A

123, ASTM A 153, or ASTM A 153 as applicable to the product, or as otherwise acceptable to the Architect.

PART 3 - EXECUTION

3.01 DELIVERY, STORAGE, & HANDLING

A. General: Comply with each Product Manufacturer's Project specific requirements.

B. Delivery: Deliver products in original containers with seals unbroken and labels intact. Inspect products for damage upon arrival at site. Reseal and mark to indicate inspected material. Replace damaged materials in timely manner as not to jeopardize the Project schedule.

C. Storage and Handling: Store and handle materials to prevent damage and deterioration. Secure from unauthorized access.

D. Loading of Structure: Do not load any structure in any manner that can endanger the structure.

3.02 EXAMINATION

A. Verification of Conditions: Prior to installation, verify the actual existing Project conditions under which the Work will be installed. Inform the Architect in writing of any detrimental conditions. Do not begin the Work where the detrimental conditions have not been brought into satisfactory conformance. Start of the Work indicates that the existing conditions are acceptable to ensure a successful installation.

3.03 INSTALLATION

A. Installation, General: Comply with the Manufacturer's Project specific requirements. Do not provide any installations that would produce a quality less than indicated by the Contract requirements without acceptance by the Architect.

B. Completeness of Assemblies: Refer to Section 01010 - SUMMARY OF WORK.

C. Structural Stability and Compatibility of Assemblies: Each Installer and the Contractor to review their work for structural stability and compatibility relative to the work of other Installers. Notify Architect of any concerns in writing.

D. Tolerances: Install Work plumb, level and true to line; without warp or wrack. Installed Work to conform to Industry acceptable tolerances for quality of Work required, except as otherwise indicated.

E. Color, Pattern, Texture Variation:

1. General: For each product, where any one of the following characteristics of color, pattern, and texture can vary for similar natural products or similarly finished products, install materials in each area to assure a uniform visual appearance acceptable to the Architect.

2. Examples: Such products include, but are not limited to, certain stone materials, tile, concrete, masonry, carpet, and wall covering.

3. Methods to Ensure Uniformity: Methods of ensuring uniformity may include utilizing materials in sequence as manufactured from same lots where singular lot may be used for single contiguous area or may require the hand selection of materials between several lots.

4. Directional Pattern: When not otherwise indicated, for materials with specific directional pattern/texture orient such pattern/texture as directed by Architect.

F. Protection: It is the intent of the Contract Documents that the Work be clean, without contamination, without abnormal deterioration, without damage, and properly functioning at the time of acceptance by the Owner. Generally conduct operations in strict conformance with each Manufacturer's recommendations and instructions applicable to the Project specific conditions and as otherwise necessary to accomplish the proper protection of the Work from all harmful causes.

G. Defective Work: Replace defective work. Restoration may be accomplished when satisfactory to the Architect. Such work shall be done at no cost to Owner.

END OF SECTION

SECTION 01630 – PROJECT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements for substitution proposals.
2. Requirements for “value engineering” proposals.

B. Related Sections:

1. Division 01 Sections, general.
2. Section 01600 - MATERIALS & EQUIPMENT.

1.02 DEFINITIONS

A. Substitution Proposal: A proposal offered by the Contractor of a product(s) to be used in lieu of the specified product(s); which is generically similar to the specified product(s).

B. Value Engineering (VE) Proposal: A proposal offered by the Contractor of a product(s) to be used in lieu of the specified product(s); which is generically different than the specified product(s) and which offers a significant advantage or advantages to the Owner relative to cost, scheduling, and/or performance.

C. Products: Use of words such as “products”, “materials”, “assemblies” “systems”, are to be used interchangeably and unless the proposal is specifically for only a single most basic (cannot be broken down any further) material unit or material component, the proposal shall mean and be measured in terms of all the - materials required for each use in the Project as a final in place assembly or system.

D. Material Composition: Where word “material composition” is used, this word is to mean the actual scientific makeup of the product with percentage of each material or chemicals going in to make up the final product being evaluated. Material Safety Data Sheets are to be provided when available. Words such as “100% acrylic” or “100% urethane” or other words to that effect are not acceptable when the product is not in fact only made up of that material alone.

E. Limitations: Where word “limitations” is used in conjunction with products being evaluated in proposals by the Architect, this word is to mean “anything” which could reduce or be less than any quality or any characteristic of the product as required for use in the Project at “any time” during its life expectancy, including its “life expectancy”; when compared to the specified product, when compared with other competitive generic products of the same type, and when compared with other competitive products that basically are designed for the same functional purpose. Examples include, but are not limited to, following.

1. Incompatibility with Other Materials: Where any contacting material is deleterious to the other, e.g. electrolysis, corrosion, contamination, chemical

sensitivity, bacteria or plant growth (mildew or algae growth, etc.), or any other deleterious material effects.

2. Life Expectancy: Shorter life expectancy than specified materials.
3. Weatherability: Not as weatherproof as specified product, e.g., water leakage, air leakage, ultra-violet exposure, breath ability, and hydrostatic pressure effects.
4. Structural: Strength of product compared with specified material, e.g. compressive, tensile, and durometer hardness characteristics.
5. Durability: Resilience of product compared with specified material. Its ability to withstand physical abuse and movement, e.g. impact resistance, abrasion resistance, puncture resistance, and elongation.
6. Fire Resistance: Ability to resist various fire exposures.
7. Product Characteristics: Susceptibility to defects occurring due to the characteristics unique to the product, e.g., sensitivities such as those due to material composition (shelf life, curing methods, etc.), configuration, weight, size, substrate conditions, weather conditions, assembly conditions, applications methods, etc.
8. Other Characteristics: e.g., slip resistance, acoustic properties, and resistance to catastrophic events, etc.

1.03 SUBMITITALS

A. Substitution or VE Proposals: Submit complete, readable, and organized information, with all proposal data applicable to Project highlight marked on Architect provided form. Information to include, but not necessarily be limited to, following.

1. Product Data:
    a. Published Data: Submit Primary Product Manufacturer's complete available published product data including, but not limited to, primary product descriptions, related product descriptions, color/pattern/texture charts, specifications, drawings, laboratory tested data, fabrication/installation instructions, and list of comparable Projects in Hawaii and other similar salt air/humid environments, such as Florida or any of the Southern States bordering the Gulf of Mexico.
    b. Comparison products:
        i. Requirement: Submit a detailed comparison of the significant generic qualities of the proposed substitution with those of the work originally specified.
        ii. Characteristics: List significant qualities including, but not necessarily limited to, following.
            a). Material composition.
            b). Sizes.
            c). Weight/density.

d). Color, textures, patterns available.

e). Qualities critical to performances, including tests performed.

f). Limitations of product.

g). How long used in Hawaii?

h). How long available in U.S.?

i). Current market share in Hawaii based upon specific material?

j). Current market share in U.S based upon specific material?

k). Current market share in Hawaii based upon all competitive materials serving same function?

l). Current market share in U.S based upon all competitive materials serving same function?

iii. Format: Submit in a typewritten table format in which characteristics are compared side by side.

2. Samples: Submit samples. Provide additional samples or small-scale mockups, if requested, by Architect. Samples to be submitted in accordance with Section 01330 - Submittals Section requirements.
3. Project Modifications: Where standard published drawings are not adequate, submit other drawings or legible to scale sketches to show each of following where applicable to Project.
    a. Where Project dimensions would be affected, indicate with some typical examples how product affects Project dimensions.
    b. Show custom modifications of product which are required for Project.
    c. Show additional work required of other Installers which is not otherwise shown.
    d. f any, penetrations are required through work, show how penetrations through work is to be accomplished, including any multiple penetrations.
4. Changes to Other Work: Submit a list of written changes to the work of other Installers that would be necessary to accommodate the proposal.
5. Cost Proposal:
    a. During Bidding Period: Do not provide.
    b. Post Bidding Period: Submit. Indicate the overall net change, if any, in the Contract Sum. Separately list cost of proposed Work, cost of changes to other Work, Contractor's cost, cost for Architect's time (verified from Architect) and other miscellaneous costs.
6. Certifications: Sign certifications indicated on form.
7. Substitution/VE Proposal Form: In addition to other required data and samples, submit completed proposal form as provided in the Project Manual.

1.04 QUALITY ASSURANCE

A. Objective: It is up to those making the proposal to prove to the Architect that the proposed products will meet the Project requirements. To the extent that the Proposer wishes to pursue the Work, the Architect reserves the right to request any information and samples necessary for him to make a decision.

B. Quality of the Proposals: It is intended that the physical appearance and dimensions of the Project and the quality of the specified products required by the Contract Documents be maintained, unless otherwise specifically requested by and acceptable to Architect or Owner. Generally, submit proposals that would result in installations of equivalent quality to that specified.

C. Conditions for Consideration of a Proposal: The Contractor's proposals will be received and considered when extensive revisions to the Contract Documents are not required, when the proposed changes are in keeping with the primary intent of the Contract Documents, when the requests are timely, fully documented and properly submitted, and when one or more of the following conditions are satisfied.

   1. Where the proposal is directly related to an "or equal" or "comparable product" clause or similar language in the Contract Documents.

   2. Where the specified product or method cannot be provided within the Contract Time. Do not submit proposals which have resulted from the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.

   3. Where the specified requirements cannot receive necessary approval by a governing Authority, and the requested proposal can be approved.

   4. Where a substantial advantage is offered the Owner, in terms of cost, time, energy conservation, or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. These additional responsibilities may include such considerations as additional compensation to the Architect for redesign and evaluation services, the increased cost of other work by the Owner or separate contractors, and similar considerations.

   5. When the specified products or methods cannot be provided in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.

   6. When the specified products or methods cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.

   7. When the specified products or methods cannot receive a warranty as required by the Contract Documents and where the Contractor certifies that the proposed substitution can be given the required warranty.

D. Factors Affecting Acceptance of Proposals:

   1. Review Intent: It is intended to give all responsible proposals a fair review, however, the Architect and Owner reserves the right to deny acceptance of any proposal for any reason. Irresponsible use of proposal process may

result in termination of the review process in its entirety by Architect and Owner.

2. Basis of Design:
    a. Requirement: Where favorable consideration is given any proposed product which is different (not comparable as determined by Architect) than the specified product (basis of design); Contractor is required to secure a bid from the same Manufacturer of product in which design is based for a product it feels is comparable to the new proposed product under consideration; unless such product does not exist.
    b. Submittal: Submit written confirmation from Manufacturer of product for which design is based; either indicating that he has no comparable product or that it has provided a new Bid that is comparable to product under consideration. Submit confirmation and product literature of recommended product along with submittals required for proposed product.
3. Proposal Period: No proposals will be considered, unless Owner specifically directs Architect to review Project for possible cost reductions through value engineering. Where value engineering is considered, then only the product(s) for which the Contractor is directed to look at by the Architect shall be considered by the Architect.
4. Documentation:
    a. Intent, Information Access: Competitors should be fully aware of the advantages and disadvantages of their products and of their competitor's products. Should any knowledge be lacking, each competitor should be fully capable of accessing and securing accurate information. Where this is not possible, and unless the product is proprietary, these competitors should not offer proposals for this Project.
    b. Quality of Information in Proposal: The Architect should be able to fully and accurately evaluate the difference between the specified product(s) and the proposed product(s) from each proposal. Do not to submit proposals with least amount of information possible without his prior knowledge, as there is no reason for the Architect to reconsider any proposal that has been "not accepted" for any reason, including one that is not adequately documented in the Architect's opinion.
    c. Reduction of Information Provided: When acceptable to the Architect, the extent of the submittals may be reduced when approved by Architect prior to the submission of each proposal. Generally, these will be for obvious products which are and fall into generic categories very familiar to the Architect. Where the Architect agrees to reduce the amount of information to be provided, the Architect reserves the right to expand the requirement again where the Architect feels that the proposal "objective" was not achieved.
    d. Comparison of Products: In addition to the other required submittals, the "Comparison of Products" table is a key submittal to the whole proposal and is a requisite to acceptance. This submittal is not to be deleted.

E. As Part of Work-Related Submittals: Submission of unspecified products or methods as part of 'work-related" submittals, does not constitute an acceptable or valid method for processing substitution or value engineering proposals. Successfully reviewed "work related" submittals does not indicate approval of unspecified products or methods.

F. Architect's Requirements: Verify prior to submission of any proposal, the Architect's requirements necessary to fully conform proposal to Contract requirements. Request for additional costs after acceptance of any proposals will be denied.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PROPOSAL PROCESS

A. Proposals:

1. Submission: As directed by Architect.
2. Acceptable Proposals:
    a. Preliminary Acceptance: Where marked "Acceptable, Preliminary" on form, indicates that further information may be required before a decision is made. Comply with "Comments" on form and where not indicated verify additional requirements from Architect, and resubmit a complete proposal conforming to new requirements. Adjust costs if required. Use of proposed products are not allowed, until "Acceptable, Final" is marked on the proposal.
    b. Final Acceptance: Where marked "Acceptable, Final" on form, proposals and any other attachments to become basis of Contract.
3. Proposals Not Accepted: Where marked "Not Accepted", resubmission may be allowed when Architect indicates "Resubmission Acceptable" and resubmission will be denied when Architect indicates "Resubmission Denied" on form. Where remarks are indicated under "Comments", comply with any further requests which may be indicated.

3.02 INCORPORATION

A. Incorporation of Proposals: Coordinate work with other affected Installers of other Work. Comply in strict accordance with accepted proposal that should be in strict conformance Product Manufacturer's Project specific requirements.

END OF SECTION

SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including the following:
   1. Construction layout. Field engineering and surveying.
   2. General installation of products.
   3. Coordination of HHSC-installed products.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.
   7. Correction of the Work.

B. Related Sections
   1. SECTION 01524 – CONSTRUCTION WASTE MANAGEMENT
   2. SECTION 01770 - CLOSEOUT PROCEDURES.

1.02 SUBMITTALS

A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.03 NOTIFICATION

A. Contact the Contracting Officer and the Project Contact Person at least 3 working days prior to starting any onsite work.

1.04 PROJECT AND SITE CONDITIONS

A. Project Contract Limits (Contract Zone Limits) indicate only in general the limits of the work involved. Perform necessary and incidental work, which may fall outside of these demarcation lines. Confine construction activities within the Project Contract Limits and do not spread equipment and materials indiscriminately about the area.

B. Disruption of Utility Services: Prearrange work related to the temporary disconnection of electrical and other utility systems with the Project Contact Person listed in SECTION 00800 - SPECIAL CONDITIONS and the Contracting Officer. Unless a longer notification period is required elsewhere in the Contract Documents, notify the Contracting Officer at least 15 days in advance of any interruption of existing utility service. Time and duration of interruptions are subject to the Contracting Officer's approval. Keep the utility interruptions and duration to a minimum so as not to cause inconvenience or hardship to the facility. If temporary electrical or other utility systems hook-up is required, provide the necessary services. Pay for temporary services as part of the contract, unless specifically noted otherwise.

C. Disruption of Air Conditioning Services: Coordinate and arrange work related to the temporary disconnection of the air conditioning system with the the Contracting Officer. Keep disruptions to a minimum. If temporary power is required, provide services and pay the cost as part of the contract. Schedule any major outage to the air conditioning system that affects the entire building and lasts 2 hours or more, on weekends or during non regular working hours of the building occupants. Pay for overtime cost as part of the contract.

D. Contractor's Operations - Provide means and methods to execute the Work and minimize interruption or interference to the facility's operations. Rearrange the construction schedule when construction activities result in interruptions that hamper the operations of the facilities.

E. Maintain safe passageway to and from the facility's occupied buildings, rooms and other occupied spaces for the using agency personnel and the public at all times.

F. Contractor, Subcontractor(s) and their employees will not be allowed to park in zones assigned to Users or facility personnel. Subject to availability, the Contracting Officer may designate areas outside of the Contract Zone Limits to be used by the Contractor. Restore any lawn area damaged by construction activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINING THE SITE

A. Contractor and Subcontractors are expected to visit the site and make due allowances for difficulties and contingencies to be encountered. Compare contract documents with work in place. Become familiar, with existing conditions, the conditions to be encountered in performing the Work, and the requirements of the drawings and specifications.

B. Verify construction lines, grades, dimensions and elevations indicated on the drawings before any clearing, excavation or construction begins. Bring any discrepancy to the attention of the Contracting Officer and make any change in accordance with the Contracting Officer instruction.

C. Obtain all field measurements required for the accurate fabrication and installation of the Work included in this Contract. Verify governing dimensions and examine adjoining work on which the Contractor or Subcontractor's work is in any way dependent. Submit differences discovered during the verification work to the Contracting Officer for interpretations before proceeding with the associated work. Exact measurements are the Contractor's responsibility.

D. Furnish or obtain templates, patterns, and setting instructions as required for the installation of all Work. Verify dimensions in the field.

E. Contractor shall accept the site and the existing building in the condition that exists at the time access is granted to begin the Work. Verify existing conditions and dimensions shown and other dimensions not indicated but necessary to accomplish the Work.

F. Locate all general reference points and take action to prevent their destruction. Lay out work and be responsible for lines, elevations and measurements and the work executed. Exercise precautions to verify figures and conditions shown on drawings before layout of work.

3.02 SITE UTILITIES AND TONING

A. Cooperate, coordinate and schedule work to maintain construction progress, and accommodate the operations and work of the owners of underground or overhead utility lines or other property in removing or altering the lines or providing new services.

B. Contact all the various utility companies before the start of the work to ascertain any existing utilities and to develop a full understanding of the utility requirements with respect to this Project. Furnish the Contracting Officer with evidence that the utility companies were contacted.

C. Should the Contractor discover the existence and location of utilities in the contract drawings are not correct, do not disturb the utilities and immediately notify the Contracting Officer.

D. Do not disturb or modify any utilities encountered, whether shown or not on the Contract Drawings, unless otherwise instructed in the drawings and specifications or as directed by the Contracting Officer. Repair and restore to pre-damaged condition any utilities or any other property damaged by construction activities.

E. Transfer to “Field Posted As-Built” drawings the location(s) and depth(s) of new and existing utilities that differ from the Contract Drawings. Locate by azimuth and distance and depth(s) from fixed referenced points.

F. Toning: Prior to the start of grading, or excavation or trenching work verify and confirm the presence, location and depth of existing underground utility lines in the area affected by the project, by “toning” or by other appropriate means acceptable to the Contracting Officer. The intent of this advanced toning is to afford the Contracting Officer an opportunity to identify utility lines that may or may not be shown on the drawings and issue a directive to address the existing conditions.
   1. Perform toning using instruments specifically developed and designed for the detection of underground pipes and cable utilities.

   2. Notify the Contracting Officer 48 hours in advance before toning operations. Provide information on the proposed toning method and other pertinent information.

G. Recording Toning Information: Upon completion of the toning operation, submit drawings that show the location and approximate depth of the existing and newly

discovered utility lines. Identify the type of utility lines. Also, identify where utility lines indicated on the drawings are not shown in their approximate location or where new utility lines are found or pointed out in the field.

H. After ascertaining the exact location and depth of utilities within the project area, mark and protect the locations.
   1. Acquaint personnel working near utilities with the type, size, location, depth of the utilities, and the consequences that might result from disturbances.

   2. Do not start trenching or start similar operations until reasonable and appropriate precautions to protect the utilities are taken.

I. For newly identified utility lines, if directed by the Contracting Officer, manually excavate within 2-feet of the utility line to avoid damage. Under this directive, manual excavation is considered additional work.

J. Existing Irrigation Systems: Where work is located in areas with existing irrigation systems, Contractor shall test the existing systems and document all deficiencies prior to any work that may damage the existing systems.

3.03 FIELD MEASUREMENTS

A. Take field measurements to fit and install the Work properly. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Submit a Request For Information (RFI) immediately upon discovery of the need for clarification of the Contract Documents. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.04 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to existing conditions. If discrepancies are discovered, notify the Contracting Officer promptly.

3.05 INSTALLATION

A. Install materials, items, fixtures required by the various Divisions and Sections of the Specifications in accordance with Contract Documents, by workers specially trained and skilled in performance of the particular type of work, to meet guarantee and regulatory agency requirements. Should the drawings or specifications be void of installation requirements, install the materials, items, and fixtures in accordance with the manufacturer's current specifications, recommendations, instructions and directions.

3.06 CUTTING AND PATCHING

A. Oversee cutting and patching of concrete, masonry, structural members and other materials where indicated on drawings and as required by job conditions.

Unless noted elsewhere in the contract documents, do not cut or patch existing or new structural members without previously notifying the Contracting Officer.

B. Provide patch materials and workmanship of equal quality to that indicated on the drawings or specified for new work.

3.07 STATE-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for the State's construction forces.

B. Coordination: Coordinate construction and operations of the Work with work performed by the State's construction forces.

1. Construction Schedule: Inform the Contracting Officer of Contractor's preferred construction schedule for the State's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify the Contracting Officer if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include the State's construction forces at preinstallation conferences covering portions of the Work that are to receive the State's work. Attend preinstallation conferences conducted by the State's construction forces if portions of the Work depend on the State's construction.

3.08 CLEANING

A. General: Clean the Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold waste more than 7 days unless approved otherwise by the Contracting Officer.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use only cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.09 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions to provide proper temperature and relative humidity conditions.

3.11 CORRECTION OF THE WORK

A. Repair or replace defective construction. Restore damaged substrates and finishes. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair defective components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including the following:
   1. Project Record Documents.
   2. Operation and Maintenance Manuals.
   3. Warranties.
   4. Instruction for the HHSC's personnel.

B. Related documents include the following:
   1. SECTION 01700 - EXECUTION REQUIREMENTS.

1.02 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting a Final Inspection to determine Substantial Completion, complete the following items in addition to requirements of Article 7 of the GENERAL CONDITIONS.
   1. Advise the Contracting Officer of pending insurance changeover requirements.
   2. Submit specific warranties, final certifications, and similar documents.
   3. Obtain and submit occupancy permits, operating certificates, and similar releases and access to services and utilities, unless waived by the Contracting Officer.
   4. Arrange to deliver tools, spare parts, extra materials, and similar items to a location designated by the Contracting Officer. Label with manufacturer's name and model number where applicable.
   5. Make final changeover of permanent locks and deliver keys to the Contracting Officer. Advise the State's personnel of changeover in security provisions.
   6. Complete startup testing of systems.
   7. Submit test, adjust, and balance records.
   8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   9. Advise the Contracting Officer of changeover in other utilities.
   10. Submit changeover information related to the State's occupancy, use, operation, and maintenance.

11. Complete final cleaning requirements, including touch up painting.

12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

13. Submit the O&M Manual(s) for review.

14. Submit Field-Posted As-Builts electronically.

1.03 FINAL COMPLETION

A. Preliminary Procedures: Within 10 days from the Project Acceptance Date, complete the following items in addition to requirements of GENERAL CONDITIONS Article 7 PROSECUTION AND PROGRESS:

1. Instruct the State's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training media materials.

1.04 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit 2 copies of any updated and action taken list. In addition to requirements of GENERAL CONDITIONS Article 7 PROSECUTION AND PROGRESS, include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

   3. Include the following information at the top of each page:
      a. Project Name and Title.
      b. Date and page number.
      c. Name of Contractor.

1.05 PROJECT RECORD DOCUMENTS AND REQUIREMENTS

A. General:
   1. Definition: "Project Record Documents", including Record Drawings, shall fulfill the requirements of "Field-Posted As-Built Drawings" listed in the GENERAL CONDITIONS.

   2. Do not use Project Record Documents for daily construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Contracting Officer's reference during normal working hours and electronically per other provisions of the Contract Documents. Maintain these documents as specified in paragraph entitled "Record Drawings" hereinafter.

   3. The Designer, under contract with the State, will update the drawings to show all addendum, PCD, and sketch changes. The Contractor shall record all

"red-line" corrections to these drawings to record the changes depicted on the Contractor's Field Posted Record ("As-Builts") by accepted drafting practices as approved by the Contracting Officer.

4. Where the recorded changes depicted on the Contractor's Field Posted Record ("As-Builts") are in the form of shop drawings, the Contractor shall provide those shop drawings electronically on the same sheet size as the drawings transmitted to the Contractor. The new drawing sheets shall be titled and numbered to conform to the construction drawings and clearly indicate what information they supercede in the actual construction drawings. For example a new drawing that replaces drawing M-3, could be numbered M3a.

5. The Contractor shall bring to the attention of the Contracting Officer any discrepancy between the changes made by the Designer and those depicted on addendum, PCD, and sketch changes. The Contracting Officer will resolve any conflicts.

6. Submit final Record Documents (Field Posted Record Drawings) before the Final Inspection Date and no later than the Contract Completion Date, unless the GENERAL CONDITIONS require otherwise.

7. The Contractor shall guarantee the accuracy of its final Record Documents. The State will hold the Contractor liable for costs the State incurs as a result of inaccuracies in the Contractor's Record Documents.

8. Prepare and submit [construction photographs and electronic files], damage or settlement surveys, property surveys, and similar final record information as required by the Contracting Officer.

9. Deliver tools, spare parts, extra materials, and similar items to a location designated by the Contracting Officer. Label with manufacturer's name and model number where applicable.

10. Submit pest-control final inspection report and warranty.

11. Submit Final, corrected O&M Manual(s).

B. Record Drawings:
   1. Maintain a duplicate full-size set as the Field Posted Record ("As-Builts") Drawings at the job site. Clearly and accurately record all deviations from alignments, elevations and dimensions, which are stipulated on the drawings and for changes directed by the Contracting Officer that deviate from the drawings.

   2. Record changes immediately after they are constructed in place and where applicable, refer to the authorizing document (Field Order, Change Order, or Contract Modification). Use red pencil to record changes. Make Field Posted Record Drawings available to the Contracting Officer at any time so that its clarity and accuracy can be monitored and can be countersigned for validity.
      a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.

b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
d. Mark the contract drawings or the shop drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on contract drawings.
e. Mark important additional information that was either shown schematically or omitted from original Drawings.
f. Locate concealed building utilities by dimension from bench marks or permanent structures. Locate site utilities by dimensions, azimuth and lengths from bench marks or permanent structures.
g. Note field order numbers, Change Order numbers, Contract Modification numbers, Alternate numbers, post-construction drawing numbers (PCD) and similar identification (RFI numbers) where applicable.
h. The Contractor shall initial each deviation and each revision marking.

3. Use the final updated Contract Drawing set (including all addenda, PCD, and sketches) plus applicable shop drawings for making the final Field Posted Record Drawings submittal.

4. Certify drawing accuracy and completeness. Label and sign the record drawings or use digital electronic signature as approved by the Contracting Officer.

5. Label the title sheet and on all sheets in the margin space to the right of the sheet number, written from the bottom upward, with the title “FIELD POSTED RECORD DRAWINGS” and certification information as shown below. Provide a signature line and company name line for each subcontractor that will also certify the respective drawing. Adjust size to fit margin space.

   FIELD POSTED RECORD DRAWINGS Certified By: _____ Date: _____
   [Contractor’s Company Name]

6. Revise the Drawing Index and label the set “FIELD POSTED RECORD DRAWINGS”. Include the label “A COMPLETE SET CONTAINS [_____] SHEETS” in the margin at the bottom right corner of each sheet. Quantify the total number of sheets comprising the set.

7. If the Contracting Officer determines a drawing does not accurately record a deviation or omits relevant information, the State will correct any FIELD POSTED RECORD DRAWINGS sheet. Contractor will be charged for the State’s cost to correct the error or omission.

8. Use the final Field Posted Record Drawings sheets and create one electronic version of the set. The set shall be recorded in Adobe Acrobat PDF (Portable Document Format). Create a single indexed, bookmarked PDF file of the entire set of drawings and upload electronically.

1.06 WARRANTIES

A. Submittal Time: Submit written manufacturer's warranties at request of the Contracting Officer for designated portions of the Work where commencement of warranties other than Project Acceptance date is indicated.

B. Partial Occupancy: Submit properly executed manufacturer's warranties within 45 days of completion of designated portions of the Work that are completed and occupied or used by the State during construction period by separate agreement with Contractor.

C. Organize manufacturer's warranty documents into an orderly sequence based on the table of contents of the Specifications.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 inch x 11-inch paper.

   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer and prime contractor.

   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES", Project Name and Title, DAGS Job Number, and name of Contractor.

   4. Use the final submittal of the warranties to create an electronic Adobe Acrobat PDF (Portable Document Format) version of the bound warranty documents files. Each sheet shall be separately scanned, at 600 DPI or better into a PDF file, indexed, and uploaded electronically.

1.07 OPERATION AND MAINTENANCE MANUALS

A. Assemble complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
   1. Operation Data:
      a. Emergency instructions and procedures.
      b. System, subsystem, and equipment descriptions, including operating standards.
      c. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
      d. Description of controls and sequence of operations.
      e. Piping diagrams.

   2. Maintenance Data:
      a. Manufacturer's information, Material Safety Data Sheets, and a list of spare parts.
      b. Name, address, and telephone number of installer or supplier.
      c. Maintenance procedures.

d. Maintenance and service schedules for preventive and routine maintenance.
e. Maintenance record forms.
f. Sources of spare parts and maintenance materials.
g. Copies of maintenance service agreements.
h. Copies of warranties and bonds.

B. Use the following 3 paragraph headings, “Notes, Cautions and Warnings”, to emphasize important and critical instructions and procedures. Place the words “Notes”, “Cautions”, or “Warnings” immediately before the applicable instructions or procedures. Notes, Cautions and Warnings are defined as follows:
1. Note: highlights an essential operating or maintenance procedure, condition or statement.

2. Caution: highlights an operating or maintenance procedure, practice, condition or statement which if not strictly observed, could result in damage to or destruction of equipment, loss of designed effectiveness, or health hazards to personnel.

3. Warning: highlights an operating or maintenance procedure, practice, condition, or statement that if not strictly observed, could result in injury to or death of personnel.

C. Organize the Operation and Maintenance Manuals into suitable sets of manageable size. Bind and index data in heavy-duty, “D” type 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Binder color shall be maroon, or if not available red. Identify each binder on front and spine with the printed title “OPERATION AND MAINTENANCE MANUAL”, Project Name and Title include building number, Prepared For: HHSC, Prepared By: Contractor and Volume Number. Each binder is a single volume.

D. Electronic Format
1. Provide all information (narratives, drawings and manual) in electronic PDF format and upload provisions in the Contract Documents. Provide Compact Disc (CD) or DVD if files are too large. Provide drawings and plans prepared for the O&M Manuals drawn electronically and saved as a PDF file. Name and index the files for ease of identification and updates.

2. Provide the complete O&M Manual using Adobe Acrobat PDF (Portable Document Format) files. Each sheet shall be separately scanned into a PDF file, indexed, bookmarked, hyperlinked to the table of contents uploaded provisions in the Contract Documents. Scanned documents shall be scanned at 600 DPI or better. Indexes and bookmarks may be highlighted or colored text.

E. Pre-Final Submittal: Submit 1 printed set of Final Operation and Maintenance Manual, for review by the Contracting Officer, at least 5 days prior to scheduled final inspection. Manuals shall be marked as Pre-Final.

1. Make any correction noted before submitting the final Operation and Maintenance Manuals.

2. The set will be returned with comments. Additional review comments may include problems discovered during the O&M Manual's review, site validation, and facility start up and will be provided to the Contractor after facility Project Acceptance Date.

F. Final Submittal: Use the final submittal of the manuals to create the electronic PDF file version of the bound Operation and Maintenance Manuals documents. Include the Submittal (100 percent) review comments along with a response to each item. Upload Final Submittal per provisions in the Contract Documents. Final printed manual and any disks shall be marked as Final and sent to the Contracting Officer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.01 DEMONSTRATION AND TRAINING

A. Instruction: Instruct the State's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Provide instructors experienced in operation and maintenance procedures.
   2. Provide instruction at mutually accepted times.
   3. Schedule training with the State's users, through the Contracting Officer with at least 7 days advanced notice.
   4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.

B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for the following:
   1. System design and operational philosophy.
   2. Review of documentation.
   3. Operations.
   4. Adjustments.
   5. Troubleshooting.

6. Maintenance.

7. Repair.

3.02 FINAL CLEANING

A. General: Provide final cleaning. In addition to requirements of Article 7 of the GENERAL CONDITIONS conduct cleaning and waste-removal operations to comply with local laws and ordinances and federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturers written instructions unless noted otherwise. Complete the following cleaning operations before requesting final inspection for entire Project or for a portion of Project:

1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits resulting from construction activities.

3. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

4. Remove tools, construction equipment, machinery, and surplus material from Project site.

5. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

6. Remove debris and surface dust from limited access spaces, including: roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

7. Sweep concrete floors broom clean in unoccupied spaces.

8. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

9. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass surfaces, taking care not to scratch surfaces.

10. Remove labels that are not permanent.

11. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    a. Do not paint over “UL” and similar labels, including mechanical and electrical nameplates.
12. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
14. Replace parts subject to unusual operating conditions.
15. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
16. Replace disposable air filters and clean permanent air filters. Clean the exposed surfaces of diffusers, registers, and grills.
17. Clean ducts, blowers, and coils if units were operated without filters during construction.
18. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
19. Leave Project clean and ready for occupancy.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the State’s property. Do not discharge volatile, harmful, or dangerous materials into drainage and sewer systems or onto State property. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

DIVISION 2 – SITE CONSTRUCTION

SECTION 02070 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Work Includes:

1. Demolition and removal of designated partitions, doors, flooring, ceilings, soffits, mechanical, plumbing and electrical fixtures, finishes and components as indicated on the Drawings

2. Demolition of portions of concrete slabs.

3. Demolition of portions of concrete slabs for removal of designated utilities.

4. Identifying, disconnecting, capping or sealing, and removing utilities.

5. Salvage designated items.

B. Related Work Described Elsewhere

1. Section 01010 – SUMMARY OF WORK

2. Section 01040 – COORDINATION

3. Section 01500 – CONSTRUCTION FACILITIES

4. Section 01524 – CONSTRUCTION WASTE

5. Section 01567 – POLLUTION CONTROL

6. Section 01700 – CONTRACT CLOSEOUT

7. Section 02100 – SITE PREPARATION

C. The extent of selective demolition work is indicated on the demolition plan and other drawings.

D. It shall be the responsibility of the Contractor to examine the project site and determine the existing conditions for themselves.

E. Selective demolition work includes but is not limited to removal and subsequent disposal of all non-hazardous materials indicated or required to be removed.

F. Execute all work in an orderly and careful manner with due consideration for all items or work to remain.

G. Clearly obvious conditions requiring selective demolition, which exist at the site, shall be accepted as part of the work, even though they may not be clearly indicated on the Drawings and/or described herein, or may vary therefrom.

H. All debris of any kind accumulated from the work of this Section shall be disposed of off the site, unless noted otherwise.

I. Permits, Notice, Etc.:

1. The Contractor shall procure and pay for all necessary permits or certificates the may be required in connection of this work.

2. The Contractor shall serve proper notice and consult with Project Manager regarding any temporary barricades that are required, or for disconnections of electrical or other utility lines in the area which may interfere with the removal work. All such lines, where necessary, shall be properly disconnected or relocated prior to commencing with demolition work.

J. Salvage items including but not limited to:

1. Emailed HHSC 01/26/21, waiting on list

1.02 SUBMITTALS

A. Meet requirements of Section 01330 – SUBMITTALS

B. Proposed Protection Measures: Submit informational report, including drawings, that indicates the measures proposed for protecting individuals and property, for dust control and for noise control. Indicate proposed locations and construction of barriers.

1. Adjacent Portions of Building: Portions of the site, including structures, adjacent to the areas to be demolished are to be kept intact. The demolition to take place in these areas is to be performed with the utmost care to avoid damage to the adjacent structures. Submit detailed special measures proposed to protect adjacent structures to remain.

C. Schedule of Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.

2. Temporary interruption of utility services.

3. Shutoff of utility services.

D. Demolition Plans: Drawings indicating the following:

1. General site, building(s) and other features to be removed and disposed of.

2. Locations of temporary protection and means of egress for adjacent occupied areas of the building.

E. Pre-demolition Photographs: Show existing conditions of adjoining construction, including finish surfaces that might be misconstrued as damage caused by demolition operations. Submit before the Work begins.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled mechanics who are thoroughly trained and experienced in the necessary crafts.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Pre-demolition Conference: Conduct conference at Project site to review methods and procedures related to building demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be demolished.

2. Review and finalize demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review and finalize protection requirements.

4. Review procedures for noise control, and dust control.

5. Review items to be salvaged and returned to the owner.

6. Review procedures for protection of adjacent, occupied structures or buildings.

7. Review schedule of work hours and facility rules.

1.04 PROJECT CONDITIONS

A. Existing conditions: The owner assumes no responsibility for actual condition of items to be demolished.

B. Conditions existing at time of commencement of contract will be maintained by the owner insofar as practical.

C. Occupancy: Building areas subject to demolition will be vacated and discontinued in use by the owner prior to start of work.

D. Do not interfere with use of adjacent building areas. Maintain free and safe passage to and from occupied spaces.

E. Provide accessibility around temporary structures conforming to ADAAG Section 4.1.1(4).

F. Prevent movement or settlement of structures. Provide and place bracing or shoring and be responsible for safety and support of adjacent structures. Assume liability for such movement, settlement, damage, or injury. Cease operations and notify the Project Manager immediately, if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.

G. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close, block or otherwise obstruct streets, walks or other occupied or used facilities without written permission from the Project Manager. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations, as directed by the Project Manager.

H. Dust Control:

1. Keep dust within acceptable levels at all times, including non-working hours, weekends and holidays as specified in Section 01567 – POLLUTION CONTROL.

2. Mechanical dry sweeping is not permitted. Vacuuming, wet mopping, approved limited dry hand, wet or damp sweeping is acceptable.

3. During loading operations, water down debris and waste materials to allay dust.

4. The method of dust control and all costs incurred thereof shall be the responsibility of the Contractor.

I. Noise Control: As specified in Section 01567 – POLLUTION CONTROLS.

J. Fire Safety: Fire safety during demolition shall comply with the 2012 Uniform Fire Code, as amended.

1.05 EXISTING UTILITY SERVICES

A. Do not abandon or otherwise alter utility services or drainage lines which would impair service to existing building areas.

B. Maintain utilities in service, protect, and reconstruct if damaged, all in-service utility pipes or conduits, except services to the structures to be dismantled. Reconstruct in-service utility pipes or conduits if damaged at no additional cost to the owner.

C. If service must be interrupted, observe requirements of Section 01500 – CONSTRUCTION FACILITIES.

D. Report damage, however slight, immediately. Do not repair or reconstruct any utility pipe, conduit or installation without authorization; however, except perform emergency repairs immediately.

1.06 HAZARDOUS MATERIALS

A. Hazardous Materials**:** It is not expected that hazardous materials will be encountered in the Work.

1. Contractor shall comply with Hawaii Administrative Rules (HAR) Chapter 11-501. Pursuant to Section 11-501-7, prior to the commencement of work, thoroughly inspect the project site for the presence of asbestos, including category I and category II nonfriable ACM. This survey shall be performed by a person who is certified pursuant to HAR Chapter 11-504. The inspector shall include sampling and laboratory analysis of the asbestos content of all suspected ACM. Sampling shall include at least three samples from each homogeneous area to be disturbed. Provide Owner with results of sampling and laboratory analysis.

2. If hazardous materials are encountered, immediately notify Architect and Owner/Construction Manager. The Contractor shall then furnish all labor, materials, facilities, equipment, services, employee training and testing, permits and agreements, waste transport and disposal necessary to remove and dispose of all hazardous materials in strict accordance with the requirements of the EPA/Department of Health, Hawaii Occupational Safety and Health Standards, State of Hawaii Regulations and any other applicable Federal, State and local government regulations. Normal demolition operations shall commence only after the hazardous material has been remediated or abated

3. In the event that asbestos, lead containing paint, urea formaldehyde or other toxic substances are present in the existing structures, observe the applicable requirements of Hawaii Occupational Safety and Health Standards, State of Hawaii.

4. Notify employees, Subcontractors and all other persons engaged on the project of the presence of hazardous materials in the existing building in accordance with the requirements of the Occupational Safety and Health Standards, State of Hawaii.

1.07 COORDINATION

A. Arrange demolition schedule so as not to interfere with the owner's on-site operations and operations of adjacent occupied buildings and areas.

1. At the end of each work period areas are required to be cleaned and readied for occupants. The condition of the areas shall be such that there is no interference with the typical work activities perform by the occupants and that the occupant's safety is not compromised

PART 2 - PRODUCTS

2.01 SALVAGE MATERIALS

A. Salvaged materials not indicated for reuse or salvage for the owner shall become Contractor's property. Remove from site and dispose of at Contractor's option.

B. Items of salvageable value not indicated for reuse may be removed from structure as work progresses. Salvaged items must be transported from site as they are removed. Storage or sale of removed items on site will not be permitted.

C. Historic items, antiques, and similar objects including, but not limited to, commemorative plaques and tablets, and other items of interest or value to the owner that may be uncovered during demolition remain the property of the owner.

   1. Carefully salvage in a manner to prevent damage and promptly return to the Owner.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the conditions under which work of this section will be performed. Do not proceed until unsatisfactory conditions detrimental to timely and proper completion of the work have been corrected.

B. Verify that utilities have been disconnected and capped before starting demolition operations.

C. Inventory and record the condition of items to be removed and salvaged. Photograph existing conditions of structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work. File with Project Manager prior to starting work.

D. Engage a professional engineer currently licensed in the owner to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

E. If hazardous materials were found to exist, verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.02 PREPARATION

A. Maintain exit requirements throughout construction period.

B. Erect and maintain temporary barricades complying with the requirements of Section 01500 – CONSTRUCTION FACILITIES. On completion, remove barricades and repair damaged surfaces to match adjacent surfaces.

C. Existing Utilities: Locate, identify, disconnect, and remove indicated utilities serving portions of the building to be demolished.

1. If removal, relocation, or abandonment of utility services will affect adjacent occupied areas and buildings, then provide temporary utilities that bypass the portions of the building to be demolished and that maintain continuity of service to other buildings and adjacent areas.

2. Cut off pipe or conduit and cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of demolition.

3.03 DEMOLITION

A. Demolition Work: Conform to owner of Hawaii, Occupational Safety and Health Standards; Subtitle 8, Division of Occupational Safety and Health; Part 3, Construction Standards; Chapter 131.1, Demolition.

B. Pollution controls: Provide temporary enclosures and use suitable methods to limit dust and dirt to the lowest practical level. Comply with governing regulations pertaining to environmental protection. Observe dust control measures of Section 01567 – POLLUTION CONTROL.

C. Explosives: Use of explosives will not be permitted.

D. Selective Demolition

1. Extent of demolition and removal as shown are minimum requirements. Contractor shall be responsible for the extent of work required to properly accommodate the methods of construction required for the new work. Additional work required to accommodate construction shall be considered incidental to the new work and shall be done at no additional cost to the owner. Contractor and its demolition subcontractor, as part of the bid proposal to review the demolition scope along with the new work and conduct site visit(s) to understand the extent of the scope and provide as part of its bid proposal, to include all work to accomplish the final work.

2. Conduct demolition of designated items and components as indicated on the Drawings and site investigation(s) in an orderly and careful manner as required to accommodate new work, including that required for connection to the existing building. Protect existing supporting structural members.

3. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

4. Use the utmost care to avoid damage to the items being removed and designated for reuse including but not limited to:

5. Disconnect, remove, cap and seal designated utilities as indicated on the Drawings.

6. Use methods required to complete the Work within limitations of governing regulations.

7. Locate demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

8. Cease operations and notify Architect and Project Manager immediately if safety of adjacent structure appears to be endangered. Do not resume operations until safety is restored.

9. Remove contaminated, vermin infested, or dangerous materials encountered and dispose of by safe means.

10. Do not demolish, chip or penetrate any portion of existing structural members not designated for such without the expressed approval of the Architect and Engineer.

11. Repair excess demolition to match adjacent surfaces.

E. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.

2. Pack or crate items after cleaning and repairing. Identify contents of containers.

3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

3.04 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish, and other materials resulting from demolition operations from the site. Transport materials removed from demolished structures and legally dispose of off site.

B. Do not allow demolished materials to accumulate on-site.

C. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

D. Burning of removed materials from demolished structures will not be permitted on site.

3.05 CLEANUP AND REPAIR

A. Repair damage to adjacent structure and improvements resulting from this work at no cost to the owner.

B. Clean adjacent areas, structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by Project Manager or governing authorities. Return adjacent areas to condition existing prior to start of work.

END OF SECTION

DIVISION 6 - WOOD AND PLASTICS

SECTION 06070 - WOOD TREATMENT

PART 1- GENERAL

1.01 SUMMARY

A. Plant preservative and insecticide treatment of lumber and other wood products specified in other Sections of this Specification by pressure and dip methods.

B. Field treatment of field cut or drilled lumber.

1.02 RELATED SECTIONS

A. SECTION 06100 - ROUGH CARPENTRY: Lumber products needed to receive preservative and insecticide treatment of lumber products.

1.03 REFERENCES

A. American Wood-Preservers' Association

1. AWPA P5: Standard for Waterborne Preservatives.
2. AWPA P9: Standards for Solvents and Formulations for Organic Preservative Systems.
3. AWPA U1: Use Category System: User Specification for Treated Wood.
4. AWPA T1: Use Category System: Processing and Treatment Standard
5. AWPA M4-02: Care of Preservative-Treated Wood Products.

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Product Data: Provide data on all treatment products, including field application instructions if applicable.

1. Provide manufacturer's Material Safety Data Sheets on all products, and hazardous materials.

C. Preserver Certifications:

1. Provide a Certificate of Treatment showing compliance with these specifications for the following:
   a. Kiln drying.
   b. Method of treatment performed, including dip treatment.

D. Contractor's Certification: Provide a certification letter stating that all wood used on this job including cuts and penetration were treated and coated with preservatives in compliance with requirements of this contract.

E. Warranty: Submit written warranty as specified in paragraph entitled "WARRANTY" hereinbelow.

1.05 REGULATORY REQUIREMENTS

A. Comply with State OSHL (Occupancy Safety and Health Law) and pollution controls regulations of the State Department of Health and EPA.

1.06 QUALITY ASSURANCE

A. Treatment methods shall be approved by ICBO. Preservatives shall be EPA registered.

B. Do not use preservatives containing arsenic or other EPA banned chemicals.

C. Do not use Perma-Clear 65 or other zinc napthanate and permethrin products.

1.07 DELIVERY STORAGE AND HANDLING

A. Protect AWPA C31 inorganic boron treated wood from contact with the ground, rain or other sources of liquid water until permanent installation of covering construction.

1.08 WARRANTY

A. The Contractor shall issue to HHSC a written warranty that he will replace all treated wood in new buildings and additions which is attacked by subterranean termites within a period of five years from the date of Project Acceptance (unless a longer period of time is standard with the manufacturer) up to a total cost of $5,000.00 (unless higher amount standard with the manufacturer) or is attacked by dry wood termites or deteriorates due to dry rot within the first five years of the Project Acceptance date.

B. The Surety shall not be held liable beyond two years of the Project Acceptance date.

PART 2 - PRODUCTS

2.01 GENERAL

A. Mill lumber to finish size and shape prior to treating, and treat before assembly. Plywood may be treated in regular panel sizes.

B. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece, or omit marking and provide certificates of treatment compliance issued by inspection agency.

2.02 PRESSURE TREATMENT WITH WATER-BORNE PRESERVATIVES

A. Treating Solutions:

1. Copper azole, Type A (CBA-A).
2. Inorganic boron (SBX).

B. Treatment Methods:

1. General:

a. All water-borne treatment methods require incising of lumber of nominal

2-inch thickness (1-1/2 inches actual dimension).

b. Choice of treatment method and conditions of use of each treating solution shall conform to the treatment schedule contained in Part 3.

2. CBA-A: Treatment methods, depth of penetration and treating solution retention shall conform to AWPA U1.

3. SBX: Treatment method shall conform to AWPA U1. Treating solution retention shall be a minimum of 0.28 pounds per cubic foot (equivalent to 0.42 DOT).

C. Drying:

1. Before Treatment:

a. CBA-A Treatment: Wood shall be air dried or kiln-dried before treatment to an average moisture content of 28 percent or less per AWPA standards.

b. SBX Treatment: Wood having a moisture content higher than 28 percent is acceptable when treating with SBX.

2. After Treatment: All one-inch and 2-inch lumber and all plywood shall be dried to a moisture content of 19 percent or less after treatment.

2.03 PRESSURE TREATMENT WITH OIL-BORNE PRESERVATIVES

A. Treating Solution:

1. 0.50 percent by weight chlorpyrifos, 0.75 percent by weight 3-iodo-2-propynyl butyl carbamate (IPBC). The solvent used in formulating the preservative solution shall meet the requirements of AWPA hydrocarbon solvent Type C, Standard P9, Paragraph 3.1.

2. For interior application use low odor mineral spirits as solvent.

B. Treatment Methods: Treated wood shall attain the following net retention requirements: 0.0175 pounds of Chlorpyrifos per cubic foot of wood, 0.035 pound of 3-Iodo-2 propynyl butyl carbamate per cubic foot of wood.

C. Drying:

1. Before Treatment: All wood treated with oil-borne preservatives shall be kiln-dried to an average moisture content of 12 percent to 15 percent per AWPA standards.

2. After Treatment: Wood shall be thoroughly dried and virtually odor-free prior to installation.

2.04 PRESERVATION BY DIP TREATMENT

A. Treating Solution:

1. Any of the Oil-Borne Preservatives listed above.

2. A solution of one quart chlopyrifos in 55 gallons of a 0.50 percent IPBC solution.

B. Treatment Methods:

1. Immersion treat for a minimum period of 15 minutes. Hollow-core flush wood

doors shall be immersion treated for a period of 5 minutes.

2. Doors shall be treated after manufacture but, where applicable, before application of plastic laminate.

3. Do not incise lumber scheduled to be left unpainted or receive a clear finish.

C. Drying After Treatment: Wood shall be thoroughly dried and virtually odor-free prior to installation.

2.05 FIELD TREATMENT

A. Treatment Method: Treat in accordance with AWPA Standard M4 using two heavy brush coats of a treating solution.

PART 3 – EXECUTION

3.01 SCHEDULE OF TREATMENTS

A. Species:

1. Treat all wood species except all-heart redwood.

2. All water-borne and oil-borne treatment solutions are applicable to douglas-fir and hem-fir species except for CBA-A treatment which is acceptable for hem-fir species only.

B. Application:

1. Pressure Treatment:

a. General: Unless otherwise stipulated, all lumber and plywood shall be pressure treated.

b. Hardwood flooring and exposed lumber 1-1/2 inch (net thickness) and over that will be unpainted or receive a clear finish shall be and pressure treated with oil-borne preservative. Do not incise lumber.

c. SBX treated wood shall not be used in areas exposed to direct precipitation (e.g. exterior deck subframing, trellises, fencing, etc.) unless painted or covered with a finish material. SBX treatment shall not be used for exposed exterior wood decking.

2. Dip Treatment: All finish lumber under 1-1/2 inch net thickness (except hardwood flooring); doors (solid wood and solid-core flush wood doors); finish plywood; and mill work items, such as for cabinet work, shelving and similar wood work that will be exposed to view in the finished work.

3. Field Cuts: Treat end cuts, notches and penetrations into treated lumber or plywood. Exception: Cuts and penetrations made in SBX treated wood 2-inches or less in nominal thickness need not be field treated.

END OF SECTION

SECTION 06100 - ROUGH CARPENTRY

PART 1 – GENERAL

1.01 SUMMARY

A. Work Includes:

1. Wood furring, grounds, nailers and blocking.
2. Plywood Sheathing
3. Metal framing anchors.

B. Related Work Described Elsewhere:

1. Section 06070 – WOOD TREATMENT
2. Section 06400 – ARCHITECTURAL CASEWORK

1.02 REFERENCES

A. American Plywood Association's "Design/Construction Guide, Residential and Commercial" (APA).

B. U.S. Department of Commerce, National Institute of Standards and Technology.

PS 1 - US Product Standard for Construction and Industrial Plywood.

PS 2 - Performance Standard for Wood-Based Structural-Use Panels.

PS 20 - American Softwood Lumber Standard (ASLS).

C. American Society for Testing and Materials (ASTM).

D. American Wood Preservers' Association's Standards (AWPA).

E. International Building Code, 2006 Edition (IBC).

1.03 DEFINITIONS

A. Rough carpentry: Carpentry work not specified in other sections and not exposed, unless otherwise indicated.

B. Exposed framing: Dimension lumber not concealed by other construction and indicated to receive a transparent finish.

1.04 SUBMITTALS

A. Submit the following:

1. Product data and ICBO evaluation reports: Engineered wood products, underlayments, insulating sheathing, air-infiltration barriers, metal framing anchors, and construction adhesives.
2. Material certificates: Dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use, and design values approved by American Lumber Standard's Committee, ALSC, Board of Review.
3. Material test reports: Compliance of fire-retardant-treated wood with

indicated requirements.

1.05 QUALITY ASSURANCE

A. Single-source responsibility:

1. Engineered wood products: Obtain each type of product from one source and by a single manufacturer.

2. Fire-retardant-treated wood products: Obtain each type of product from one source and by a single manufacturer.

B. Wood products: Bear grade stamp or trade mark as follows.

1. Dimension lumber: Grade stamped by an agency certified by the Board of Review of the American Lumber Standards Committee and manufactured in accordance with PS-20.

2. Plywood: Trademark of the American Plywood Association.

1.06 DELIVERY, STORAGE AND HANDLING

A. Observe manufacturer's instructions and precautions for the safe transportation, storage and handling of potentially harmful or hazardous materials.

B. Keep materials under cover and dry.

1. Protect from weather and contact with damp or wet surfaces.

2. Stack lumber, plywood and other panels; place spacers between each bundle to provide air circulation.

3. Provide for air circulation around stacks and under temporary coverings.

C. Pressure treated lumber and plywood: Place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.01 LUMBER

A. General:

1. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

2. Lumber standards: Comply with PS 20 and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

a. WCLIB: West Coast Lumber Inspection Bureau.
b. WWPA: Western Wood Products Association.

3. Grade stamps:

a. Factory-mark each piece of lumber with grade stamp of inspection agency.

b. Exposed lumber: Apply grade stamps to ends or back of each piece

of exposed lumber, or omit grade stamps and issue certificate of grade compliance from inspection agency.

4. Dimensions:

   a. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

   b. Provide dressed lumber, S4S, unless otherwise indicated.

5. Seasoning: Uniformly 15 percent maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness, unless otherwise indicated.

B. Miscellaneous Lumber:

1. Wood for support or attachment of other work including cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members.

2. 15 percent maximum moisture content.

3. Grade and Species: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common or Standard grade per WWPA of any species.

2.02 PLYWOOD

A. Standards: Comply with U.S. Product Standard PS 1 for plywood panels. Comply with APA "Performance Standard and Policies for Structural-Use Panels" for products not manufactured under PS 1. Factory-mark each construction panel with APA.

B. Manufacture plywood panels with an exterior-type adhesive complying with ASTM D 2559 and containing no urea formaldehyde.

C. Performance-rated panels: APA Performance-Rated Panels complying with indicated requirements where used for the following concealed applications.

1. Countertop Substrate: APA 3/4-inch, A-C Exterior Grade, 4-foot by 8-foot plywood.

2.03 FASTENERS

A. General: Provide fasteners of size and type indicated, that comply with requirements specified.

Where rough carpentry work is exposed to weather, in ground contact, or in areas of high relative humidity, provide fasteners with hot-dip, zinc-coating per ASTM A153

B. Nails, Wire, Brads, and Staples: FS FF-N-105B.

C. Wood Screws: ASME B18.6.1.

D. Lag Bolts: ASME B18.2.1.

E. Bolts: Steel bolts complying with ASTM A307, Grade A with ASTM A563 hex nuts and, where indicated, flat washers.

2.04 METAL FRAMING ANCHORS

A. General: Provide galvanized steel framing anchors of structural capacity, type, and size indicated, with allowable design loads as published by manufacturer that meet or exceed those indicated.

B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653, G60 coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.

2.05 MISCELLANEOUS MATERIALS

A. Building Paper: ASTM D 226, Type I, asphalt saturated felt, non-perforated, 30-lb type.

B. Construction Adhesive: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

1. Use adhesives that have a VOC content of 70 g/L or less when calculated according to 40 CFR 59 subport D (EPA METHOD 24).

PART 3 – EXECUTION

3.01 INSPECTION

A. Examine areas to receive rough carpentry work and verify following:

1. Complete installation of building components to receive rough carpentry work.
2. That surfaces are satisfactory to receive work.
3. That spacing, direction, and details of supports are correct to accommodate installation of blocking, backing, stripping, furring, and nailers.

3.02 INSTALLATION

A. General:

1. Discard material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.
2. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.
3. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
4. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood
5. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by the following:

a. IBC Table 2304.9.1, “Fastening Schedule.”

b. Published requirements of the metal framing anchor manufacturer.

c. CABO NER-272 for power-driven fasteners.

6. Countersink nail heads on exposed carpentry work. Fill holes.

7. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not 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. Predrill as required.

B. Grounds, Nailers, Blocking and Sleepers:

1. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

3.03 INSTALLATION OF CONSTRUCTION PANELS

A. Comply with applicable recommendations contained in "APA Design/Construction Guide - Residential & Commercial," for types of construction panels and applications indicated.

B. Fastening methods:

1. Plywood countertop substrate: Nail to supports.

3.04 PROTECTION

A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 06400 - ARCHITECTURAL CASEWORK

PART 1 -GENERAL

1.01 SUMMARY

A. Section includes:

1. Casework.
2. Factory finishing
3. Installation.

B. Related Work Specified Elsewhere:

1. Section 06070 – WOOD TREATMENT
2. Section 06100 - ROUGH CARPENTRY - Wood blocking and concealed framing.

1.02 REFERENCES

A. Architectural Woodwork Institute, AWI: Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program, current edition.

B. Department of Justice 2010 ADA Standards for Accessible Design.

1.03 SUBMITTALS

A. Shop drawings: Show location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components. Show flitch matching, jointing, anchorage and accessory items. Indicate finishes.

B. Product data: For each type of product indicated including cabinet hardware and accessories, and finishing materials and processes.

C. Samples:

1. Lumber with or for transparent finish, not less than 50 sq. in., for each species and cut, finished on 1 side and 1 edge.
2. Wood veneer faced panels for transparent finish: 8" x 10", finished, for each species and cut.
3. Exposed cabinet hardware, one unit of each type and finish.
4. Cabinet liner.

1.04 QUALITY ASSURANCE

A. Fabricator qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer qualifications: Use only a firm which can demonstrate successful experience in installing items similar in type and quality to those specified for this

project.

C. Quality standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

D. Provide AWI Quality Certification Program labels indicating that woodwork complies with requirements of grades specified.

1.05 DELIVERY, STORAGE AND HANDLING

A. Protect architectural woodwork with appropriate heavy duty wrapping materials prior to shipment. Mark each unit with appropriate identification required for installation.

B. Protect architectural woodwork during handling, transit and storage to prevent damage and deterioration. Store in a conditioned space complying with environmental requirements of this specification. Stack only in accordance with manufacturer's instructions.

C. Do not deliver woodwork, until painting, wet work, grinding and similar operations which could damage woodwork have been completed in installation areas.

1.06 PROJECT CONDITIONS

A. Field measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

C. Environmental requirements

1. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

2. Condition spaces for a minimum of 48 hours within occupant usage temperature and humidity ranges during the remainder of work.

1.07 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 -PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. Solid lumber stock: Comply with AWI Quality Standard Section 100 Lumber grading rules.

1. Softwood for concealed structures and supports: Provide kiln-dried lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated; Custom Grade, western pine.

C. Plywood

1. Softwood plywood for concealed structures and supports: AWI Section 200-2, Custom Grade; species as selected.

2. Manufacture plywood panels with an exterior-type adhesive complying with ASTM D 2559 and containing no urea formaldehyde.

D. Exposed Materials:

1. High-Pressure Plastic Laminate:

a. Plastic Laminate: Plywood faced with high-pressure plastic laminate for vertical surface meeting NEMA standards for vertical grade, 0.028-inch thick, VG 28.

b. Color: Provide colors as scheduled and if not scheduled submit manufacturer's full range of colors and textures to be selected by Architect.

2. Edges of cabinet ends doors and drawer fronts faced with plastic laminate, shall be rigid PVC extruded edgebanding, through color matching faces, 3-mm thick.

E. Semi-exposed Materials: Unless otherwise indicated, provide the following:

1. High-Pressure Plastic Laminate Backing Sheet: Heavy gauge, high-pressure plastic laminate balancing sheet, meeting NEMA standards for vertical grade.

a. Balancing sheet on interior faces doors, and drawer fronts shall be 0.020-inch thick, CLS.

b. For interior faces of cabinet including tops, bottoms sides, partitions and shelves apply low pressure, thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.

F. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength.

G. Fasteners

1. Wood Screws: FS-S FF-S-111, type, size, material and finish as required for the condition of use.

2. Anchors: Type, size, material and finish as required for substrate condition and adequate anchorage for the work. Provide hot-dip galvanized anchors and inserts as required for corrosion-resistance. Provide toothed steel expansion bolt devices for drilled-in-place anchors.

H. Adhesives

1. Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.

a. Use wood glue that has a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24)

2. Multipurpose Construction Adhesive: Formulation complying with ASTM D 3498 that is recommended for indicated use by adhesive manufacturer.

a. Use adhesive that has a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.02 CASEWORK

A. Quality standard: Comply with AWI Section 400 Architectural Cabinets sub-section ”Laminate Cabinets".

B. Laminate casework:

1. Grade: Custom grade.

2. Construction: Flush overlay.

3. Exposed surfaces: Refer to Article 2.01.F

4. Semi-Exposed Surfaces: Interior surfaces of drawers and doors shall be CL-20 cabinet liner grade where indicated. Interior of cabinet and casework shall be high pressure decorative laminate.

C. Laminate Color, Patterns and Finishes: Provide Laminates in colors, patterns and finishes as scheduled (PL-1), or if not indicated as selected by Architect from manufacturer’s full line of laminate samples.

2.03 HARDWARE

A. Shelf support pins: Provide 1/4-inch self pins with rubber cushion pads; nickel finish.

1. Hafele Shelf Support Catalog No. 282.04.739

2. Rockler Woodworking and Hardware Model # 33860.

B. Cabinet hinges: Fully concealed adjustable hinges.

1. Unless otherwise noted, all cabinet hinges shall be self-closing, full overlay and shall allow for 120 degree opening. Provide mounting plates and

accessories as required.

a. Hafele Doumatic 200 Series; screw mount Catalog No. 329.03.503 or pre-approved equal.

C. Pulls: Alno Contemporary Pulls Item No. A1236-6, Polished Chrome or pre-approved equal.

D. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

E. ADA Compliance: Hardware on cabinets and drawers required to be accessible shall comply with Section 309.4 of the Department of Justice 2010 ADA Standards for Accessible Design.

2.04 FABRICATION

A. Cabinet Grade: Unless otherwise indicated, provide Custom-grade cabinets complying with AWI Quality Standard Sections 100, 200, 400, 1500 and 1700.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

D. Shelves: Fabricate from thermally fused melamine to plywood core.

E. Complete fabrication, including assembly finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

F. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.

G. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

H. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

I. Measurements: Obtain field measurements and verify dimensions and shop drawing details as required for accurate fit. Provide ample borders to allow for subsequent scribing and trimming for accurate fit when construction schedule does not allow time for field measurements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the surfaces and conditions under which work of this section will be performed. Do not proceed until unsatisfactory conditions detrimental to timely and proper completion of the work have been corrected.

3.02 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

3.03 INSTALLATION

A. Comply with AWI Quality of Standards Section 1700 Installation of Woodwork.

1. Grade: Premium

B. Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level, including tops with no variations in flushness of adjoining surfaces.

C. Scribe and cut woodwork to fit adjoining work. Refinish cut surfaces or repair damaged finish at cuts.

D. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.

E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.

F. Fasten each individual cabinet to floor with fasteners spaced a maximum of 24-inches on center. Fasten to walls at framing or blocking. Attachment to gypsum wallboard alone is not permitted. Where required, assemble units into one integral unit with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16-inch.

G. Countertops, General:

1. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

2. Install countertops level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

3. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

4. Caulk space between backsplash and wall with sealant specified in Section 07920 – SEALANTS.

3.04 ADJUSTMENT, CLEANING AND PROTECTION

A. Repair damaged and defective woodwork where possible to eliminate defects functionally and visually, where not possible to repair replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

D. Provide final protection and maintain conditions, in a manner acceptable to fabricator and installer, which ensures architectural woodwork being without damage or deterioration at time of Project Acceptance.

END OF SECTION

SECTION 06615 – SOLID SURFACE COUNTERTOPS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Solid surface material countertops and backsplashes.

B. Related Sections:

1. Section 06100 - ROUGH CARPENTRY.
2. Section 06412 – ARCHITECTURAL CASEWORK

1.02 SUBMITTALS

A. Submit under the provisions of Section 01300 - SUBMITTALS.

B. Manufacturer's Data: Submit manufacturer's technical data for each type of countertop material, accessory and other manufactured product required.

C. Shop Drawings: Submit cutting and setting drawings indicating sizes, dimensions, sections and profiles of solid surface units, arrangement and provisions for jointing,.

D. Sealant supporting, anchoring and bonding solid surface material; and other details showing relationships with, attachment to, and reception of, related work such as sinks and plumbing fixtures.

E. Samples: Submit sets of samples for each type of solid surface countertop consisting of units not less than 12 inches by 12 inches. Include 2 or more units in each set of samples showing the full range of appearance characteristics to be expected in completed Work.

F. Maintenance Data: For solid surface countertops to include in maintenance manuals. Include Product Data for solid surface care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.

1.03 QUALITY ASSURANCE

A. Fabricator Qualifications: Engage a fabricator that employs skilled workers who custom-fabricate solid surface countertops and who has successfully completed work similar in material, design and extent to that indicated for this project. The fabricator shall be the installer of the countertops.

B. Cut all openings from templates for plumbing fixtures, trim, and accessories to be mounted.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver no components to project site until areas are ready for installation.

B. Store components indoors prior to installation.

C. Handle materials to prevent damage to finished surfaces.

1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.05 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements before countertop fabrication is complete.

1.06 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops.

1.07 WARRANTY

A. Provide manufacturer's warranty against defects in manufacturing and workmanship of solid surface assemblies for a period of fifteen (15) years from the Project Acceptance date.

PART 2 - PRODUCTS

2.01 SOLID SURFACE MATERIAL COUNTERTOPS

A. Countertops and Backsplashes: 1/2-inch- thick, solid surface material with beveled edges.

B. Fabrication: Fabricate tops in one piece unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

2.02 COUNTERTOP MATERIALS

A. Solid Surface Material: Homogeneous solid sheets; cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6.

1. Basis-of-Design Product: Products described in this Section are products of Staron. Subject to compliance with requirements, provide products by one of the following:

   a. Formica.

   b. Wilsonart International

   c. or Approved Equal.

2. Colors and Patterns: As scheduled.

3. Nominal Thickness: 1/2- inch minimum thickness as indicated.

4. Edge Detail: As Detailed.

5. Splashes: Provide 1/2-inch-thick backsplashes and end splashes, unless otherwise indicated.

a. Height: As indicated on the Drawings.

b. Top-Edge-Detail: As Detailed.

6. Joint Adhesive: Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.

7. Sealant: Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

B. Lab Work Top and Ledge Materials: Counter tops and ledges shall be as indicated on the drawings or as indicated by model number, and all clips, screws and parts for fastening top to table frame and/or cabinet shall be included.

1. Molded Epoxy Resin Tops: Molded from a modified epoxy resin that has been especially compounded and cured to provide the optimum physical and chemical resistance properties required of a heavy-duty laboratory tabletop. Tops and curbs shall be a uniform mixture throughout their full thickness and shall not depend upon a surface coating that is readily removed by chemical and/or physical abuse. Tops and curbs shall be non-glaring. Tabletops shall be 1" thick, with drip grooves provided on the underside at all exposed edge.

a. Color: Epoxy Products Color: Ivory

2.03 FABRICATION

A. Fabricate solid surface material countertops in sizes and shapes required to comply with requirements indicated, including details on Drawings and final shop drawings. Provide matching backsplash.

B. Joints: To the great extent possible, fabricate countertops to be one piece with no joints.

1. Where joints are unavoidable, form joints between components using manufacturer's standard joint adhesive without conspicuous joints. Reinforce with strip of solid polymer material, 2" wide.

C. Cutouts: Cut openings to accommodate other work and indicated features.

1. Cutouts shall have 3/8 inch minimum inside corner radius. Inside corners shall be reinforced in an acceptable manner to prevent cracking. Smooth edges.

D. Cut and drill sinkages and holes in solid surface material for anchors, supports, and attachments.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Require Installer to examine surfaces to receive solid surface countertops and conditions under which countertops will be installed and to report in writing any conditions which are not in compliance with requirements. Do not proceed with

installation until surfaces and conditions comply with requirements indicated or for execution of other work which affects the installation.

B. Verify that substrates supporting solid surface countertops are plumb, level, and flat to within 1/16 inch in ten feet and that necessary supports and blocking are in place**.**

3.02 INSTALLATION

A. Execute installation of solid surface countertops by skilled mechanics. Do necessary field cutting as counters are set. For exposed edges, produce edges which are cut straight and true.

B. Set counters to comply with requirements indicated on drawings and final shop drawings. Install supports, fasteners, and other attachments indicated or necessary to secure counters in place. Shim and adjust anchors, supports and accessories to set counters accurately in locations indicated with uniform perimeter joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerance.

C. Anchor securely to base cabinets or other supports.

D. Install applied backsplashes using manufacturer's standard color-matched silicone sealant. Adhere applied backsplashes to countertops using manufacturer's standard color-matched silicone sealant.

E. Install countertops and backsplashes plumb, level, square and flat to within 1/16-inch in ten feet.

F. Apply sealant to gaps specified for filling with sealant. Remove temporary shims before applying sealant.

3.03 ADJUSTMENTS AND CLEANING

A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive and sealant smears immediately.

B. Remove and replace countertop if broken, chipped, stained or otherwise damaged that cannot be repaired to the Architect's satisfaction.

C. Replace in manner which results in countertops matching approved samples, complying with other requirements and showing no evidence of replacement.

D. Clean countertops after adhesives and sealants have fully cured and set, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage countertops.

END OF SECTION

SECTION 07270 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.01 SUMMARY

A. Work includes through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.

B. Related Work Described Elsewhere:

1. Section 09250 – GYPSUM BOARD ASSEMBLIES.
2. Section 15400 – PLUMBING.
3. Section 16050 – BASIC MATERIALS AND METHODS.

1.02 REFERENCES

A. ASTM E 84 Test Method for Surface Burning Characteristics of Building Materials

B. UL-05 Underwriters Laboratory, Inc. Fire Resistance Directory.

C. UL 2079-98 Standard Tests for Fire Resistance of Building Joint Systems.

D. ASTM E 119-00a Fire Tests of Building Construction and Materials.

E. UL 1497-94 Fire Tests of Through-Penetration Firestops.

F. NFPA 70 National Electric Code.

1.03 PERFORMANCE REQUIREMENTS

A. Select and provide through-penetration firestop systems test by Underwriters Laboratories or another qualified testing and inspection agency to resist spread of fire according to requirements indicated, resist passage of smoke and other gases and maintain the fire resistance rating of the construction penetrated as determined by UL 1497-94.

1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
    a. Penetrations located outside wall cavities.
    b. Penetrations located outside fire-resistance-rated shaft enclosures.
    c. Penetrations located in construction containing fire protection rated openings.
    d. Penetrating items larger than 4-inches in diameter nominal pipe or 16 square inch in overall cross sectional area.

B. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.

2. For floor penetrations with annular spaces exceeding 4-inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.

3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

C. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

D. Select and provide fire resistive joint systems test by Underwriter's Laboratories or other qualified testing and inspecting agency to resist spread of fire, resist passage of smoke and other gases, and maintain the fire resistance rating of the construction penetrated and, where applicable, UL 1497-94 and UL testing standard 2079.

1.04 SUBMITTALS

A. Product Data: For each through-penetration firestop system indicated submit documentation, including illustrations, from Underwriter's Laboratories or other certified testing and inspecting agency. Submit data for the component products of the selected systems.

B. Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.

2. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

C. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:

1. Types of penetrating items.

2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.

3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.

D. Qualification Data: For firms and persons specified in “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, name and addresses of the architects and owners, and other information specified.

E. Product Certificates: For through-penetration firestop system products, signed by product manufacturer.

F. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A firm experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its through-penetration firestop system products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.

B. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:

1. Firestopping tests are performed by Underwriter’s Laboratories (UL).

2. Through-penetration firestop systems are identical to those tested per ASTM E 814. Provide rated systems complying with the following requirements:

a. Through-penetration firestop system products bear UL classification marking.

b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by the following:

i. UL in its "Fire Resistance Directory."

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 01040 - COORDINATION. Manufacturer’s technical representative must attend.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels

identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.07 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.08 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements. Coordination includes but not limited to:

1. Offsetting the penetrating item from parallel walls, ceilings or from other penetrating items so that the penetration details match the tested design on all sides.

2. Rerouting the penetrating item so the item penetrates the rated barrier at a 90 degree angle or at an angle sufficiently great to stay within the limits of he tested design.

B. Limiting the size of sleeves, openings, core-drilled holes, or cut openings so that the annular space remaining between the penetrating item and the surrounding construction does not exceed that of the tested design.

C. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application that are produced by one of the following manufacturers:

1. Hilti Construction Chemicals, Inc.

2. Isolatek International

3. Nelson Firestop Products.

4. Specified Technologies Inc.

5. 3M; Fire Protection Products Division.
6. Tremco; Sealant/Weatherproofing Division.

2.02 FIRESTOPPING, GENERAL

A. Asbestos Prohibition: No materials or equipment containing asbestos shall be used under this section. Assure that all materials and equipment used in the project are asbestos free.

B. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

C. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated.

2.03 MIXING

A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration

firestop systems. Remove loose particles remaining from cleaning operation.

3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.03 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.

2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.

3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.04 FIRE RESISTIVE JOINT SYSTEM INSTALLATION

A. Perimeter Fire Containment Systems:

1. Where indicated for gaps between tops of fire resistance rated partitions assemblies and fire resistance rated ceilings, floor slabs, and roofs, provide a perimeter fire containment system with the fire test response rating of the assembly indicated, as determined by UL 2079. Materials shall be identified with UL classification markings.

3.05 IDENTIFICATION

A. Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6-inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:

1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Through-penetration firestop system manufacturer's name.
6. Installer's name.

3.06 FIELD QUALITY CONTROL

A. Inspecting Agency: Manufacturer’s technical representative to inspect firestop systems and to prepare test reports. Inspecting Agency will state in each report whether inspected through-penetration firestop systems comply with or deviate from requirements

B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.

C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.07 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Project Acceptance. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

END OF SECTION

SECTION 07551 – FLUID APPLIED FLASHING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. As specified in Section 01001.

1.02 SUMMARY

A. This Section includes the following:

1. Atactic-polypropylene (APP) modified bituminous membrane roofing system, including base flashing, roofing membrane, membrane expansion joints and all accessories needed for complete installation.
2. Roof insulation and cover board.
3. Traffic Protection.
4. Fabric reinforced fluid-applied flashing.
5. Roof Penetration seal system

B. Related Sections include the following:

1. Section 06100 - ROUGH CARPENTRY for wood nailers, curbs, and blocking.

1.03 PERFORMANCE REQUIREMENTS

A. Except as otherwise indicated, Modified Bitumen Roofing system is required to establish and maintain a waterproof continuous seal on a permanent basis, with recognized limitations of wear and aging as indicated for each application. Failures of installed roofing materials to comply with this requirement will be recognized as failures of materials and workmanship.

B. As roofing manufacturer's system installation requirements and tested assemblies vary, this specification is to provide and intent of the type of membrane and overall roofing system. The noted performance requirements shall be met by the installed system. The installer shall provide the manufacturer of their choice with all applicable project documents for review before the installer shall develop and submit final costs. Whether specifically noted by the project documents or not, the installer shall include all manufacturer requirements and recommendations (and including all project document related requirements when more stringent) in the final submitted costs.

C. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

D. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

E. Wind Uplift Design: Provide roofing system that complies with the following:

1. Roofing System Design: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspection agency to resist uplift pressures as indicated below and with a safety factor of two applied.
2. 2006 IBC Chapter 16, Section 1609; require wind forces:
   a. Exposure Category: Exposure C
   b. Basic Wind Speed: 105 mph in 3-second gusts.
   c. Topographic Factor: 1.0
   d. Wind Directionality Factor: 0.70
   e. Importance Factor: 1.0
3. Wind uplift pressures as determined by the following:
   a. Chapter 6 of ASCE/SEI 7 “Minimum Design Loads for Buildings and Other Structures”.

F. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

1.04 SUBMITTALS

A. Submit copy of statement, in an approved form, signed by the Roofing Subcontractor and Manufacturer, certifying that the products comply with these specifications and were the proper selections for the applications made, and that the installation methods complied with the manufacturer's printed instructions and their field representatives' verbal instructions and were proper and adequate for the condition of installation and use. Submit copy of roofing manufacturers accepted “notice of award” or equal that confirms that the manufacturer is aware of the project and has reviewed the system to be installed and that it is acceptable to the manufacturer.

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

C. Installation Instructions: Complete instructions for handling, storage, priming, installation and protection of the Modified Bitumen Roofing System.

D. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work. Clearly show all adjacent materials for proper coordination. Drawings shall indicate the following:

1. Base flashings and membrane terminations.
2. Tapered insulation noting all slopes and elevations shall be incorporated into the overall shop drawings. R-values, materials and attachments shall be clearly noted.

3. Details of roof hatch units, vent pipes and all other project specific detail items shall be included.

4. Associated sheet metal and fluid-applid flashing systems shall be included in shop drawings and clearly detailed in coordination with adjacent exterior finish materials. Sheet metal items shall be clearly noted regarding gauge, profile, fastening and compliance with applicable anticipated project specific wind uplift forces.

5. Wind uplift analysis signed and stamped by a qualified structural engineer licensed in the State of Hawaii including drawings showing size and types of fasteners, insulation fastening patterns for corners, perimeter and field-of-roof locations.

E. Samples:

1. 12-inch square field membrane and base flashing.

F. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.

G. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of meeting performance requirements.

2. Statement that each product to be furnished is recommended for the application shown for this project.

H. Qualification Data: For Installer and manufacturer.

I. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.

J. Research/Evaluation Reports: For components of membrane roofing system.

K. Maintenance Data: For roofing system to include in maintenance manuals.

L. Warranties: Special warranties specified in this Section.

M. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

N. Warranty Certification: Submit a signed certificate from the Manufacturer or its Technical Representative stating that the plans and specifications for the project have been reviewed and fully comply with the Manufacturer’s standards and meet the requirements for the General and Special Warranties of the Complete Roofing System for the specified project.

1.05 QUALITY ASSURANCE

A. Coordinate as required and be totally responsible for the full and satisfactory compatibility and performance between all Modified Bitumen Roofing materials used under this section with all other applicable and related sections which may be in direct contact with work of this section.

B. A project specific QA / QC manual shall be submitted by the Installer before any work has begun. This manual shall be reviewed at the pre-installation meeting and copies shall be kept at roof level in the possession of the Installer's supervisory personnel. Approved shop drawings and all other pertinent submittal materials shall be kept at roof level in the possession of the Installer's supervisory personnel.

C. Take required steps and precautions to properly isolate and prevent of incompatibility between this system and adjacent work, in accordance with manufacturer's specifications, recommendations and instructions.

D. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product, with 3 years documented experience and that is eligible to receive manufacturer's warranty.

E. Manufacturer Qualifications: A qualified manufacturer that has a minimum 20 years' experience in manufacturing the modified bitumen membrane roofing system identical to that specified for this Project. Membrane manufacturers shall submit the following certification for review when making substitution requests or submittals.

F. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

G. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer or materials and components certified by the roofing manufacturer as compatible with other system components.

H. Preinstallation Conference: Prior to installation of roofing and associated work conduct conference at Project site. Comply with requirements in Section 01040 – COORDINATION. Review methods and procedures related to roofing system including, but not limited to, the following:

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance and certificates if applicable.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

I. Manufacturer's technical representative shall make periodic site visits and complete inspection reports that are submitted to the owner. At least one visit per roof area not including final inspections. Final inspections by the roofing membrane manufacturer shall be coordinated at least two weeks in advance with the Contractor and owner / owners consultants so that their attendance can be properly coordinated. Final inspection reports and signed / completed punch list reports by the roofing membrane manufacturer shall be submitted to the owner. Submittal of the roofing warranty alone shall not be acceptable.

J. The installation of pitch pockets is not acceptable. With proper coordination and planning they shall be avoided. Roof penetrations shall be properly coordinated and installed to meet the roofing manufacturer's requirements and NRCA guidelines. Conduit, vent pipe, supports, davits or similar penetrations shall be round or square tube. Whenever possible, a pre-manufactured flashing shall be installed over such items before "connections" are made. If "split" flashings are required then they shall be manufacturer's pre-manufactured type, installed, if possible, before field fabricated flashings are installed.

K. All modified bitumen roofing related sheet metal flashings specified in Section 07600 – FLASHING AND SHEET METAL shall be supplied by the roof system manufacturer as applicable and installed by the roofing contractor. Pre-manufactured coping and edge systems specified in Section 07600 – FLASHING AND SHEET METAL shall be included per the roofing manufacturer in the roofing systems warranty.

1.06 DELIVERY, STORAGE, AND HANDLING

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

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation. Outside storage of insulation in manufacturing packaging is not acceptable.

D. During installation, protect the roof deck and membranes with appropriate material such as plywood sheeting. Never scrape or puncture slip sheet or membranes. Keep roof surfaces free of soil, grit, or debris at all times with broom. Never set roof modules on top of soil, dirt or grit.

E. Transport conveyors to be run parallel to the line of installation.

F. Transport carts to have pneumatic tires, to be wheeled about only upon protective plywood sheeting, and to be loaded so as not to exceed weight capacity of roof deck.

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

1.07 PROJECT CONDITIONS

A. Do not apply roofing membrane during inclement weather.

B. Do not apply roofing membrane to damp deck surface.

C. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

D. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Installer shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over membrane or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.

E. Install only as much insulation and other roofing system materials, which are vulnerable to sun and water damage, as can be made waterproof during the same day.

1.08 WARRANTY

A. General Warranty: The Contractor shall submit a written guaranty on the roofing membrane system and sheet membrane flashing for a 2 year period after the date of Project Acceptance. The guaranty shall provide the following at no cost to the Owner:

1. Repair of roofing and flashings as necessary to seal leaks, which are attributable to faulty materials and/or workmanship.

2. Repair or replacement of damage to the building and/or its finishes, equipment and/or furniture when occasioned by such leaks.

3. Inspection of the roofing and flashings together with the Owner or their designated representative, on or about the 1st and 2nd anniversaries of the date of Project Acceptance and repair or replacement of roofing and/or flashing as necessary to correct any deficiencies in workmanship or materials, such as by eliminating blisters exceeding 12 inches in any dimension or re-adhering open seams.

    a. Such repair or replacement of roofing and/or flashings shall be done in a manner which will preserve the integrity of the roofing membrane.

B. Special Warranty: Submit a written warranty, without monetary limitation, signed by roofing system manufacturer agreeing to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.

1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories roof insulation fasteners, walkway products, all modified bitumen roofing related sheet metal flashings specified in Section 07600 – FLASHING AND SHEET METAL and other components of membrane roofing system.
2. Warranty Period: 20 years from date of Project Acceptance.
3. Wind Speed: Project Wind Speed as indicated in Article 1.03 of this Section. Note: All manufacturer material and installation requirements to obtain wind speed warranty shall be included by the installer.

C. The surety will not be held liable beyond 2 years from the date of Project Acceptance.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

B. Mastic Sealant: Polyisobutylene, plain or modified bitumen, nonhardening, nonmigrating, nonskinning, and nondrying.

C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM 4470; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.

D. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

E. Fabric Reinforced Fluid-Applied Flashing: Liquid flashing system consisting of a foundation coat, reinforcing fabric and UV resistance finish coat for a total system thickness of 40 dry mils. Equivalent to Premium Coat system as manufactured by Hydro-Stop, LLC

1. Foundation Coat: Acrylic polymer resin coating
2. Reinforcing Fabric: Non-woven 100 percent polyester, stitch bonded, heat set fabric.
    a. Weight : 3oz. square yard
    b. Tensile Strength: ASTM D 5034; Warp 74 lbs., Fill 45 lbs.
    c. Elongation at Break: ASTM D 5034; Warp 21.3%, Fill 51.3%.
3. Finish Coat: Ultraviolet resistant, colored, acrylic polymer resin.
4. Cured Membrane Properties:
    a. Elongation: ASTM D 638; >300% elastomeric
    b. Tensile Strength (Cured): ASTM D 412; >2000 psi
    c. Density: 12.1 lbs/gal

2.02 ACCESSORIES

A. Sealants: As recommended by the membrane manufacturer.

B. Wood Roof Nailer: As specified in Section 06100 – ROUGH CAPRENTRY

C. Traffic Protection: Equivalent to Firestone APP 180W; ASTM D 6222, Grade G, Type I, non-woven polyester-mat reinforced, APP-modified asphalt sheet; granular surfaced; suitable for application method specified, and as follows

1. Granule Material: Mineral
2. Granule Color: Gray

D. Roof Penetration Seal System: Provide penetration seal system consisting of precast curb components, pourable sealant, and structural adhesive/sealant, equivalent to ChemCurb System as manufactured by Chem Link Products, LLC.

1. Precast Curb Components: Cast, UV resistant polyester resin, minimum 2-inches high in size and shape as indicated on the Drawings.
2. Structural Adhesive/Sealant: Moisture curing, UV resistant, polyether adhesive/sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT, T, M, G, A and O; M-1 Sealant.
3. Pourable Sealant: Single component, self-leveling, 100% Solids, UV resistant, pourable sealant; 1-Part.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
2. Verify that wood blocking, curbs, cant strips and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of

the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.03 ROOF PENETRATION SEALER INSTALLATION

A. Install roof penetration sealer systems in strict accordance with the system manufacturer's written instructions.

B. Remove previously applied sealant, mastic, asphalt, cement and other contaminants from penetrations with a wire brush. Sweep away all loose dirt, gravel and granules from the penetration area.

C. Seal the base of each penetration and coat the penetration to 3-inches above the roof line with structural adhesive/sealant.

D. Affix preformed curb sections to roof around penetration and to each other with structural adhesive/sealant. Press section of curbs firmly onto the roof and together at joints until the adhesive extrudes from the edges. When curb is set into place apply a continuous bead around the outside perimeter of the curb and tool to form a fillet.

1. Maintain a 1-inch minimum distance between penetrations and the inside of the curb.

E. After curb is placed and sealed fill the interior of the curb with pourable sealant flush to the top of the curb.

3.04 FLUID-APPLIED FLASHING MEMBRANE INSTALLATION

A. Install fluid-applied flashing membrane system at roof membrane termination along roof perimeter and at all penetrations and where indicated on the Drawings in accordance to fluid-applied flashing membrane manufacturer's written instructions.

B. Roof Perimeter Terminations:

1. Apply foundation coat on to the field membrane beginning 6-inches beyond the edge of the base flashing membrane, running over the cant strip, up the side and over the top of the parapet wall. Reinforce roof-to-wall transition with reinforcing fabric wide enough to begin 6-inches beyond cant on to roof cap and extend over the cant, up the wall ending 2-inches above termination bar. Overlap adjacent runs by 4-inches. Embed fabric into wet foundation coating and immediately saturate fabric with second coat of foundation coat. Apply at the manufacturers recommended rate to achieve a total dry mil thickness of 30 mils for the 2 foundation coats and reinforcing fabric. Continue foundation coat up and over the top parapet wall as detailed.

2. After foundation coat is cured apply finish coat, beginning on the field membrane 6-inches beyond the edge of the reinforced foundation coat and running it over the cant and up and over the parapet wall. Apply material at the rate and in the number of applications recommended by the manufacturer. Allow each application to dry for eight (8) hours prior to the next application.

C. Roof Penetrations:

1. Apply foundation coat beginning at 6-inches beyond the penetration curb and continue up over the penetration sealer system and onto the penetration terminating at 6-inches above the sealer system.
2. Embed reinforcing fabric wrap around penetration and onto horizontal surface. Then embed a second sheet of reinforcing fabric centered around the base of the penetration sized to cover the penetration sealer system over the curb and extend out from the penetration curb 6–inches all around onto the field membrane. Immediately saturate fabric with second coat of foundation coat.
    a. For vent pipes, run foundation coat up over the edge of vent pipe and down 1-inch on the inside.
3. After foundation coat is cured apply finish coat, beginning on the field membrane 6-inches beyond the edge of the reinforced foundation coat and running it over the penetration sealer system and up the penetration terminating at 6-inches above the sealer system.
    a. For vent pipes, run finish coat up over the edge of vent pipe and down 1-inch on the inside.
    b. Apply material at the rate and in the number of applications recommended by the manufacturer. Allow each application to dry for eight (8) hours prior to the next application.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.

B. The Contractor shall perform the work to patch a maximum of 5 “membrane” samples that may be taken by the testing / observation firm at any given roof area.

C. Final Roof Inspection: Arrange for roofing system manufacturer’s technical personnel to inspect the roofing system upon completion of all areas and submit a report to the Architect. The Architect or Owner shall be notified of this inspection two weeks in advance.

D. Provide periodic site observation by roofing and insulation materials manufacturer’s representatives at the commencement, midpoint and at completion of each stage of the roofing system work or at more frequent intervals if so required by the manufacturer’s extended warranty require by this section

E. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.

F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

G. Water Testing: All roof areas shall be water tested. As possible based on site / substrate conditions, Electric Field Vector Mapping is the recommended test method. If EFVM is not applicable per site / substrate conditions then water testing may consist of “sprinklers” or “soaker hoses” and does not imply flood testing. Water shall be allowed to run across all roof areas to drainage units for

at least 24 hours at all areas. The Architect shall be notified 72 hours in advance of such testing. The Installer shall be responsible for interior observations of on-going testing to identify any water intrusion and to stop testing to minimize any interior damage.

1. At time of water testing, if lack of positive drainage is noted, the Architect and Owner reserve the right to not accept the roofing membrane installation until such time that drainage issues are resolved.

3.06 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Project Acceptance and according to warranty requirements.

3.07 DAILY SEALS

A. At end of day's work or when precipitation is imminent, a water cut-off shall be built at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. New roofing shall be divorced from existing roofing at the deck. Cut-offs must be completely removed prior to the resumption of roofing.

END OF SECTION

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Provide all labor, materials and equipment necessary to install flashing, counterflashing, gutters, scuppers, collector boxes and downspouts, steep-slope and low-slope flashing, and other related work as shown on drawings and as specified herein.

B. All edge flashing and coping (where TPO membrane roofing is installed under coping or terminated with edge flashing) shall be provided by the TPO membrane roofing manufacturer, installed by the roofing contractor performing the work specified in Section 07541 – TPO MEMBRANE ROOFING and included in the TPO membrane roofing system warranty.

1.02 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Wind Uplift Design: Provide metal flashing and counter-flashing that complies with the following:

1. 2006 IBC Chapter 16 and ASCE 7 Chapter 6 for require wind forces:
    a. Exposure Category: Exposure B
    b. Basic Wind Speed: 105 mph in 3 second gusts
    c. Importance Factor: 1.15
2. Metal edge flashings and copings of low-slope roofs shall comply with the requirements set forth by ANSI/SPRI ES-1.

C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.03 SUBMITTALS

A. General: Submit under provisions of Section 01330 – SUBMTTAL PROCEDURES.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes

C. Shop Drawings: Submit shop drawings to the Contracting Officer for approval, showing layouts of sheet metal flashing and trim, including plans, elevations and

details. Distinguish between shop and field assembly works. No fabrication will be permitted before approval is secured. Include the following:

1. Identify material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.
4. Details of expansion-joint covers, including showing direction of expansion and contraction.

1.04 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" and the NRCA's Roofing and Waterproofing Manual in coordination with requirements of roofing and waterproofing systems (the more stringent shall apply). Conform to dimensions and profiles shown unless more stringent requirements are indicated.

B. ANSI/SPRI ES-1 Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems. All configurations, gauges, attachments and other items shall meet or exceed testing and design criteria related to ES-1.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section.

1. Meet with Contracting Officer, Architect, Engineer, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials and roof-mounted equipment.
2. Review methods and procedures related to sheet metal flashing and trim.
3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.06 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

B. Fabricate flashings from materials noted below as most appropriate in regards to the system that the flashing is being integrated with and / or adjacent to and in coordination with the drawings and finish schedules. Concealed flashings may be mill finish.

1.07 WARRANTY

A. The Contractor shall execute to the Owner a 5-year written warranty that the installation will be watertight and that any leaks which develop during that period which are not due to improper use or willful damage will be repaired at no cost to the Owner.

   1. Flashing for roofing to be performed by roofing contractor and be included in roofing warranty.

   2. Edge flashing and coping system shall be warranted to perform over the term of the specified roofing system warranty in Section 07541 – TPO MEMBRANE ROOFING and shall be warranted to not blow off or cause membrane failure, even in wind conditions up to 105 mph or the manufacturer shall replace or repair their materials.

B. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

   1. Exposed Sheet Metal Finish: Deterioration includes, but is not limited to, the following:

      a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.

      b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.

      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

   2. Finish Warranty Period: 20 years from the Project Acceptance date.

C. The Surety and the Contractor shall not be held liable beyond two years from the Project Acceptance date.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

C. Fasteners: Same material as flashing/sheet metal, or other noncorrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

1. For attachment to wood substrates and blocking, provide 18-8/Type 304 stainless steel nails not less than 1-1/4-inch long, barbed with large head.

2. For attachment to concrete or masonry provide 1/4-inch by 2-inches long, 18-8/Type 304 stainless steel drive pins with neoprene bonded stainless steel washers

D. Lead Sheet for Vent Pipe Flashing: ASTM B 749, Grade B, copper bearing sheet lead, minimum 2-1/2 pounds per square foot, unless indicated otherwise.

E. Isolation Membrane: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, non-perforated. To be used to isolate flashing metal from dissimilar metals or corrosive substrates.

F. Sealants and Sealant Tape:

1. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

2. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

3. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.

G. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.02 FABRICATION

A. General: Fabricate sheet metal copings and low-slope roof edge systems to comply with ANSI/SPRI ES-1 and all other flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.

1. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

D. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counter-flashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and interlocking counter-flashing on exterior face, of same metal as reglet.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Fry Reglet Corporation.
    b. Heckmann Building Products Inc.
    c. Hickman, W. P. Company
2. Material: 0.024-inch aluminum sheet.
3. Siding Type: Provide with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
4. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
5. Finished to match flashings.

E. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

F. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints.

G. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

H. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

1. Thickness: As required by ANSI/SPRI ES-1 for copings and low-slope roof edge systems and for all other flashing and trims as recommended by SMACNA's "Architectural Sheet Metal Manual" for application but not less than thickness of metal being secured.

2.03 GUTTERS AND DOWNSPOUTS AT LOW SLOPE ROOFS

A. Gutters: Formed to cross section indicated, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." but not less than twice the gutter thickness. Space gutter supports a maximum of 36 inches o.c. Fabricate expansion joints, expansion-joint covers and gutter accessories from same metal as gutters.

1. Gutter Profile: As indicated
2. Sheet Metal Thickness: 0.040-inch
3. Fabricate and locate lap type expansion joints in compliance with SMACNA recommendations for the material specified. Expansion joint to be type as shown in Figure 1-6 in the SMACNA “Architectural Sheet Metal Manual”.
4. Provide stainless steel wire ball strainers of compatible metal at outlets

B. Downspouts: Fabricate round downspouts from 0.032-inch thick aluminum sheet complete with mitered elbows. Furnish with metal hangers, from 0.063-inch thick aluminum sheet, and anchors.

1. Hanger Style: As detailed or if not detailed per SMACNA figure designation 1-35D.

2.04 SCUPPERS AND COLLECTOR BOXES

A. Parapet Scuppers: Fabricate scuppers of dimensions required with closure flange trim to exterior, 4-inch wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof and as indicated on the Drawings. Fabricate from the following materials:

   1. Aluminum: 0.040-inch thick sheet.

B. Collector Boxes: Fabricate collector boxes with flanged back and stiffened top edge and of dimensions and shape indicated complete with outlet tubes, exterior flange trim.

   1. Fabricate from 0.040-inch thick Aluminum sheet

2.05 PRE-MANUFACTURED EDGE FLASHING AND COPING SYSTEMS

A. Roof-Edge Flashing: Metal roof edge fascia with continuous coated steel waterdam. The system shall be watertight, maintenance free, not requiring exposed fasteners. Joints shall be a butt type with concealed splice plates.

   1. Fabricate fascia cover from 0.040-inch aluminum in standard 12-foot long sections. Vertical face length as detailed.

   2. Concealed Splice Plates: Fabricate concealed splice plates in 12-inch widths of same thickness as fascia.

   3. Waterdam: Shall be continuous 24-gauge, pre-punched, Kynar coated steel waterdam in standard lengths of 12-feet. Mechanically fastened as indicated and detailed.

   4. Fasteners: 1-1/4-inch Type 316 stainless steel ring shank roofing nails.

   5. Manufacturers:

      a. Firestone Building Products; UNA-Edge DE

      b. Carlisle-Syntec; SecurEdge 3000

      c. GAF; EverGuard Drip Edge

      d. Or approved equal

B. Copings: Metal coping cap with coated steel anchor/support cleats. The system shall be watertight, maintenance free, not requiring exposed fasteners. Joints shall be a butt type with concealed splice plates.

   1. Fabricate copings cover from 0.040-inch aluminum in minimum lengths of 96-inch and not exceeding 12-foot long sections. Vertical face and back leg lengths as detailed.

   2. Concealed Splice Plates: Fabricate concealed splice plates in 8-inch widths of same thickness as copings.

   3. Anchor/Cleats: 22-gauge, pre-punched Kynar coated steel cleat with stainless steel spring mechanically locked to cleat 12-inches wide at 3-feet on center. Mechanically fastened as indicated and detailed.

   4. Fasteners (Wood Substrate): #9 x 1½" stainless steel fasteners with provided drivers. No exposed fasteners shall be permitted. Fasteners shall be electrolytically compatible.

   5. Fasteners (Concrete Substrate): 1/4-inch diameter by 1-1/4-inch long Tapcon fasteners.

6. Manufacturers:
    a. Firestone Building Products; UNA-Edge CO Coping System
    b. Carlisle-Syntec; SecurEdge 200 Coping
    c. GAF; EverGuard M-Weld Formed Coping
    d. Or approved equal

2.06 LOW SLOPE ROOF FLASHING

A. Base and Counter Flashings: to be fabricated from Aluminum sheet of the following thicknesses:
    1. Base Flashing – 0.040-inch.
    2. Counter Flashing – 0.032-inch.
B. Roof Penetration Flashing: Fabricate from 0.040-inch. aluminum sheet.

2.07 STEEP SLOPE ROOF FLASHING

A. Eave, Hip, Ridge, Rake, Valley, Pan, Drip Edge, Apron, Step, Cricket, and Backer Flashing: Fabricate from same material as metal roofing panels specified in Section 07410 – STANDING SEAM METAL ROOF PANELS.

2.08 WALL FLASHING

A. Openings Flashing in Frame Construction: Fabricate head, sill and similar flashings to extend a minimum of 4 inches beyond wall openings. Form head and sill flashing with 2-inch high end dams.
    1. At Windows and Doors:
        a. Aluminum Windows and Doors: Fabricate from 0.062-inch aluminum sheet.
        b. Steel Doors: Fabricate from 0.034-inch aluminum-zinc coated steel sheet.
    2. Color to match color of window or door trim.

2.09 FINISHES

A. Finishes: Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    1. Humidity Resistance: 2000 hours.
    2. Salt-Spray Resistance: 2000 hours.
    3. Color:
        a. Downspouts, scuppers, collection boxes, coping drip edges and roof flashing
            1) As selected by Contracting Officer.
        b. Wall opening flashings at windows and doors
            1) Custom color to match door and window frame color.

c. Wall Joint flashing

1) Custom color to match wall color.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Surface to which sheet metal is to be applied shall be even, smooth, sound, thoroughly clean and dry, and free from defects that might affect the application. Report any unsatisfactory surfaces to the Contracting Officer. In the absence of such a report, the Contractor shall be held responsible for the finished product.

B. All accessories or other items essential for the completeness of the sheet metal installation, though not specifically indicated on the drawings or specified, shall be provided. All such items unless otherwise indicated on the drawings or specified, shall be of the same kind of materials as the item to be applied. Nails, screws, rivets, and bolts shall be of the type best suited for the purpose intended and shall be of a composition that is compatible with the metal to which it will contact.

C. Except as otherwise indicated on the drawings or specified, the workmanship of sheet metal work, method of forming joints, anchoring, cleating, provisions for expansion, etc., shall conform to the standards details and recommendations of the Sheet Metal and Air Conditioning Contractors National Association's "Architectural Sheet Metal Manual" and shall be subject to the approval of the Contracting Officer.

1. Torch cutting of sheet metal flashing and trim is not permitted.

D. All sheet metal work shall be watertight and wind-tight in compliance with the purpose intended for the items indicated on the drawings or specified herein.

E. Install sheet metal flashing and trim true to line and levels indicated without excessive oil canning, buckling and tool marks. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.

F. Cleating: Cleats for sheet metal work shall be provided continuous, unless otherwise indicated on the drawings. Cleats shall be of the same material and weight as the metal being installed.

G. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with elastomeric sealant concealed within joints.

H. Fasteners: Use fasteners of types and sizes indicated that will penetrate substrate not less than 1-1/4 inches.

I. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures.

1. Prepare joints and apply sealants to comply with requirements in Section 07910 – EXTERIOR WALL JOINT SEALANTS.

J. Reglets: Type and size as indicated.

K. Protection from Contact of Dissimilar Materials: Surfaces in contact with dissimilar metal shall be painted with heavy-bodied bituminous paint or shall be separated by means of moisture-proof building felts.

3.02 DOWNSPOUT INSTALLATION

A. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners and hangers designed to hold downspouts securely 1-inch away from walls; locate hangers at top and bottom.

B. Downspout indicated to empty on to splash blocks, provide elbows at base of downspout to direct water away from the wall.

3.03 SCUPPER AND COLLECTOR BOX INSTALLATION

A. Parapet Scuppers: Install scuppers where indicated through parapet. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

1. Loosely lock front edge of scupper with conductor head.

2. Seal exterior wall scupper flanges into back of conductor head with sealant.

B. Conductor Heads: Anchor securely to wall with elevation of conductor head rim 1-inch below the scupper.

3.04 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

B. Copings and Edge Flashing at Low Slope Applications: Anchor to resist uplift and outward forces and comply with the requirements set forth by ANSI/SPRI ES-1

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Secure in a waterproof manner by means of anchor and washer at 36-inch centers unless otherwise indicated.

D. Steep Slope Roof Flashing: Install in accordance with Section 07410 – STANDING SEAM METAL ROOF PANELS.

3.05 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate

installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, and similar flashings to extend 4 inches beyond wall openings.

1. Form end dams in sill flashing at each where flashing meets jamb. Turn metal up jamb a minimum of 2-inches.

3.06 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

E. Protect all sheet metal work until final acceptance of the building.

F. At completion of the work, clean up and remove all rubbish and debris from the premises which resulted from this work.

END OF SECTION

SECTION 07920 - SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: All sealants. Completely close with sealant all joints indicated or specified to be sealed to a watertight condition.

1.02 SUBMITTALS

A. Submit under the provisions of Section 01300 – SUBMITTALS.

B. Manufacturer's Data: Submit copies of manufacturer's product data and specifications for type of sealant required, to the Architect for approval.

C. Material Safety Data Sheets (MSDS): Submit MSDS for each sealant product.

D. Color Samples: Submit sets of color finish samples of sealants.

1.03 JOB CONDITIONS

A. Examine joint surfaces and backing, and their anchorage to the structure, and conditions under which joint sealer work is to be performed, and notify Contractor in writing of conditions detrimental to proper completion of the work and performance of sealers. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions. Proceed with the work only when weather conditions are favorable for proper cure and development of high early bond strength.

1.04 PRODUCT HANDLING

A. Delivery: Deliver sealants to the jobsite in sealed containers labeled to show the designated name, formula, or specification number, lot number, color, date of manufacture, shelf life, curing time, manufacturer's directions, and name of manufacturer.

B. Storage: Carefully handle and store all materials to prevent inclusion of foreign materials. Remove from project site all damaged and deteriorated materials and materials exceeding shelf life.

C. All sealant materials shall be installed prior to expiration of shelf life.

1.05 WARRANTY

A. Provide a 2-year written warranty against leaks, air infiltration, cracks, and other failures of the installation and materials.

1. Repair of sealants to seal leaks caused by faulty materials or workmanship;

2. Repair or replace damage to the building or its finishes, equipment or furniture when occasioned by such leaks.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene-jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer to control the joint depth for sealant placement, to break bond of sealant at bottom of joint, to form optimum shape of sealant bead on back side, and to provide a highly compressible backer which will minimize the possibility of sealant extrusion when joint is compressed. Do not use oakum or other types of absorptive materials as backstops.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer.

D. Masking Tape: Non-staining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

E. Primer for Sealants: Non-staining, as recommended by the sealant manufacturer.

F. Sealants: All site-applied, interior wood adhesives and sealants shall comply with low-VOC limits

1. At Exterior Vertical And Overhead Moving Joints, including perimeter seals around louvers: Medium Modulus Silicone Sealant, one-part, non acidic, neutral curing, Type S, Grade NS, Class 25, Use NT, capable of withstanding movements from plus 50% to minus 50% based on original joint design. All sealants that are used must be SWRI certified and comply with ASTM C920. Provide one of the following:

    a. GE Silpruf SC 2000

    b. Dow Corning 795

    c. Sika SikaSil 995

2. At Interior Vertical and Overhead Moving Joints except at tile joints: One-part polyurethane-based sealant, conforming to ASTM C 920, Type S, Grade NS, Class 25, Use NT. Provide products from one of the following, or approved equal:

    a. Tremco, Inc.

    b. Bostik Construction Products Div.

    c. Sika Corp.

    d. Pecora Corp.

    e. Sonneborn.

3. At Interior Vertical and Overhead Non-Moving Joints: Non-Elastomeric Sealant; acrylic-emulsion type, conforming to ASTM C 834. Provide one of the following, or approved equal:

    a. AC-20 Acrylic Latex: Pecora Corp.

    b. Tremco Acrylic Latex 834; Tremco, Inc.

    c. Chem-Calk 600; Bostik Construction Products Div.

    d. Sonolac; Sonneborn.

4. At Horizontal Traffic-Bearing Joints: Two-part polyurethane based sealant, conforming to ASTM C 920, Type M, Grade P, Class 25, Use T. Provide one of the following, or an approved equal:

    a. Sikaflex 2c SL; Sika Corp.

    b. THC-900; Tremco, Inc.

    c. Urexpan NR-300; Type HM; Pecora Corp.

    d. SL-2; Sonneborn.

5. Silicone Sealant: At Perimeter of All Plumbing Fixtures and Fittings and wall and floor tile movement joints: One-part mildew-resistant silicone sealant conforming to ASTM C 920, Type S, Grade NS, Class 25, Use NT, formulated with fungicide; intended for sealing interior joints with non-porous substrates. For use in kitchens and food preparation areas provide sealant complying with FDA requirements. Provide one of the following, or approved equal:

    a. Dow Corning 786; Dow Corning Corp.

    b. SCS 1702 Sanitary; General Electric Co.

    c. Tremsil 600 White; Tremco, Inc.

    d. Omni Plus; Sonneborn.

    e. 898 or 893, No. 345; Pecora Corp.

6. Bedding Compound: For installation of thresholds and similar items indicated to be bedded in sealant, use a preformed butyl-polyisobutylene sealant tape. Size of tape as required for the specific application. Provide one of the following, or approved equal:

    a. Extru-Seal; Pecora Corp.

    b. 440 Tape; Tremco, Inc.

    c. Chem-Tape 40; Bostik Construction Products Div.

7. Acoustical Sealant: Provide one of the following, or approved equal:

    a. Fire-rated and Non-rated Exposed Joints and Fire-rated Concealed Joints: Non-sag, paintable, non-staining, latex sealant complying with ASTM C 834, ASTM A 119 or ANSI/UL 263 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90 as well and resists the spread of fire and passage of smoke and other gases, and maintain original fire-

resistance rating of assemblies in or between which the sealant is installed.

1) AC-20 FTR; Pecora Corp.

2) Sheetrock Acoustical Sealant; USG

b. Non-Rated Concealed Joints: Non-drying, non-hardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

1) BA-98; Pecora Corp.

2) Tremco Acoustical Sealant; Tremco.

3) Pro-Series SC-170; Ohio Sealants.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.

3.02 EXAMINATION

A. Examine joints indicated to receive joint sealers, with Installer present, for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

3.03 JOINT PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:

1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil; grease; waterproofing; water repellants; water; and surface dirt.

2. Clean unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

3. Remove laitance and form release agents from concrete.

4. Steel Surfaces in Contact with Sealant: Scrape and wirebrush to remove loose mill scale. Remove dirt, oil, or grease by solvent cleaning, and wipe surfaces with clean cloths.

5. Clean metal, glass, glazed surfaces of ceramic tile, and other nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.04 INSTALLATION OF JOINT SEALERS

A. General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply. Do not apply sealant on wet surfaces or when the surface temperature exceeds 130 degrees F.

B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.

   a. Do not leave gaps between ends of joint fillers.

   b. Do not stretch, twist, puncture, or tear joint fillers.

   c. Remove absorbent joint fillers which have become wet prior to sealant application and replace with dry material.

2. Install bond breaker tape between sealants and joint fillers, compression seats, or back of joints where adhesion of sealant to surfaces at back of joints would result in sealant failure.

3. Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.

E. Primer: Immediately prior to application of the sealant, clean out all loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in wood and other porous surfaces in accordance with compound manufacturer's instructions. Do not apply primer to exposed finish surfaces.

F. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 8A in ASTM C 1193, unless otherwise indicated.

2. Provide flush joint configuration per Figure 8B in ASTM C 1193, where indicated.

H. Showers: Apply sealant to all penetrations through the finish materials, at flanges, eschusions and cover plates.

3.05 CLEAN UP

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

3.06 PROTECTION

A. Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

END OF SECTION

DIVISION 08- OPENINGS

SECTION 08110 - STEEL FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Provide standard steel frames and doors and fixed windows as indicated and scheduled on drawings.

B. Related Work Described Elsewhere:

1. Finish hardware is specified in Section 08710 - FINISH HARDWARE.
2. Field applied painting is specified in Section 09900 - PAINTING.

1.02 QUALITY ASSURANCE

A. Provide doors and frames complying with ANSI/SDI 100 “Recommended Specifications for Standard Steel Doors and Frames” and as herein specified.

B. Fire-Rated Assemblies: Where fire-rated assemblies are indicated or required, provide fire-rated door assemblies that comply with NFPA 80 “Standard for Fire Doors and Fire Windows”, and have been tested, listed, and labeled in accordance with UL 10B ‘Fire Tests of Door Assemblies” and NFPA 252 “Fire Tests of Door Assemblies” by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.

C. Hardware Mounting Heights: The Contractor shall be responsible to coordinate all mounting heights of various finish hardware with all project requirements.

1.03 SUBMITTALS

A. Submit under the provisions of Section 01330 – SUBMITTAL PROCEDURES.

B. Manufacturer’s Data: Submit manufacturer’s technical product data substantiating that products comply with requirements.

C. Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections, gauges, and finishes. Show anchorage and accessory items.

D. Certification: For acoustical door and fixed window assemblies provide certification that the window construction utilized has been tested at an independent laboratory in accordance with ASTM E90, and that the STC rating determined in accordance with ASTM E413, is not less than that specified in this Section. The laboratory referenced in the certification must be qualified under the National Voluntary Accreditation Program (NVLAP) of the U.S. Bureau of Standards. Certification must reference laboratory name, test report number, and date of test; substitution of test data not in accordance with ASTM E90 and E413 will not be acceptable.

E. Schedule: Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.

F. Label Construction Certification: For assemblies required to be fire-rated and exceeding sizes of tested assemblies, submit manufacturer's certification for that each frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Strap knock-down frames in bundles. Provide temporary steel spreaders securely fastened to the bottom of each welded frame.

B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to the Architect; otherwise, remove and replace damaged items as directed.

C. Store doors and frames at building site under cover in a dry, secure place. Place units on minimum 4-inch high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chambers.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. Galvanized Steel Sheets: Zinc coated commercial quality carbon steel. Comply with ASTM A 653 coating designation and G60 at interior doors and frames.

C. Sheet Steel:

1. Cold-rolled, commercial quality carbon steel, Type B; suitable for exposed applications, complying with ASTM A 1008.

2. Hot-rolled, commercial quality carbon steel, Type B; free of scale, pitting, or surface defects, pickled and oiled, complying with ASTM A 1011.

D. Supports and Anchors: Fabricate of not less than 18 gauge galvanized sheet steel.

E. Frame Anchors:

1. Wall Anchors for Attachment to Drywall Partitions:

a. Use manufacturer's adjustable type compression anchors with knocked down die mitered frames at drywall locations.

b. Use stud anchors sized to accommodate frame jamb depth and face dimension on all welded frames.

2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.

3. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick

4. Postinstalled Expansion Type for In-Place Concrete: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

5. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

   a. Stud Wall Type: Provide three anchors per jamb up to 60-inches in height and four anchors for jambs 60 to 90 inches in height.

   b. Compression Type: Not less than two anchor for each jamb.

   c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

6. Floor Anchors: Angle clip type:

   a. 16 gauge minimum.

   b. To receive 2 fasteners per anchor.

   c. Welded to the bottom of each jamb.

F. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanize, complying with ASTM A 153/A 153M "Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware", Class C or D as applicable.

G. Factory Applied Primer Paint: Rust-inhibitive enamel paint, either air-drying or baking, suitable as a base for specified finish paints conforming to ANSI A250.10 "Test Procedures and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames". Primers shall be free from asbestos, lead, mercury, chromate, and cadmium.

2.02 MANUFACTURERS

A. Manufactuers: Subject to compliance with requirements of this section, provide products from one of the following:

1. Amweld Building Products, Inc.

2. Curries Co.

3. Steelcraft

4. Timely

2.03 FABRICATION, GENERAL

A. Fabricate steel doors and frame units to be rigid, neat in appearance and free from defects, warp or buckle.

B. Fabricate frames, concealed stiffeners, reinforcement, edge channels, and moldings from either cold-rolled or hot-rolled steel (at fabricator's option).

C. Fabricate all doors and frames from galvanized sheet steel.

D. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames.

E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

F. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for frame preparation for hardware.

1. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site. Provide minimum gauge hardware reinforcing for mortise or surface applied hardware as follows:

a. Hinges: 7 gauge on frames.

b. Surface Closers: 12 gauge.

2. Locate finish hardware as indicated on final shop drawings or, if not indicated, in accordance with DHI-05 “Recommended Locations for Builder’s Hardware for Standard Steel Doors and Frames” and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 4.13.9.

G. Factory Painting:

1. Clean, phosphatize, and prime paint exposed surfaces of steel doors and frame units, including galvanized surfaces.

2. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.

3. Apply factory coat of prime paint to an even consistency to provide a uniformly finished surface ready to receive finish paint.

2.04 STANDARD STEEL FRAMES

A. Provide metal frames for doors of type and style as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16 gauge cold-rolled furniture steel.

1. Fabricate frames with mitered corners in the following type construction:

a. Interior Door and Window Frames: Knock-down (mechanical interlock joint) construction with hairline seam.

b. Exterior Door Frames: Welded construction.

2. Form all frames of hot dip galvanized steel.

3. Frames shall comply with ANSI A250.4 “Performance Test Procedures for Steel Door Frames and Frame Anchors”, Level A, one million cycle swing test performance for a 4070 door frame.

B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.

C. Plaster Guards: Provide 26 gauge steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

D. Template Hardware: Factory cut doors and frames for all template hardware including hinges, bolts, etc.

2.05 WINDOW ACCESSORIES

A. Stops and Moldings: Provide stops and moldings around glazed lites. Form corners of stops and moldings with mitered hairline joints.

1. Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.

2. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

B. Glass and Glazing: Wire Glass and glazing complying with Section 08800 – GLAZING.

2.06 FIRE-RATED ASSEMBLIES

A. Assemblies shall bear the listing identification label of the Underwriters Laboratories, Inc. (UL), Factory Mutual Engineering Corp. (FM), Warnock Hersey International (WHI), or a nationally recognized testing laboratory qualified to perform tests of fire assemblies in accordance with ANSI/UL 10B and NFPA 252 and having a listing for the tested assemblies. Listing identification labels shall be constructed and permanently applied by a method which results in their destruction should they be removed. Labels shall be metal with raised letters and shall bear the name and file number of the frame manufacturer. Labels shall not be painted.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Install standard steel doors and frames and fixed acoustical windows in accordance with final shop drawings, manufacturer's data, and as herein specified.

B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames", unless otherwise indicated.

1. Anchors: Provide sufficient anchorage to attach to wall in accordance with ANSI A250.4 Test compliance Level A of one million cycles, or anchorage as detailed on drawings to specific wall conditions.

2. Except for frames located at in-place concrete and masonry installations, place frames prior to construction of enclosing walls and ceilings. Set

frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

3. Install fire-rated frames in accordance with NFPA 80.

4. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.

C. Door Installation: Fit hollow-metal accurately in frames, with clearances specified in ANSI/SDI 100.

1. Fire-Rated Doors: Install doors with clearances according to NFPA 80

D. Glazing: Comply with installation requirements in Section 08800 - GLAZING and with hollow-metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.02 TOLERANCES

A. Installation Tolerances: Adjust hollow-metal door and window frames for squareness, alignment, twist, and plumb to the following tolerances:

1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

4. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

3.03 ADJUST AND CLEAN

A. Factory Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of factory coating and apply touch-up of matching air-drying coating.

B. Final Adjustments: Check and readjust operating finish hardware items, leaving steel frames undamaged and in complete and proper operating conditions.

END OF SECTION

SECTION 08210 - WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. Types of doors required include interior flush wood doors with glass lites.

1. Non-rated doors
2. Fire-rated doors

B. Related Work Described Elsewhere:

1. Section 08800 – GLAZING.
2. Section 09900 – PAINTING for wood door finish.

1.02 SUBMITTALS

A. Submit under the provisions of Section 01330 – SUBMITTAL PROCEDURES.

B. Manufacturer's Data: Door manufacturer's technical data for each type of door, including details of core and edge construction.

C. Shop Drawings: Submit shop drawings indicating location and size of each door, door swing, stile and rail dimensions, veneers, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, and other pertinent data.

D. Submit certificates issued by an independent testing agency stating that doors scheduled to be acoustically rated, in fact meet the specified STC ratings when tested in accordance to ASTM E 90 and ASTM E 413.

E. Samples: Request wood and finish samples from Contracting Officer for species of wood and types of finish. Submit 3 verification samples of each type of wood species and finish for approval.

1.03 QUALITY ASSURANCE

A. Quality Standards: Comply with the following standards:

1. NWWDA/WDMA Quality Standard:
    a. Flush Wood Doors: ANSI/NWWDA I.S.-1A "Wood Flush Doors" I.S.-1 R "Residential Wood Flush Doors".
    b. Stile and Rail Doors: ANSI/NWWDA I.S.-6A "Wood Stile and Rail Doors".
2. AWI Quality Standards: "Architectural Woodwork Quality Standards", including Section 200 "Panel Products", Section 1300, "Architectural Flush Doors" and Section 01400, "Stile and Rail Doors", of Architectural Woodwork Institute (AWI) for grade of door, core construction, finish and other requirements exceeding those of NWWDA/WDMA quality standard

B. NWWDA/WDMA Quality Markinq: Mark each wood door with WDMA Wood Door Certification Hallmark certifying compliance with applicable requirements of ANSI/NWWDA I.S.-1A and WDMA I.S.-6A or NWWDA I.S.-6 Series. For

manufacturers not participating in WDMA Hallmark Program, a certification of compliance may be substituted for marking of individual doors.

C. Fire-Rated Wood Doors: Provide wood doors which are identical in materials and construction to units tested in door and frame assemblies per NFPA 252 “Fire Tests of Door Assemblies”, and UL 10B, “Fire Tests of Door Assemblies”, and which are labeled and listed for ratings indicated by UL, Warnock Hersey or other testing and inspection agency acceptable to authorities having jurisdiction. Labels shall be metal with raised letters and shall bear the rating followed by the letter “S”, name and file number of the door manufacturer and the service conducting the inspection. Labels shall not be painted.

D. Acoustical Rated Doors: Provide acoustical doors with an STC rating as scheduled when tested as an operable system in accordance with ASTM E90 and ASTM E413.

E. Factory seal all doors on all 6 sides using manufacturer’s standard.

F. Manufacturer: Obtain doors from a single manufacturer.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced standards and recommendations of ANSI/NWWDA I.S.-1A Section G-20 “Care and Installation at Job Site”, as well as with manufacturer’s instructions.

B. Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door, frames, and hardware, using temporary, removable or concealed markings.

C. Do not walk on or stack other materials on top of stacked doors. Do not drag doors across one another.

D. For all doors not factory finished, seal all four edges immediately after delivery.

E. Store doors away from threat of termite or other insect infestation.

1.05 PROJECT CONDITIONS

Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with the following requirements applicable to project’s geographical location: AWI Section 100-S-3 “Moisture Content”.

1.06 WARRANTY

A. General: Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.

B. Door Manufacturer’s Warranty: Submit written agreement on door manufacturer’s standard form signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or that show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of referenced quality standards.

1. Warranty shall be in effect during following minimum period of time after date of Substantial Completion, unless longer warranty is standard with the manufacturer.
2. Flush Interior Doors: One year.

C. Contractor's Responsibilities: Replace or refinish doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 - PRODUCTS

2.01 ASBESTOS PROHIBITION

A. No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

2.02 MANUFACTURERS

A. Manufacturers: Provide products complying with the requirements of this section by one of the following:
   1. Eggers Industries
   2. Maiman Company
   3. Trustile Doors, LLC.
   4. VT Industries

2.03 WOOD FLUSH DOORS

A. Flush Doors: Comply with the following requirements:
   1. Core: Structural composite lumber core
   2. Construction: Five plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.
   3. Faces:
      a. For transparent finish, AWI Custom, Plain sliced Maple; book-matched.
      b. For opaque finish, AWI Custom, Plain sliced Birch or Medium Density Overlay (MDO)
      c. Stiles: Applied wood-veneer edges of same as faces and covering edges of faces.
   4. Fire Rated Doors:
      a. Rating: As indicated on the schedule
      b. Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.

c. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated as needed to eliminate through-bolting hardware.

d. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile matching face veneer, and laminated backing at hinge stiles for improved screw-holding capability and split resistance.

e. Vision Panel in Fire Rated Doors: Refer to Section 08800 – GLAZING for fire protection rated glazing.

5. Glass Panels: Kind FT (fully tempered), Condition A, Type 1, Class 1, Quality q3, 1/4-inch thick unless indicated or required otherwise.

   a. Glazing stops to match wood panel doors with ogee profile.

6. Configuration: As shown in the Drawings.

7. Finish: Factory finish.

2.04 FABRICATION

A. Wood Doors: Fabricate wood doors to produce doors in sizes indicated for job-site fitting. Stile edge bands of doors to be painted shall be mill option specie. No visible finger joints will be accepted in stile edge bands. When used, locate finger-joints under hardware.

B. Stile and Rail doors shall be fabricated with mortise and tenon construction. Blind mortise and tenon shall be sized for a drive fit. Tenon shall be set in adhesive. Alternative methods of joinery are acceptable provided the meet or exceed the structural performance and appearance of the joinery method described above

C. Openings:

1. Light Openings: Trim openings with moldings of material and profile indicated.

2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 08800 - GLAZING.

D. Adhesives: Adhesives shall be in accordance with WDMA I.S.-1A, requirements for Type I Bond Doors (waterproof) for exterior doors and requirements for Type II Bond Doors (water repellent) for interior doors. Adhesives shall contain no formaldehydes. All site-applied, interior wood adhesives shall comply with EQ 4.1 low-VOC limits of Section 01352.

E. Finish Hardware: Locate hardware to comply with DHI-WDHS-3 and each door that is an element of an accessible route shall comply with Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 4.13. Comply with finish hardware schedules, doorframe shop drawings, DHI A115-W series standards, and hardware templates.

2.05 PRESERVATIVE TREATMENT

A. Treat all solid core doors at factory with water repellent after manufacturing has been completed, in accordance with WDMA Industry Standard I.S.-4 “Water-Repellent Preservative non-Pressure Treatment for Millwork”.

B. As required for fire-rated doors treat solid wood and wood cores with fire retardant in accordance with Section 06070 – WOOD TREATMENT.

2.06 WOOD DOOR FINISH

A. General: The entire finish of wood doors is work of this section, regardless of whether shop-applied or applied after installation.

1. Shop finishing: To the greatest extent possible, finish wood doors at factory or shop. Defer only final touch-up, cleaning and polishing for time after delivery and installation.

B. Preparations for finishing: Comply with WDMA I.S. 6A “Industry Standard for Architectural Stile and Rail Doors”, for sanding, sealing of concealed surfaces and similar preparations for finishing of wood doors, as applicable to each unit of work.

C. Transparent finish: Comply with requirements indicated below for filling, staining, finish and sheen.

1. Fill open grain wood with filler compatible with the finishes indicated, match color and tone of the wood being filled.

2. Finish: Manufacturer’s standard interior finish with performance requirements comparable to WDMA TR-4 Conversion Varnish.

3. Staining: Clear.

D. Opaque Finish: Shop prime doors with one coat of wood primer specified in Section 09900 – PAINTING. Seal all four edges, edges of cutouts, and mortises with primer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine installed door frames prior to hanging door:

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.

2. Reject doors with defects that cannot be repaired in a manner that is imperceptible. Replace doors which cannot be field repaired to match new as approved by the Contracting Officer at no additional cost to the Owner. Doors warped in excess of 1/4 inch when measured in accordance with ANSI/NWWDA I.S.-1A shall be rejected.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Hardware: For installation see Section 08710 - FINISH HARDWARE.

B. Manufacturer's Instructions:

1. Install wood doors to comply with manufacturer's instructions and of referenced AWI and NWWDA/WDMA standard and as indicated.

C. Job Fit Doors: Align and fit doors in frame with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.

1. Fitting Clearances for Non-Rated Doors: Provide 1/8 inch at jambs and heads; and 1/2 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 3/8 inch clearance from bottom of door to top of threshold unless indicated for undercut.

2. Bevel non-rated doors 1/8 inch in 2 inches at lock and hinge edges.

D. Prefit Doors: Fit to frames for uniform clearance at each edge.

3.03 ADJUSTING AND PROTECTION

A. Operation: Rehang or replace doors which are hinge bound and do not swing or operate freely. Replace or rehang doors which are warped, twisted, or which are not in true planes.

B. Protection: Protect doors as recommended by door manufacturer to assure that wood doors will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 08710 - FINISH HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes:

1. Hardware for interior doors, other than hardware specified in specific door Sections.
2. Furnish and deliver to the building site, all finishing hardware required for all doors, etc., complete as indicated on Drawings and as specified.
3. It is the intent of this Specification to cover in general the class and character of all finish hardware required.
4. The hardware list specified has been made for the convenience of the Contractor and covers in general the necessary hardware for doors, casework, etc., but all other doors, etc., shown on the Drawings and not covered by the general characterization shall be fitted with appropriate hardware of the same standards as the hardware described throughout these specifications. Contractor shall furnish hardware schedule as specified.
5. Suppliers proposing substitutes of equivalent products of other than the manufacturers named shall submit schedules listing the product and manufacturer specified and the product and manufacturer of proposed substitute.

B. Related Work described elsewhere:

1. Section 06400 - ARCHITECTURAL CASEWORK

1.02 REFERENCES

REFERENCES: The publications listed below form a part of this Specification to the extent referenced. These publications are referred to in the text by the basic designation only.

A. ADA – Department of Justice 2010 ADA Standards for Accessible Design

B. BHMA – Builders Hardware Manufacturers Association

C. NFPA 80 - Fire Doors and Windows.

D. NFPA 252 - Fire Tests of Door Assemblies.

E. SDI – Steel Door Institute

F. UL 10B - Fire Tests of Door Assemblies.

G. UL 305 - Panic Hardware.

H. NFPA 101 - Life Safety Code.

I. IBC – 2006 International Building Code

1.03 SUBMITTALS

A. Schedule: Furnish eight (8) copies of the schedule of hardware in compliance with specifications and Drawings. Schedule format shall be vertical type as listed in DHI

document "Sequence and Format for the Hardware Schedule". List each opening and hardware to be applied. State materials finish, and manufacturer's number for each item. Required types are listed.

B. Manufacturer's Data: Submit manufacturer's descriptive literature along with schedule for information only.

C. Certified Test Reports: Indicate that each item listed under Hardware Items meets the standard listed for that item. A copy of the listing of proposed hardware items in the current applicable BHMA directories of certified products may be submitted in lieu of test reports.

D. Project Reference Samples: Upon delivery of finish hardware to the site, select and tag one item of each different type. Identify each item by reference publication type or number and manufacturer's catalog number. Items shall remain on file until similar items have been installed, at which time items on file shall be installed in predetermined locations.

E. Templates: Furnish hardware templates of each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check Shop Drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

F. Tools and Maintenance Instructions: Furnish a complete set of special wrenches, tools, maintenance instructions applicable to each different or special hardware component.

G. Certification: After completion and inspection by hardware supplier of all construction work, certify on an approved form, that all items of finish hardware have been adjusted and are working properly and that all hardware on fire rated (labeled) closures conforms to requirements of ULI.

H. Warranty: Submit warranty as stipulated in item entitled "WARRANTY" hereinbelow.

1.04 PROJECT RECORD DOCUMENTS

A. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.05 OPERATION AND MAINTENANCE DATA

A. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

B. The manufacturer's representative shall instruct the user's staff on the hardware's maintenance procedures (type of lubricant needed and frequency of maintenance).

1.06 QUALITY ASSURANCE

A. Perform work in accordance with Americans with Disabilities Act Accessibility Guidelines ADAAG Section 404.1, NFPA 80, "Fire Doors and Fire Windows", NFPA 101, "Life Safety Code", UL10C, "Fire Tests of Door Assemblies", NFPA 252, "Fire Tests of Door Assemblies", and ICC IBC as applicable. Each door that is an element of

an accessible route shall comply with ADAAG Section 404.1 and shall be mounted no higher than 48-inches above finish floor.

B. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience. Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.

C. Hardware Supplier: Company specializing in architectural finish hardware, with a local stock warehouse, who has furnished hardware in Hawaii for a period of not less than three years.

D. Hardware Supplier Personnel: Employ an experienced Architectural Hardware Consultant (AHC), or architects approved equal, who is available at reasonable times during the course of the Work, to the Engineer and Contractor for consultation about Project's hardware requirements, to verify specified hardware with door function and hardware finishes, and to establish keying system.

E. HARDWARE INSTALLER: Company specializing in the installation of architectural hardware and approved by the architect and architectural hardware consultant (AHC), or architects approved equal.

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable code for accessibility and requirements applicable to fire rated doors and frames.

B. Products Requiring Electrical Connection: Listed and classified by Underwriter's Laboratories, Inc., as suitable for the purpose specified and indicated.

C. Definition: “Door Hardware" includes items known commercially as finish hardware which are required for swing and sliding doors, except special types of unique and non-matching hardware specified in same section as door and door frame.

1.08 SECURITY DOOR HARDWARE REQUIREMENTS

A. All security door hardware specified herein shall be furnished and installed by the Door Hardware Contractor.

B. Electronic security components such as magnetic door contacts, card readers, external request to exit devices, etc. shall be furnished and installed by the security contractor.

C. Hardware manufacturers and model numbers referenced within this document define the functional and technical requirements for the hardware. Other manufacturers and models may be substituted if the same functional and technical requirements are provided.

D. All doors and frames scheduled to receive security hardware shall be prepared in the manufacturer's shop for the security hardware as required by the hardware manufacturer.

E. All electric door hardware shall be 24 volts DC.

F. Power supplies for exit devices with electric latch retraction, time delay exit devices, and time delay electromagnetic locks shall be furnished, installed, and wired by the Door Hardware Contractor. Power supplies for all other electric door hardware shall be furnished, installed, and wired by the Security Contractor.

G. All security controlled and monitored doors shall be equipped with high security closers such as the High Security Series as manufactured by Sargent or equivalent as scheduled.

H. Non-removable hinge pins shall be used for all security controlled and monitored doors.

I. All cylinders for security controlled and monitored doors shall be equipped with interchangeable cores.

1.09 DELIVERY, STORAGE AND HANDLING

A. Delivery, store, protect and handle products to prevent damage of any kind and to maintain security to site.

B. Inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

C. Deliver individually packaged hardware items at proper times to proper locations (shop or project site) for installation.

D. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

E. Deliver keys to Engineer by security shipment direct from hardware supplier.

F. Provide secure lock-up for hardware delivered to project but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the Work will not be delayed by hardware losses, both before and after installation.

1.10 COORDINATION

A. Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware, and door machining for all hardware items.

1.11 WARRANTY

A. Provide one year warranty. Ten (10) years on Door Closers, with two (2) years on Electrical Components. Where longer warrant is standard with the manufacturer, furnish the longer warranty.

B. The Surety shall not be liable beyond 2 years of the Project Acceptance date.

1.12 MAINTENANCE MATERIALS

A. Provide special wrenches and tools applicable to each different or special hardware component.

B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing material materials shall be used under this section. The Contractor shall insure that all material incorporated in the project are asbestos-free.

2.02 SCHEDULED HARDWARE

A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware is indicated in HARDWARE GROUPS at end of this section. Products are identified by using proprietary catalog numbers, and are used to establish quality and function of products desired.

B. Product numbers indicated in the HARDWARE GROUPS are those of the manufacturers listed and are used to establish the quality of products intended.

2.03 MATERIALS AND FABRICATION

A. Hand of Door: Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of indicated door.

B. Base Metals: Produce hardware units of basic metal and forming method specified, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish optional materials or forming methods for those indicated, except as otherwise specified.

C. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

D. Furnish screws for installation, with each hardware item. Provide Phillips flat head screws except as otherwise indicated. Finish exposed screws to matches hardware finish. If exposed in surfaces of other work, to match finish of such other work as closely as possible, including prepared-for-paint finish in surfaces to receive painted finish.

E. Expansion shields in concrete or masonry shall fill the depth and diameter of drilled holes.

F. Provide concealed fasteners for hardware units which are exposed when door is closed, except to the extent no standard units of the type specified are available with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the Work. In such cases, provide sleeves for each through bolt or use sex screws fasteners.

G. Bring to the attention of the University any discrepancy between the Hardware Groups and door schedule prior to ordering.

2.04 HINGES, BUTTS AND PIVOTS

A. General: Hinges shall conform to ANSI/BHMA A156.1, pivots shall conform to ANSI/BHMA A156.4, and the requirements of this specification.

B. Templates: Except for hinges to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Screws: Furnish Phillips flat head or machine screws for installation of units, except furnish Phillips flat head or wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.

D. Hinges Pins: Except as otherwise indicated, provide hinge pins as follows:

1. Nonferrous Hinges: Stainless steel pins.
2. Interior Doors: Nonrising pins.
3. Tips: Flat button and matching plug, finished to match leaves.

E. Number of Hinges: Provide number of hinges in accordance with BHMA A 156.1 but not less than 3 hinges for door leaf for doors 90 inches or less in height and one additional hinge for each 30 inches of additional height.

F. Size of hinges shall be as follows:

Door Thickness / Width	Hinge Height	Hinge Width
1-3/4 inch to 36 inches	4-1/2 inch	4 or 4-1/2 inch
1-3/4 inch over 36 inches	5-inch	4-1/2 Extra Heavy Ball Bearing
1-3/4 inch over 48 inches	5-inch	4-1/2 Extra Heavy Ball Bearing

2.05 LOCK CYLINDERS AND KEYING

A. Lock cylinders shall be ASSA high security key system, 6 pin tumblers to match University of Hawaii Manoa ASSA system. The lock cylinders shall be master-keyed to the University ASSA high security key system as directed by the University.

B. Provide no more than ten (10) keys per lockset; exact quantity to be determined during keying schedule. Stamp all keys “University of Hawaii do not duplicate.”

C. Upon acceptance of the project, the contractor shall arrange for temporary keys from HHSC if further access is required.

2.06 LOCKS, LATCHES AND BOLTS

A. General: Mortise locks and latches shall conform to ANSI/BHMA A156.13, Grade 1, bored locks and latches shall conform to ANSIIBHMA A 156.2, bolts shall conform to ANSI/BHMA A156.16, ADAAG Section 404.2.7, and the requirements of this specification

B. Mortise Locksets shall be manufactured in a single sized case formed from 12 gauge minimum steel. The case shall be closed on all sides and back. The lockset shall have a field-adjustable, beveled armored front, with a 0.125-inch minimum thickness.

C. Mortise locksets shall have freewheeling outside levers on all exterior doors. The freewheeling lever design shall allow the lever to swing freely up to 70 degrees, when the door is locked.

D. Strikes: Provide manufacturer's standard wrought box strike for each latch of lock bolt, with curved lip extended to protect frame, finish to match hardware set. Provide dustproof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolts.

E. Lock Throw:

1. Provide 3/4-inch minimum throw of latch, and 1-inch minimum Deadbolt.

F. Flush Bolt Heads: Minimum of 1/2-inch diameter rods of brass, bronze or stainless steel, with minimum 12-inch long rod for doors up to 7 feet in height; minimum 42-inches long rod for doors up to 9'-6" in height.

G. Provide locksets, latches, and cylinders equal in all respects to those specified in the Hardware Groups. All thumb turns shall conform to ADAAG Section 404.2.7.

2.07 CLOSERS AND DOOR CONTROL DEVICES

A. Standards: Comply with BHMA A 156.4 for closers, BHMA A 156. 15 for closer holder release devices and ADAAG Section 404.2.8.1 and Section 404.2.9 and the requirements of this specification.

B. Grade: BHMA Grade1 for all closers.

C. Size of Units: Comply with manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather, and anticipated frequency of use. Where parallel arm closers are installed, provide closer unit one size larger than recommended for use with standard arms.

D. Maximum effort to operate doors shall not exceed 8.5 pounds for exterior doors and 5 pounds for interior doors, such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the door may be increased not to exceed 15 pounds.

E. Surface Closers:

1. Provide parallel arm or regular arm closer as required to mount closer on door face least exposed to public traffic.

2. Closers shall have brass adjustment operating valves for closing speed, latching speed and backcheck control as a standard feature.

3. Closers shall have one piece high performance aluminum alloy body.

4. Closer covers shall be high impact non corrosive, flame retardant.

5. Closer shall not require removal for adjustments to be made.

F. Following door closers will be considered equal subject to Project conditions:

1. LCN - 4041 Series.

2. Corbin Russwin - DC6000 Series.

3. Norton - 7500 Series.

4. Sargent - 351 Series.

2.08 DOOR SEALS

A. Standard: Comply with BHMA A156.22.

B. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702

C. Provide noncorrosive fasteners as recommended by manufacturer for application indicated.

D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.

E. Smoke Seals: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784

1. Provide smoke-labeled gasketing on 20-minute-rated doors and on smoke-labeled doors. Provide continuous seals at each edge of door leaf.

F. Thresholds: Provide all thresholds as indicated on the door schedule conforming to ANSI/BHMA A156.21 and ADAAG Section 404.2.5.

2.09 FINISHES

A. Standard: Comply with BHMA A156.18.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Designations used are those listed in ANSI/BHMA A156.18 -American National Standards for Materials and Finishes, including coordination with traditional U.S. finishes shown by certain manufacturers for their products.

1. If no BHMA finish is established, match specified product.

D. Provide matching finishes for hardware units at each door or opening to greatest extent possible, except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where base metal or metal forming process is different for individual units of hardware exposed at same door or opening.

E. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's standards, but in no case less than specified for applicable units of hardware by referenced standards.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Pre-Installation Meeting: Before start of work under this contract, the Contractor, hardware installer, hardware manufacturer's representative or supplier and the University shall meet to review the hardware installation instructions and installation conditions.

B. Verify that doors and frames are ready to receive Work and dimensions are as indicated. Hardware installer must notify the architect of any conflicts prior to installing hardware.

3.02 INSTALLATION

A. Install each hardware item in compliance with manufacturer's instructions and recommendations.

B. Mount hardware units at height indicated in ANSI/SDI A250.8, "Recommended Specification for Standard Steel Doors and Frames", except:

1. As otherwise indicated or as required to comply with governing regulations or ADAAG Section 404.2.7.

2. Mount deadbolt (if any)) centerline to conform with ADAAG Section 404.2.7 above latchset handle centerline.

C. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protection with finishing work. Do not install surface mounted items until finishes have been completed on the substrate.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set metal thresholds for exterior doors in full bed of butyl rubber or polyisobutylene mastic sealant as specified in Section 07920 – SEALANTS.

G. Fit face of all mortise parts snug and flush.

H. Operating parts shall move freely and smoothly without binding, sticking or excessive clearance.

I. Protect hardware from damage or marring of finish during construction. Use strippable coatings, removable tapes or other approved means.

J. Ensure that hardware displays no evidence of finish paint after building cleanup with exception of prime coated hardware installed for finish painting. The Contractor may achieve this by sequencing installation, removing after fittings and reinstalling after painting is completed, providing protection, cleaning original hardware finish, or other approved means.

K. Latch and bolt: Install latch and bolt to automatically engage in keeper, whether activated by closer or manual push. In no case shall additional manual pressure be required to engage latch or bolt in keeper.

L. Closers:

1. Do not mount closers on corridor side of door except at exterior doors.

2. Carefully adjust closers to be operated noiselessly and evenly and to conform to ADAAG Section 404.2.8 and Section 404.2.9.

3. Have manufacturer's representative regulate closers prior to University's acceptance of building.

3.03 FIELD QUALITY CONTROL

A. Required certified Architectural Hardware Consultant or architects approved equal from door hardware supplier to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUST AND CLEAN

A. Hardware installer shall adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace items which cannot be adjusted to operate freely and smoothly as intended for application made.

B. Hardware installer shall clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, hardware installer shall return to the Work during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area:

1. Clean operating items as necessary to restore proper function and finish of hardware and doors.
2. Adjust door control devices to compensate for final operation of ventilating equipment.
3. Lubricate bearings surface of moving parts and adjust latching and holding devices for proper function.
4. Test keys for proper conformance with keying system.

3.05 HARDWARE GROUPS

MANUFACTURER LIST

CATEGORY	VENDOR NAME	MFG
ELECTRIC STRIKE	BY HANCHETT ENTRY SYSTEMS, INC.	HAN
HINGE	BY McKINNEY PRODUCTS COMPANY	MCK
POWER OPERATOR	BY NORTON DOOR CONTROLS	NOR
WALL STOP (CONCAVE)	BY ROCKWOOD MANUFACTURING CO.	ROC
WALL STOP (CONVEX)	BY ROCKWOOD MANUFACTURING CO.	ROC
DOOR CLOSER	BY SARGENT MANUFACTURING COMPANY	SAR
ENTRY LOCK	BY SARGENT MANUFACTURING COMPANY	SAR
PASSAGE SET	BY SARGENT MANUFACTURING COMPANY	SAR
ADA WALL SWITCH	BY WIKK INDUSTRIES, INC.	WIK

HW GROUP - 001

DOOR 201

3.0 EA	HINGE	TA2314 4.5 X 4.5 US26D	MCK
1.0 EA	PASSAGE SET	28-10U15 LL US26D WBS	SAR
1.0 EA	DOOR CLOSER	1431 O EN	SAR

1.0 EA	WALL STOP (CONVEX)	406 626	ROC

HW GROUP - 002

DOOR 201A

3.0 EA	HINGE	TA2314 4.5 X 4.5 US26D	MCK
1.0 EA	ENTRY LOCK	28-10G24 LL US26D WBS KEY AS DIRECTED.	SAR
1.0 EA	DOOR CLOSER	1431 O EN	SAR
1.0 EA	WALL STOP (CONCAVE)	409 626	ROC

HW GROUP - 003

MORGUE ENTRY

1.0 EA	ELECTRIC STRIKE	8300C 630	HAN
1.0 EA	POWER OPERATOR	6312 689	NOR
1.0 EA	ADA WALL SWITCH	4 X 4-3 630 MORGUE SIDE WIRING BY ELECTRICAL CONTRACTOR. BALANCE OF HW IS EXISTING TO REMAIN.	WIK

END OF SCHEDULE

DIVISION 09 - FINISHES

SECTION 09250 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Includes: Gypsum board work including, but not limited to, the following:

1. Gypsum board on metal framing and furring.
2. Non-load bearing metal stud framing for board.
3. Metal ceiling suspension system.

B. Related Work Described Elsewhere:

1. Wood blocking for interior work is provided under Section 06100 – ROUGH CARPENTRY.

1.02 QUALITY ASSURANCE

A. Fire Resistive Design: The construction shall comply with the applicable provisions of 2006 IBC, including all local amendments thereto and shall have been tested according to ASTM E 119 by an independent testing and inspecting agency acceptable to the authorities having jurisdiction. Installation and materials shall be in strict accordance with the above mentioned code.

1. The Fire Resistant Design shall be as indicated from UL's "Fire Resistance Directory", FM's "Approval Guide, Building Products", GA-600 "Fire Resistance Design Manual", or as listed otherwise

B. Industry Standard: Comply with applicable requirements of GA 216 "Application and Finishing of Gypsum Board" and GA 214, "Recommended Specification: Levels of Gypsum Board Finish" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including the recommendations of the manufacturer.

C. Transverse Loading: The non-load bearing metal framing shall be capable of carrying a transverse load of 5 psf without exceeding the allowable stress or a deflection of L/360. Increase stud gauge, decrease stud spacing, or provide hidden from view lateral bracing to comply with these requirements at no additional cost to the University.

D. STC-Rated Assemblies: For STC rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

E. Gypsum Board Terminology: Refer to ASTM C 11, "Terminology Relating to Gypsum and Related Building Materials and Systems", for definition of terms for gypsum board assemblies not defined in this Section or in referenced standards.

1.03 SUBMITTALS

A. Submit under the provisions of Section 01330 - SUBMITTALS.

B. Manufacturer's Data: Material description and manufacturer's recommended installation procedures for each material.

C. Shop Drawings: Submit shop drawings indicating fabrications and location of control and expansion joints including plans, elevations, sections, details and attachment to adjoining work. Submit setting drawings for backing plates and anchors.

D. Material Safety Data Sheets (MSDS): Submit MSDS for each product.

1.04 PRODUCT HANDLING

A. Deliver gypsum wallboard materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade; store in a dry well ventilated space, protected from the weather, under cover and off the ground. Stack gypsum panels flat to prevent sagging. Joint materials shall be stored in accordance with manufacturer's printed instructions. Damaged or deteriorated materials shall be removed from jobsite.

B. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. General: Provide gypsum board panels in maximum lengths and widths available that will minimize joints and correspond with the applicable support system.

C. Gypsum Wallboard: ASTM C 1396/C 1396M "Gypsum Wallboard", 5/8 inch unless specifically noted as 1/2-inch thick, tapered edge type, 48 inches wide, Type "R" regular for all non-rated walls and Type "X" (Special Fire Retardant) for fire rated partitions and elsewhere as indicated.

D. Water Resistant Board: ASTM C 1396/C 1396M, Type "WR" water-resistant backing board, 5/8-inch thick unless indicated otherwise, with tapered edges, 48 inches wide, unless indicated otherwise (for walls only). Provide Type "WR-X" (Special Fire Retardant) for fire rated partitions

E. Wallboard Fasteners: ASTM C 1002 "Steel Drill Screws for the Application of Gypsum or Metal Plaster Bases", standard bugle head self-drilling, self-tapping corrosive-resistant drywall screws, Screws used in fire-resistive rated construction shall be of type approved for use by governing building code. Screws for structural studs shall conform to ASTM C 954 "Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs from 0.033 inch (0.84 mm) to 0.112 inch (2.84 mm) in Thickness".

F. Reinforced Tape and Cement: ASTM C 475 “Joint Compound and Joint Tape for Finishing Gypsum Board”, materials for treating joints and fastener heads shall be as manufactured or recommended by the Manufacturer of the wallboard used. Provide “setting” type joint compound that is unaffected by humidity for water resistant board.

G. Non-Load Bearing Studs: Comply with ASTM C 754 for conditions indicated. ASTM C 645 “Non-Load (Axial) Bearing Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board”, studs shall be 1-5/8, 2-1/2, 3-5/8, and 6 inches unless indicated otherwise on the drawings. Studs shall be rolled formed channel of 25, and 20 gauge galvanized steel, ASTM A 653 “Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process”, G60 coating. Provide holes and notches for conduit or electrical wiring.

H. Tracks: Metal floor and ceiling tracks shall be rolled formed channel of gauge electro-zinc plated steel of same gauge as stud with width dimensions suitable to corresponding stud sizes indicated on the drawings.

I. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; same gauge as stud and in width to accommodate depth of studs. The U-shape track is 2-1/2-inches deep and has 1-1/2-inches vertical slots spaced 1” along both legs and is fabricated from hot-dipped galvanized steel complying with ASTM A653.

J. Furring Channels: ASTM C 645, hat-shaped, 7/8 inch deep, hot-dipped galvanized, 25 gauge.

K. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch, depth of 1-1/2-inch and minimum 1/2-inch-wide flanges.

L. Resilient Clip: The isolation clip consisting of a rubber element into which a standard galvanized steel furring channel, 7/8 in. x minimum 25 gauge, is captured. The channel legs snap fit into the rubber element without any metal-to-metal or other rigid contact with building elements. Isomax manufactured by Kinetics Noise Control.

M. Ceiling Support Materials and Systems:

1. General: Size ceiling support components to comply with ASTM C 754 “Installation of Steel Framing Members to Receive Screw-Attached Gypsum” unless indicated otherwise.

2. Direct Suspension Systems: Manufacturer’s standard zinc-coated or painted steel system of furring runners, furring tees, and accessories designed for concealed support of gypsum drywall ceilings; of proper type for use intended. System Manufacturer: Equal to one of the following:

   a. Armstrong World Industries, Inc

   b. Chicago Metallic Corp

   c. USG Interiors, Inc.

3. Wire for Hangers and Ties: ASTM A 641/A 641 M "Zinc-Coated (Galvanized) Carbon Steel Wire", Class 1 zinc coating, soft temper, 8 gauge for hangers supporting up to 12.5 square feet and 6 gauge where supporting up to 16 square feet and 18 gauge for ties.

N. Wallboard Accessories: ASTM C 1047 "Accessories for Gypsum Wallboard and Gypsum Veneer Base", Vinyl Corp., Plastic Components Inc., Vinyl Tech or approved equal.

1. Standard Corner Bead: Vinyl Corp. Corner Bead CB 125 at all outside corners of wall, ceiling, and soffit as indicated.

2. Casing Trim: Vinyl Corp. "L" Bead SB 58, "J" Bead MJB5B, or approved equal as indicated.

3. Control Joint: Vinyl Corp. CJV 16 or approved equal.

4. Other Accessories: As indicated or necessary for complete installation.

5. Alt accessories shall be vinyl, PVC, or approved equal.

O. Joint Treatment Materials: ASTM C 475; type recommended by manufacturer for the application indicated, except as otherwise noted. Perforated tape, and joint and topping compound, or "all-purpose" compound.

P. Laminating Adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.

PART 3 - EXECUTION

3.01 EXAMINATION

Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Comply with ASTM C 840 "Application and Finishing of Gypsum Board", Gypsum Association GA 216 and ASTM C 754 as applicable to the type of substrate and drywall support system indicated.

B. Tolerances:

1. Maximum variation of finish surface from true flatness shall be 1/8-inch in 10-feet in any direction unless specified otherwise.

2. Maximum variation of plumbness of wall shall be 1/8 inch in 10 feet of height.

3. Maximum variation from true position shall be 1/8 inch.

C. Ceiling Support Suspension Systems:

1. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips or other anchorage

devices or fasteners as indicated. Ensure that structural anchorage provisions have been installed to receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.

2. Coordinate installation of ceiling suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers at spacing required to support ceilings and that hangers will develop their full strength.

3. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

5. Secure hangers to structure, including intermediate framing members, by attaching to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.

6. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail.

7. Sway brace ceiling to conform to the applicable seismic zone and uplift, applicable requirements of ASTM E 580, “Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint”, and the manufacturer’s recommendations.

8. Space main runners 4 feet on center and space hangers 4 feet on center along runners, except as otherwise shown.

9. Level main runners to a tolerance of 1/8 inch in 12 feet, measured both lengthwise on each runner and transversely between parallel runners.

10. Wire-tie or clip furring members to main runners and to other structural supports as indicated or as recommended by the manufacturer.

11. Direct-hung Metal Support System: Attach perimeter wall track or angle wherever support system meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into wall track.

12. Space furring member 16 inches on center, except as otherwise indicated.

13. Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.

14. Do not connect or suspend steel framing from ducts, pipes or conduit.

15. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.

D. Non-Load Bearing Metal Wall Framing:

1. Install supplementary framing, blocking and bracing to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings and similar work which cannot be adequately supported on gypsum board alone to comply with details indicated and with recommendations of gypsum board manufacturer, or if none available, with “Gypsum Construction Handbook” published by United States Gypsum Co.

2. Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.

3. Install runner tracks at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated.

4. Space studs and furring 16 inches on center, except as otherwise indicated.

5. Install steel studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edges of stud flanges first.

6. Install 20 gauge studs spaced at 16-inches on center in walls scheduled to receive ceramic or stone tile and in walls that support wall cabinets and shelving.

7. Frame door openings with vertical studs securely attached by screws at each jamb either directly to frames or to jamb anchor clips on door frame in accordance with door manufacturer’s recommendations; install runner track sections (for jack studs) at head and secure to jamb studs. Provide runner tracks of same gauge as jamb studs. Space jack studs same as partition studs.

8. Install 20 gauge studs at each jamb for all doors 2’-8” wide to 4 feet wide weighing not more than 200 pounds; and for all doors less than 2’-8” wide weighing more than 100 pounds but not more than 200 pounds.

9. Install double 20 gauge studs for single doors up to 4 feet wide, weighing more than 200 pounds but not more than 300 pounds; screw attach web of back-to-back studs direct to jamb anchor clips nested between flange of stud.

10. Frame openings other than door openings in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

11. Install each steel framing and furring member so that fastening surface does not vary more than 1/8-inch from plane of faces of adjacent framing.

E. Gypsum Wallboard, General:

1. Locate exposed end-butt joints as far from center of walls and ceilings as possible.

2. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.

3. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that both tapered edge joints abut, and mill-cut or field-cut end joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

4. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

5. Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.

6. Cover both faces of stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are properly braced internally. Except where concealed application is required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 square foot area, and may be limited to not less than 75 percent of full coverage.

7. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to 3/8 inch space and trim edge with J-type semi-finishing edge trim. Seal joints with acoustical sealant.

8. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

9. Install insulation at framing as indicated. Size insulation to width of members spacing. Press friction fit insulation between members as recommended by the insulation manufacturer. Insulation is provided under Section 07210 - BUILDING INSULATION.

10. Tile Backer Unit: Install tile backer units in accordance with manufacturer's instructions and TCA methods specified in Section 09310 – CERAMIC TILE.

F. Methods of Gypsum Wallboard Application:

1. On ceilings, apply gypsum board prior to wall/partition board application, to greatest extent possible and at right angle to framing, unless otherwise indicated.

2. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

3. Single-Layer Application:

a. On partitions/walls higher than 8'-1", apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

b. On partitions/walls 8'-1" or less in height apply gypsum board horizontally (perpendicular); use maximum length sheets possible to minimize end joints.

4. Single-Layer Fastening Method: Apply gypsum boards to supports by fastening with screws, spaced not to exceed 16-inch centers for walls and 12 inch centers for ceilings.

5. Gypsum wallboard construction for fire rated and acoustical rated assemblies shall be in accordance with the design number indicated or if not indicated in accordance with 2003 IBC.

6. Multi-Layer Application on Partitions/Walls: Apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints.. Stagger joints on opposite sides of partitions.

G. Installation of Trim Accessories:

1. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, attach trim in accordance with manufacturer's instructions and recommendations.

2. Install corner beads at external corners.

3. Install edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

4. Install J or LC-type semi-finishing trim where indicated.

5. Install control joints where indicated or necessary in large ceiling and wall expanses. Use door header to ceiling or floor to ceiling in long partitions and wall furring runs and from wall to wall in large ceiling areas. Where joint will be conspicuous, obtain approval prior to installation.

H. Acoustical Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM E 497, "Installing Sound-Isolating Gypsum Board Partitions", ASTM C 919, "Use of Sealants in Acoustical Applications", and manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

3.03 DRYWALL FINISHING

A. General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fasteners heads, surface defects and elsewhere in accordance with ASTM C 840 and Gypsum Association GA 216 and GA 214 as required to prepare work for decoration. Prefill open joints, rounded or beveled edges, and damaged surfaces using type of compound recommended by manufacturer.

1. Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated that does not require tape.

2. Apply joint compound in 3 coats (not including prefill of openings in base), and sand between last 2 coats and after last coat. Fastener heads, dents, gouges, and cut-outs shall be filled with joint compound and sanded.

3. Accessories at exposed joints, edges, corners, openings, and similar locations shall be taped, floated with joint compound, and sanded to produce surfaces ready for gypsum board finishes.

4. Treatment for water-resistant gypsum wallboard shall be as recommended by the gypsum wallboard manufacturer.

B. Finish interior gypsum wallboard by applying the following levels of gypsum board finish in accordance with GA-214.

1. Level 1: For ceiling plenum areas and other concealed areas.

2. Level 2: Where wall panels form substrates for tile.

3. Level 4: For ceiling surfaces to receive flat paint and wall surfaces to receive an eggshell finish and wall surfaces to receive all grades of wall covering.

4. Level 5: For wall and ceiling surfaces to receive semi-gloss enamel.

5. Where Level 5 gypsum board finish is indicated, embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories; and apply a thin, uniform skim coat of joint compound over entire surface. For skim coat, use joint compound specified for third coat, or a product specially formulated for this purpose and acceptable to gypsum board manufacturer. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects, tool marks, and ridges and ready for decoration.

6. For Level 4 gypsum board finish, embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration.

7. Where Level 3 gypsum board finish is indicated, embed tape in joint compound and apply first and fill (second) coats of joint compound.

8. Where Level 2 gypsum board finish is indicated, embed tape in joint compound and apply first coat of joint compound.

9. Where Level 1 gypsum board finish is indicated, embed tape in joint compound.

3.04 BACKING PLATES AND ANCHORS

Backing plates and anchors or blocking which are to be attached to studs or furring for anchoring items and work indicated on the drawings or specified in other Sections shall be installed and secured. Plates and anchors shall be welded or fastened in place in accordance with approved setting drawings

3.05 CLEANING AND REPAIRING

After installation and before painting, correct surface damage and defects. Leave surface clean and smooth, satisfactory to the painter. painting shall be done over gypsum board work until the joints are thoroughly dry. Joints and fastenings are to be invisible after painting.

END OF SECTION

SECTION 09510 – SUSPENDED ACOUSTICAL CEILING PANELS SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDES

A. Acoustical Ceiling Systems
   1. Acoustical Ceiling Panels.
   2. Exposed grid suspension system.
   3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.

1.02 REFERENCES

A. ASTM C 635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

B. ASTM C 636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

1.03 SYSTEM REQUIREMENTS

A. Structural Characteristics: Suspension system to rigidly secure acoustical ceiling system including integral mechanical and electrical components with maximum deflection of 1/360,
   1. Classification: ASTM C 635 Intermediate Duty Class.
   2. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, “Direct Hung” unless otherwise indicated. Comply with seismic design requirements.

B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
   1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
      a. Flame Spread: 25 or less
      b. Smoke Developed: 50 or less

C. Acoustical Performance:
   1. Acoustical Panels:
      a. Noise Reduction Coefficient (NRC):
         i. ACT-1: 0..90
      b. Ceiling Attenuation Class (CAC):
         i. ACT-1: N/A

D. Seismic Requirements:

1. Acoustical ceiling system to be install in accordance with ASTM E 580 "Practice for Application of Acoustical Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Resistance".

   a. Seismic Zone: As determined by 2006 IBC

E. Optical Performance:

1. Acoustical Tile - Light Reflectance (LR) per ASTM E 1477: 0.90 or greater.

F. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

1.04 SUBMITTALS

A. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

B. Shop Drawings: Layout and details of acoustical ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.

C. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

E. Warranties: Special warranties specified in this Section.

1.05 QUALIFICATIONS

A. Grid Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten years documented experience.

B. Acoustical Unit Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten years documented experience.

1.06 COORDINATION

A. Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.07 PROJECT CONDITIONS

A. Space Enclosure: Do not install interior ceilings until space is enclosed and weatherproof; wet work in place is completed and nominally dry; work above ceilings is complete; and ambient conditions of temperature and humidity are continuously maintained at values near those intended for final occupancy. Building areas to receive ceilings shall be free of construction dust and debris.

1.08 EXTRA MATERIALS

A. Extra Materials: Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

1.09 WARRANTY

A. Acoustical Tiles: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical tiles that fail within the warranty period. Failures include, but are not limited to:

1. Acoustical Tiles: Sagging and warping.

2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:

1. Acoustical Tiles: One (1) year from date of Project Acceptance.

2. Grid: Ten (10) years from date of Project Acceptance.

3. The Surety shall not be liable beyond two (2) years of the Project Acceptance date.

C. The Warranty shall not deprive the University of other rights they may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. Products described in this Section are products of Armstrong World Industries, Inc. Products of one of the following manufacturers are acceptable subject to visual comparability and the requirements of this Section.

C. Suspension System:

1. Armstrong World Industries

2. USG Interiors, Inc.

3. or pre-approved equal.

D. Acoustical Tile Units:

1. Armstrong World Industries
2. USG Interiors, Inc.
3. Certainteed
4. or pre-approved equal

2.02 ACOUSTICAL CEILING TILE TYPES

A. Type **ACT-1**: Fiberglass tile with manufacturers factory-applied acoustically transparent membrane and CAC backing, inherently resistance to mold and mildew growth and protected to prevent sag when air conditioning is not in use.

1. Size: 2 foot by 4 foot by 3/4-inch thick.
2. Pattern: Ultima Health Zone, Square Lay-In as manufactured by Armstrong World Industries Inc.

2.03 SUSPENSION SYSTEMS

A. Recycled Content: Provide products made from steel sheet with average recycled content such that postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

B. Main beams and cross tees shall be hot dipped galvanized steel per ASTM A 653 and finished with baked on polyester paint, color to match the actual color of the selected ceiling tile.

1. Style: Clean Room Aluminum, 15/16” Exposed Tee System as manufactured by Armstrong World Industries, Inc.

C. Edge Moldings and Trim: Of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner. Finish to match exposed tees.

D. Wire for Hangers and Ties: ASTM A 641, Class I zinc coating, soft temper, pre-stretched, with a yield stress load of at least three times the design load, but not less than 12 gauge. With clear non-ferrous hold down clips and factory-applied gaskets.

E. Seismic Struts: Manufacturer’s standard compression struts designed to accommodate lateral forces.

F. Seismic Clips: Manufacture’s standard seismic clips designed and placed to secure acoustical tiles in place.

2.04 ACCESSORIES

A. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify site conditions..

B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C 636 and as supplemented in this section. Install suspension system to comply with the seismic requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook.".

B. Locate system on room axis according to reflected plan.

C. Install after major above ceiling and wet work is complete and humidity levels are stabilized in the building. Coordinate the location of hangers with other work.

D. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

E. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

H. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.

I. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.

J. Do not eccentrically load system, or produce rotation of runners.

K. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet.

L. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

3.03 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Lay directional patterned units one way with pattern parallel to longest room axis. Fit border trim neatly against abutting surfaces.

D. Install units after above ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp and dents.

F. Cut panels to fit irregular grid and perimeter edge trim. Field rabbet edge. Double cut and field paint exposed edges of tegular units.

G. Where round obstructions occur, provide preformed closers to match edge molding.

3.04 ERECTION TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09651 – RESILIENT FLOORING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Sheet Vinyl Flooring
2. Transition Strips

1.02 SUBMITTALS

A. Product Data: Submit manufacturers data, installation instructions, and maintenance manuals for resilient flooring

B. Samples for Verification: Physical samples of each different color and pattern of flooring system specified, showing the full range of variations expected in these characteristics.

C. Heat-Welded Seam Samples: For each flooring product and welding bead color and pattern combination required; with seam running lengthwise and in center of 6-by-9-inch Sample applied to a rigid backing and prepared by Installer for this Project.

D. Product Certificates: Signed by manufacturers of resilient products certifying that each product furnished complies with requirements.

1.03 QUALITY ASSURANCE

A. Manufacturer: Provide flooring by a firm with a minimum of 10 years experience in the production of resilient flooring of the type equivalent to that specified.

B. Installer Qualifications: Engage an experienced installer with a minimum of 5 years experience to perform work of this Section who has specialized in installing resilient flooring products similar to those required for this Project and with a record of successful in-service performance.

C. Source Limitations: Obtain each type, color, and pattern of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

D. Fire-Test-Response Characteristics: Provide products with the following fire-test response characteristics as determined by testing identical products per test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: 0.45 W/sq. cm or greater when tested per ASTM E 648.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 55 and 85 deg F.

C. Store the indoor resilient surfacing rolls in an upright position on a smooth flat surface immediately upon delivery to Project.

D. Move products into spaces where they will be installed at least 48 hours before installation, unless longer conditioning period is recommended in writing by manufacturer.

1.05 PROJECT CONDITIONS

A. Maintain a temperature of 70 deg F plus or minus 5 deg F in spaces to receive products for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After post-installation period, maintain a temperature of not less than 55 deg F or more than 85 deg F.

B. Do not install products until they are at the same temperature as the space where they are to be installed.

C. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.

D. Install flooring and accessories after other finishing operations, including painting, have been completed.

E. Do not install flooring over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive, as determined by flooring manufacturer's recommended bond and moisture test.

1.06 WARRANTY

A. Special Limited Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace flooring that fails within specified warranty period.

1. Material warranty must be direct from the product manufacturer.
2. Failures include, but are not limited to, the following:
    a. Material manufacturing defects.
    b. Surface wear and deterioration to the point of wear-through.
    c. Failure due to substrate moisture exposure not exceeding 80 percent relative humidity when tested according to ASTM F2170 or 5 pounds moisture vapor emission rate when tested according to ASTM F1869.
3. Material manufacturing defects.
    a. For materials: 2 years from date of Project Acceptance.
    b. For surface wear: 10 years from date of Project Acceptance.
    c. For moisture vapor tolerance: 1 year from date of Project Acceptance.

PART 2 - PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

A. Sheet Vinyl Flooring with Integral Flash Cove Base **(RF-01)**:

1. Sheet Vinyl: ASTM F1913, Type 2, Grade 1, unbacked homogeneous sheet vinyl flooring with UV cured factory finish.
    a. Wear-Layer Thickness: 0.030-inch
    b. Overall Thickness: 0.080-inch
2. Seaming Method: Heat Welded.
3. Adhesive Method:
    a. Full-spread adhesive to completely adhere flooring to substrate.
    b. Complete adhesive coverage to eliminate the possibility of gaps or space between the slab and flooring material where moisture could accumulate and create an environment conducive to mold growth.
    c. Flooring to be adhered to the concrete slab in all locations eliminating the possibility of waves or wrinkles forming caused by the floor shifting, moving or by rolling loads displacing it.
4. Roll Size:
    a. Roll Width: Rolls to be a minimum width of 6-feet 6-inches.
    b. Roll Length: Rolls to be a minimum length of 66-feet.
5. Color and Pattern: As schedule.
6. Performance Criteria:
    a. Static Load Limit/ Maximum Static Load:
        i. ASTM F 970: Exceed, -0.002'-inch
        ii. Modified ASTM F 970 for maximum static load, 2000 PSI
    b. Residual Indentation: ASTM F1914; Exceeds, -0.005-inch
    c. Impact Resistance: ASTM F925; Excellent, results on request
    d. Impact Insulation Class: ASTM E989 (E492); 42
    e. Slab Moisture Design Tolerance:
        i. Maximum relative humidity of 80 percent when tested according to ASTM F 2170.
        ii. Maximum moisture vapor emission rate of 5 pounds of water per 1000 sq. ft. in 24 hours when tested according to ASTM F1869.

B. Accessories

1. Reducers: Butt-to transition, polyvinyl chloride (PVC), high quality additives, and colorants, ASTM E 648 Class 1.

2.02 INSTALLATION MATERIALS

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

B. Adhesives: Brush-on , roll-on, or trowel on water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Adhesive shall be solvent free with zero VOC content, low odor , no ammonia and non-flammable in wet state.

C. Heat Welding Bead: Solid-strand product of floor covering manufacturer. Color to match flooring.

1. Chemical-bonding compound shall have a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. Vapor Retarder: Two-part, fluid- applied, epoxy based membrane compatible with flooring adhesive.

1. Durabond Slab Cote as manufactured by Bostik, Inc., or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where installation of vinyl products will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may act as a bond breaker. Substrate surface shall be smooth and flat to within 1/8 inch per 10 feet

2. Slab, regardless of age and grade level, shall be tested for moisture vapor emissions in accordance with ASTM F 1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Sub-floor Using Anhydrous Calcium Chloride. One test shall be conducted for every 1000 square feet of flooring and the results not to exceed 3 pounds per 100 square feet per 24 hours.

3. Perform alkalinity and adhesion tests recommended in writing by manufacturer.

4. Subfloor finishes comply with requirements specified in Section 03300 - CAST-IN-PLACE CONCRETE for slabs receiving resilient flooring.

5. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Comply with resilient product manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.

B. Apply the specified vapor retarder or approved equal in strict accordance to the manufacturer's written instructions.

C. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates. Substrate tolerance: level to within 1/8" in 10' at all locations.

D. Remove coatings, including curing compounds, and other substances that act as bond breakers and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

E. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

3.03 FLOOR INSTALLATION, GENERAL

A. General: Comply with tile manufacturer's written installation instructions.

B. Scribe, cut, and fit floor covering to butt neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

C. Extend floor covering into toe spaces, door reveals, closets, and similar openings.

D. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent, nonstaining marking device.

E. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.04 SHEET VINYL INSTALLATION

A. Unroll sheet vinyl floor coverings and allow them to stabilize before cutting and fitting. Lay out sheet vinyl flooring maintaining uniformity of floor covering direction. Minimize the number of seams keeping seams a minimum 6-inches away from parallel joints in the floor covering. Match edges of flooring for color shading at seams. Avoid cross seams.

B. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and use welding bead to permanently fuse sections into a seamless floor covering. Prepare, weld, and finish seams to produce surfaces flush with adjoining floor covering surfaces.

3.05 CLEANING AND PROTECTING

A. Perform the following operations immediately after installing resilient products:

1. Remove adhesive and surface blemishes using cleaner recommended by resilient product manufacturers.

2. Sweep or vacuum floor thoroughly.

3. Do not wash floor until after time period recommended by flooring manufacturer.

B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by flooring manufacturer.

1. Cover products installed on floor surfaces with undyed, untreated building paper until inspection for Project Acceptance.

2. Do not move heavy and sharp objects directly over floor surfaces. Place plywood or hardboard panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

C. Clean floor surfaces not more than 4 days before dates scheduled for inspections intended to establish the Project Acceptance date in each area of Project. Clean products according to manufacturer's written recommendations.

END OF SECTION

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. Work Includes: The work includes painting and finishing of exterior and interior items and surfaces throughout the project, whether scheduled or not, except as otherwise indicated. Painting shall include new work and surfaces made bare or damaged during construction. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of the work and are included in this Section.

B. The work includes field painting of exposed bare and covered pipes and conduits, and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the electrical work, such as junction boxes, raceways and cabinets, except as otherwise indicated.

C. “Paint” as used herein means all coating systems materials, including primers, enamels, sealers, stain, varnish, and fillers, and other applied materials whether used as prime, intermediate or finish coats, except as specifically noted herein.

D. Paint all exposed surfaces whether or not colors are designated in “schedules.” Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. If color or finish is not designated, the Architect will select these from standard colors available for the materials systems specified.

1.02 PAINTING NOT INCLUDED

A. The following categories of work are not included as part of the field-applied finish work, or are included in other sections of these specifications.

1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for miscellaneous metal, hollow metal work, and similar items.

   Also, for fabricated components such as shop-fabricated or factory-built mechanical and electrical equipment or accessories.

2. Mechanical and Electrical Work: The prime coat for mechanical and electrical work is specified in Divisions 15 and 16, respectively. Finish coats are as specified herein.

3. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer finishing is specified for such items as (but not limited to) solid phenolic, plastic laminate, high performance organic coated metal, exterior finish system, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets.

4. Concealed Surfaces (Present and Future): Unless otherwise indicated painting is not required on surfaces such as walls or ceilings in conceal areas and generally inaccessible areas, furred areas, and pipe spaces.

5. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, and similar finished materials will not require finish painting, unless otherwise indicated.

6. Labels: Do not paint over any code-required labels, such as Underwriters' Laboratories, or any equipment identification, performance rating, name, or nomenclature plates.

1.03 SUBMITTALS

A. Submit under the provisions of Section 01330 - SUBMITTALS.

B. Schedule of Finishes: Submit sets of the proposed painting finish schedule to the Architect for approval. The schedule shall indicate the wet film thickness (mils) which the proposed paints/coatings will be applied that are necessary to achieve the final dry film thickness indicated on the Schedule of Finishes under paragraph entitled “Schedule of Finishes”.

C. Color Samples: Submit the following to the Architect for approval.

1. Sets of each color finish sample.

D. Schedule of Operations: Before work on the project is commenced, complete sets of a work schedule showing Contractor’s sequence of operations and dates shall be submitted to the Architect.

E. Warranty: Copies of a written warranty shall be submitted to the Architect.

F. Certifications: Copies of asbestos-free, lead-free, zinc-chromate-free, strontium chromate-free, cadmium-free, and mercury free paint certificates shall be submitted to the Architect.

G. Manufacturer’s Product Data Sheets: Copies of the Manufacturer’s Product Data Sheets for the primers, paints, coatings, solvents, sealing and patching materials, sealants and caulking, and other materials being used shall be submitted to the Architect. Data sheets shall indicate thinning and mixing instructions, required film thickness (mil) and application instructions.

H. Manufacturer’s Material Safety Data Sheets: Copies of the Manufacturer’s Material Safety Data Sheets for coatings, solvents, and other hazardous materials shall be submitted to the Architect.

I. Comprehensive Spray Plan: Where the Contractor proposes to employ airless spraying, a Comprehensive Spray Plan including the following information shall be submitted to the Architect for approval:

1. Documentation that the individual spray applicator(s) on the project have completed an approved “Spray Applicator Certification Program”.

2. The overspray protection methods proposed.

3. The spray application instructions and recommendations of the paint manufacturer he proposes to use.

J. Certificate of Public Liability and Property Damage Insurance

1.04 ANALYZING AND TESTING

A. All paints and their applied thickness shall be subject to testing whenever the Architect deems necessary to determine conformation to the requirements of these specifications. Should testing by a laboratory be required, the laboratory shall be selected by the Architect and the cost of testing shall be borne by the Contractor. However, should test results show that the paint is in compliance with these specifications, the cost will be borne by HHSC.

B. All rejected material shall be removed from the job site immediately. Surfaces painted with the rejected material shall be redone at no additional cost to HHSC.

C. Where the required paint thickness is deficient, the affected surface(s) shall be recoated as necessary to provide the required paint thickness at no additional cost to HHSC.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

1.06 WARRANTY

A. Warranty that the work performed under this section conforms to the contract requirements and is free of any defect in the materials used and workmanship performed by the Contractor. Such warranty shall continue for a period of two years from the Project Acceptance date and the Contractor shall remedy any such defect which is discovered during that period at no cost to HHSC.

B. HHSC will notify the Contractor in writing within a reasonable time after discovery of any failure or defect.

C. Should the Contractor fail to remedy any failure or defect described in Paragraph A above within 10 working days after receipt of notice thereof, HHSC shall have the right to repair or otherwise remedy such failure or defect and charge the Contractor for the cost of same.

1.07 SPECIAL REQUIREMENTS

A. Codes: Comply with State OSHL (Occupational Safety and Health Law) and all pollution control regulations of the State Department of Health.

B. Safety methods used during coating application shall comply with SSPC-PA Guide 3.

C. Protection:

1. Persons:

   a. Take all necessary precautions to protect public pedestrians including tenants from injury.

   b. Provide, erect, and maintain safety barricades around scaffolds, hoists, and wherever Contractor's operation create hazardous conditions in order to properly protect the public and workmen.

2. Completed Work: Provide all necessary protection for wet paint surfaces.

3. Protective Covering: Provide and install protective covering over equipment, floor and other areas that are not scheduled for treatment. Protective covering shall be clean, sanitary drop cloth or plastic sheets. Paint applied to surfaces not scheduled for treatment shall be completely removed and surfaces shall be returned to original condition.

4. Safeguarding of Property: Take whatever steps necessary to safeguard the work and also the property of HHSC and other individuals in the vicinity of the work area during the execution of this Contract. Contractor shall be responsible for and make good on any and all damages and for losses to work or property caused by his or his employee's negligence. Where the damaged property cannot be cleaned and restored to its original condition (i.e. prior to being damaged) it shall be replaced with a new product of equal quality. No proration or use of "used" products will be permitted.

   a. The Contractor shall be assessed $300.00 for each incidence of property or personal damage caused by his or his employee's negligence until such time that a satisfactory settlement has been agreed upon by the damaged party and corrective action has been completed. All corrective action shall be settled within 24 hours from the time the damage is discovered. Should the Contractor fail to take corrective action in a timely and expeditious manner, the Architect will contact the Contractor's Insurance company to seek resolution on the matter.

   b. The Architect will withhold payment due the Contractor until damages have been corrected or damage claims resolved. The amount of payment withheld shall be equal to a minimum of $2,000.00 plus the estimated cost of corrective action as determined by the Architect.

5. Fire Safety: Direct employees not to smoke in the vicinity and exercise precautions against fire at all times. Waste rags, plastic (polyester sheets), empty cans, etc., shall be removed from the site at the end of each day.

D. Right of Rejection: The Architect will have the right to reject all work which is not in compliance with the plans and specifications. Rejected work will be redone at no additional cost to HHSC.

   In addition, the Architect will have the right to require the immediate removal of any paint applicator who demonstrates negligence, lack of competence or repeated non-compliance with the contract requirements.

E. Sequence of Operations: The sequence of operations shall divide the surfaces into work areas and present a schedule for:

   1. Surface preparation and spot prime.

2. Prime coat.
3. First finish coat.
4. Second finish coat.

F. Inspection and Approvals: Obtain written approval from the Architect upon completion of each phase of work (phases of work are: surface preparation and spot prime; prime; first finish coat; second finish coat) before proceeding into the next phase of work. Give the Architect one day (24 hours minimum) advance notice of completion of any phase of work for a work area only when he deviates from the previously submitted work schedule. Provide necessary access to areas to be inspected.

Failure to obtain approval of any phase of work for a work area may result in redoing the operation at no cost to HHSC.

G. Sample Panels: Prior to commencing with the work, prepare a sample panel(s) of approximately 10 square feet indicative of the specified surface preparation and required number of paint coats to be applied for approval by the Architect. The intent of this requirement is to ensure adequate coverage/thickness and/or hiding value of the paint and proper hue. The location where the sample panel(s) is to be prepared will be selected by the Architect.

H. Ventilation of Interior Spaces Following Painting: Following the completion of interior painting and prior to final acceptance, the interior spaces shall be ventilated and allowed to “air-out” to remove paint odors such that no odors exist at HHSC’s occupancy date. Where necessary and as deemed by the Architect, the Contractor shall provide fans to mechanically ventilate the space(s).

1.08 DELIVERY, STORAGE AND HANDLING

A. Deliver paint materials to the job site in original unopened containers with original labels intact.

B. No paint material, empty cans and paint brushes and rollers, drop cloths and rags, may be stored in buildings, but shall be stored in separate storage facilities away from the buildings. Receiving, opening, and mixing of painting materials shall be done in this area.

C. The Contractor may furnish a job site storage facility. Such facility shall comply with requirements of the local Fire Department. The storage area shall be kept clean and facility shall be locked when not in use or when no visual supervision is possible.

D. Ensure the safe storage and use of paint materials and the safe storage or disposal of waste, at the end of each work day.

1.09 WARRANTY

A. Provide a two year warranty that the work performed under this section conforms to the contract requirements and is free of any defect of material or workmanship.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Hazardous Material Prohibition: All paint shall be free of asbestos, lead, mercury, zinc-chromate and/or strontium chromate, and cadmium.

B. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

C. Material shall be equal in quality to that specified under the Schedule of Finishes and any given finish shall be as labeled by one manufacturer.

D. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Flat Paints, Coatings, and Primers: VOC content of 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC content of 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.

E. All materials shall be delivered to the job site in undamaged original containers bearing the manufacturer's label and shall be stored in such a manner as to prevent damage. All rejected materials shall be removed from the job site immediately.

F. Subject to compliance with the requirements paints shall be as manufactured by one of the following manufacturers:

1. Benjamin Moore
2. Pittsburg Paints
3. Pratt & Lambert
4. Rust-Oleum
5. Sherwin-Williams
6. or Approved equal.

G. Thinning of paint shall be done using material recommended by the manufacturer. Mix proprietary products according to manufacturer's printed specifications. Compound thinner, mineral oil, kerosene, refined linseed oil, or gasoline shall not be used for thinning.

H. Mildew and Mold Resistance:

1. Mildew Treatment: All paints specified in this section shall be factory formulated to be mold and mildew resistant.

    a. The supplier shall submit aa signed certificate indicating that the primers and paints supplied for this Project are manufactured and factory formulated to be mold and mildew resistant

2. In the event a specified primer or finish paint is not formulated with mold and mildew resistant properties, provide each primer and finish paint with the maximum amount of mildewcide per gallon of paint permitted by the mildewcide manufacturer without adversely affecting the quality of the paint.

    a. Mildewcide Additive: Zinser Add2 Prevent Mildew Mildewcide Additive, or approved equal.

    b. The supplier shall submit a signed certificate indicating the amounts of mildewcide added by both the paint manufacturer and the paint supplier. Mercurial fungicide shall not be used.

2.02 SCHEDULE OF FINISHES

A. The Schedule of Finishes is made for the convenience of the Contractor and indicates the types and quality of finishes to be applied to the surfaces. Refer to Finish Schedule for symbols indicating location for various finishes. Provide additional systems for surfaces to be painted not listed hereinafter.

B. All paints unless otherwise noted, are the products of Benjamin Moore and are so named to establish desired quality and standard of materials. Painting materials, equal to those mentioned by trade name under the various treatments may be used, provided they meet with the approval of the Architect.

C. Treatments shall be applied on exposed surfaces of designated materials, in conformity with instructions of the paint product used.

D. Exterior Painting: Colors to be selected by Architect.

1. <u>Cast-In-Place Concrete:</u>

Primer Coat:	Ultra Spec Masonry Interior / Exterior 100% Acrylic Masonry Sealer (608) or Fresh Start® Multi-Purpose Latex Primer (N023)
2nd Coat:	Ultra Spec EXT Flat Finish (N447)
3rd Coat	

E. Interior Painting: Colors to be selected by Architect

1. Gypsum Board:

Wall:

Prime coat:	Benjamin Moore Ultra Spec 500 Interior Latex Primer N534
2nd and 3rd coats:	Benjamin Moore Ultra Spec SCRUFF-X Interior Eggshell Finish 485

Ceiling:

Prime coat:	Benjamin Moore Ultra Spec 500 Interior Latex Primer N534
2nd and 3rd coats:	Benjamin Moore Ultra Spec SCRUFF-X Interior Eggshell Finish 485

2. Non- Ferrous Metals:

Prime coat:	Ultra Spec® HP Acrylic Metal Primer (HP04)
2nd and 3rd coats:	Benjamin Moore Ultra Spec SCRUFF-X Interior Eggshell Finish 485

F. Mechanical Piping Painting:

1. Provide piping identification and flow arrows. Chilled water piping shall be color coded as follows: Supply – Dark Blue; Return – Light Blue. Condenser water piping shall be as follows: Supply – Dark Green; Return – Light Green.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. General:

1. Surface preparation shall be in accordance with the Painting and Decorating Contractors of America, “Architectural Specification Manual,” methods are applicable to all substrates.

2. Scrub surfaces with stiff nylon bristle brush and T.S.P. solution at rate of 3/4 cup T.S.P. per gallon of warm water to remove accumulated film of wax, oil, grease, smoke, dust, dirt, chalky, or other foreign matter which would impair bond or bleeding through new finish. Thoroughly sponge wipe surfaces with clean water. Allow surfaces to thoroughly dry before priming, painting, calking, or sealing.

   a. Following sponge wiping, the surfaces shall be allowed to dry for a minimum of 24 hours.

   b. Wood surfaces shall have a maximum moisture content of 12 percent when measured with an electronic moisture meter.

3. Cracks and openings found at joints and where different materials abut each other shall be sealed with a caulking compound compatible with the substrate and primer/paint. The caulking shall be applied and allowed to set in accordance with the manufacturer’s recommendations and instructions.

B. The painting contractor shall be wholly responsible for the finish of his work and shall not commence any part of it until surfaces are in proper condition. If painting contractor considers any surfaces unsuitable for proper finish of his work, he shall notify the Architect of this fact in writing and he shall not apply any material until the unsuitable surfaces have been made satisfactory, or until the Architect has instructed him to proceed. Major defects shall be restored by the proper trades. In general, follow paint manufacturer’s directions for surface preparation for the paint to be applied.

C. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

D. All necessary puttying of nail holes, cracks and blemishes shall be done after priming coat has become hard and dry and before second coat is applied.

E. All surfaces adjacent to areas being finished shall be protected and left clean of paints, stains, etc. Clean drop cloths shall be used until completion of job.

F. Unprimed galvanized metal shall be washed with a solution of chemical phosphoric metal etch and allowed to dry.

G. All metal surfaces shall be made clean and free of any defects or condition that may produce unsatisfactory finish. Touch-up any chipped or abraded places on surfaces that have been shop coated with the proper primer.

H. Gypsum Board Surfaces:

1. Surface Cleaning: Surfaces shall be dry. Remove loose dirt and dust by brushing with a soft brush or rubbing with a dry cloth prior to application of the first coat material.

2. Repair of Minor Defects: Prior to painting, repair joints, cracks, holes, surface irregularities, and other minor defects with patching plaster or spackling compound and sand smooth.

I. Plywood and Wood Surfaces:

1. Surface Cleaning: Surfaces shall be free from dust and other deleterious substances and in a condition approved by the Architect prior to receiving paint or other finish. Do not use water to clean uncoated wood.

2. Knots and Resinous Wood: Prior to application of paint, treat knots and resinous wood with an application of surface sealer.

3. Open Joints and Other Openings: Fill with whiting putty. Sand smooth after putty has dried.

4. Checking: Where checking of the wood is present, sand the surface, wipe, and apply a coat of pigmented orange shellac. Allow to dry before paint is applied.

J. PVC Trims and Accessories: Paint to match adjoining surfaces unless specifically indicated to remain unpainted.

3.02 PAINT APPLICATION

A. General:

1. Apply coating materials in accordance with SSPC-PA 1. SSPC-PA 1 methods are applicable to all substrates, except as modified herein. Thoroughly work coating materials into joints, crevices, and open spaces. Touch-up damaged coatings before applying subsequent coats.

2. All work shall be done in a workmanlike manner by skilled and experienced mechanics and shall conform to the best painting practices.

3. All materials shall be applied in accordance with the manufacturer's specifications and the finished surfaces shall be free from runs, sags, drips, ridges, waves, laps, streaks, brush marks and variations in color, texture and finish (glossy or dull). The coverage shall be complete and each coat shall be so applied as to produce a film of uniform thickness. No paint, varnish or enamel shall be applied until the preceding coat is thoroughly dry and approved.

4. Interior areas shall be broom clean and dust free before and during the application of coating material.

5. Any mixing shall be done outside the building.

B. Application:

1. Paint application shall be by brush, roller, airless spray painting or combination thereof or as required by manufacturer.

2. Where airless spraying is provided, a nozzle of the proper size in accordance with the paint manufacturer's recommendations to properly apply the paint shall be used.

3. Spray painting method shall be used only under approved conditions. Spraying shall be done only when there is no wind, or under very low wind velocity. When wind velocity increases, all spraying operation shall be stopped. Before start of spraying, all surfaces that do not require painting shall be completely masked and protected. Adequate drop cloths shall be provided over floors, adjacent sidewalks, and over all cars parked nearby that may be stained or damaged from the spray work.

4. Drying Time: Allow time between coats, as recommended by the coating manufacturer, to permit thorough drying. Provide each coat in specified condition to receive the next coat.

5. Primers and Intermediate Coats: Do not allow primers or intermediate coats to dry more than 30 days, or longer than recommended by the manufacturer, before applying subsequent coats. Follow manufacturer's recommendations for surface preparation if primers or intermediate coats are allowed to dry longer than recommended by manufacturers of subsequent coatings. Each coat shall cover the surface of the preceding coat or surface completely and there shall be a visually perceptible difference in shades of successive coats.

6. Finished Surfaces: Provide finished surfaces free from runs, drops, ridges, waves, laps, brush marks, and variations in selected colors.

C. Colors: Tint pigmented undercoats to approximately same shade as final coat. Perceptibly increase the shade of each successive coat. Colors shall be in accordance with the color schedule on the drawings or as selected by the Architect.

D. Finish Film Thickness: Apply primer, intermediate, and finish coats to not less than 1.5 mils dry film thickness, 4 mils wet unless recommended otherwise in writing by the manufacturer, for each coat and in accordance with the manufacturer's recommendations. Verify mil thickness by use of a suitable wet film gauge. Use a Tooke or other dry film gauge to test for total dry film thickness.

3.03 MECHANICAL AND ELECTRICAL WORK

A. Paint visible surfaces of ductwork or plenum spaces, and interior surfaces visible through grilles.

B. Paint shop primed metal surfaces of mechanical and electrical equipment with two finish coats of paint to match adjoining wall or ceiling surfaces. Prime unprimed bare metal surfaces with specified prime coat.

3.04 MISCELLANEOUS

A. Installation of Removed Items: After completion of final paint coat, Reinstall removed items.

B. At the completion of other trades, touch up damaged surfaces.

3.05 CLEAN UP

A. During the progress of the work, remove all debris, empty crates, waste, drippings, etc., and leave the grounds about the areas to be painted clean and orderly at the end of each work day.

B. Upon completion of the work, remove staging, scaffolding, containers and all other debris from the site. Remove all paint, shellac, oil or stains splashed or spilled upon adjacent surfaces not requiring treatment (hardware, fixture, floor) and leave the entire job clean and acceptable.

C. Rinsing and cleaning of painting equipment shall be done completely off campus. Use of campus facilities and fixtures is strictly prohibited.

END OF SECTION

SECTION 10200 - METAL LOUVERS AND VENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Storm Resistant Fixed Wall louvers
2. Storm Resistant Fixed Wall Louvers with Backdraft Dampers

1.02 SUBMITTALS

A. General: Submit under provisions of Section 01330 - SUBM1TTAL PROCEDURES.

B. Manufacturer's Data: Submit copies of manufacturer's product specifications and installation instructions along with shop drawings. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

C. Shop Drawings: Submit shop drawings for fabrication and erection. Include plans, elevations, sections, large scale details, materials and thicknesses, and anchorages.

D. Samples: Submit 4 samples of high performance organic coated aluminum color and finish for factory finished louvers.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver.

1.03 PERFORMANCE REQUIREMENTS

A. Air performance, water penetration, air leakage ratings and wind-driven rain ratings: Provide louvers complying with performance requirements indicated as demonstrated by testing manufacturers stock units, of height and width indicated, according to Air Movement and Control Association (AMCA) Standard 500.

B. Airborne sound transmission loss: Provide acoustical louvers complying with airborne sound transmission loss ratings indicated, as demonstrated by testing manufacturer's stock units according to ASTM E 90.

C. Structural Performance: Structural supports shall be designed and furnished by louver manufacturer to withstand loads created by the following criteria:

1. Wind Speed: 105 mph in 3 sec gusts, Exposure C
2. Seismic: As per 2003 IBC

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used in this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. Extruded Aluminum: ASTM B 211, aluminum extrusions shall be of 6063-T5 alloy and temper. Fasteners, where exposed, shall be aluminum or stainless steel in accordance with ASTM A 164.

C. Aluminum Sheet: ASTM B 3209, Alloy 1100, 3003 or 5005.

D. Fasteners: Of same basic metal and alloy as fastened metal, unless otherwise indicated. Do not use metals which are corrosive or incompatible with materials joined.

1. Use types, gages, and lengths to suit unit installation conditions.

2. Use Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated.

E. Anchors and Inserts: Of type, size, and material required for type of loading and installation indicated. Use hardened aluminum or stainless steel anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or expansion bolt devices for drilled-in-place anchors.

F. Bituminous Paint: SSPC-Paint 12 (cold-applied asphalt mastic).

2.02 FABRICATION, GENERAL

A. General: Fabricate louvers to comply with requirements indicated for design, dimensions, materials, joinery, and performance.

B. Preassemble louvers in shop to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

C. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

D. Fabricate frames, including integral sills, to fit in openings of size indicated with allowances made for fabrication and installation tolerances of louvers, adjoining construction, and perimeter sealant joints.

E. Include supports, anchorages, and accessories required for complete assembly.

F. Provide concealed vertical brace/mullion of type and at spacing indicated.

G. Join frame members to one another and to fixed louver blades as follows, unless otherwise indicated, or size of louver assembly makes bolted connections between frame members necessary: With fillet welds, concealed from view; or mechanical fasteners; or a combination of these methods; as standard with louver manufacturer.

2.03 STORM RESISTANT FIXED WALL LOUVERS

A. Storm Resistant Horizontal Louver (6-inch Deep): Heads, jambs and mullions to be one piece 0.081-inch thick structural aluminum members with integral caulking slot and retaining beads. Mullions shall be sliding interlock with integral drains. Blades to be one piece 0.081-inch thick aluminum extrusions with front lip gutter and secondary gutters designed to catch and direct water to jamb and mullion downspouts. Equal to Ruskin. Model # ELF375DX or approved equal.

1. Air Performance: Louver shall pass a maximum free area velocity of 7,962 cfm with less than 0.21-inch wg pressure drop.

    a. Test criteria shall be based on a 48-inch square sample with a minimum free area of 6.99 square feet or 44%.

2. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall of 3 inches/hr. and a wind speed of 29 mph.

    a. Test criteria shall be based on a 39.37-inch square sample.

3. Louver shall carry the AMCA Certified Ratings Seal for both water penetration and air performance.

B. Storm Resistant Horizontal Louver with Backdraft Damper (6-inch Deep): Heads, jambs and mullions to be one piece 0.081-inch thick structural aluminum members with integral caulking slot and retaining beads. Mullions shall be sliding interlock with integral drains. Blades to be one piece 0.081-inch thick aluminum extrusions with front lip gutter and secondary gutters designed to catch and direct water to jamb and mullion downspouts. Equal to Ruskin. Model # ELBD375E or approved equal.

1. Air Performance: Louver shall pass a maximum free area velocity of 7,962 cfm with less than 0.21-inch wg pressure drop.

    a. Test criteria shall be based on a 48-inch square sample with a minimum free area of 6.99 square feet or 44%.

2. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall of 3 inches/hr. and a wind speed of 29 mph.

    a. Test criteria shall be based on a 39.37-inch square sample.

3. Louver shall carry the AMCA Certified Ratings Seal for both water penetration and air performance.

2.04 BIRD SCREENS AND ACCESSORIES

A. General: Provide each exterior wall louver with louver screens complying with the following requirements.

1. Screen Location for Fixed Louvers: Interior face, unless otherwise indicated.

2. Bird Screening: 14 gauge, 1/2-inch stainless steel wire mesh.

B. Secure screens to louver frames with stainless steel machine screws, spaced at each corner and at 12 inch on center between.

C. Louver Screen Frames: Fabricate screen frames with mitered corners to louver sizes indicated and to comply with the following requirements:

1. Metal: Same kind and form of metal as indicated for louver frames to which screens are attached.
2. Finish: Same finish as louver frames to which louver screens are attached.
3. Type: Rewireable frames with a driven spline or insert for securing screen mesh.

D. Blank-Off Panels: 0.040 inch aluminum sheet aluminum skin, insulated core], factory installed with removable screws and neoprene gaskets

2.05 FINISH

A. All exposed aluminum surfaces shall be free of scratches and other blemishes. Pre-clean surfaces and provide a conversion coating and provide exposed surfaces of aluminum with a three coat fluoropolymer coating system containing at least 70 percent by weight polyvinylidene fluoride, PVF2 resin, factory-applied, oven baked conforming to AAMA 605.2, “High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels,” with total dry film thickness of not less than 1.2 mils. Color as selected by the Architect.

PART 3 - EXECUTION

3.01 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions and directions for installation of anchorages which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.02 INSTALLATION

A. Locate and place louver units plumb, level, and in proper alignment with adjacent work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated. Provide closed cell PVC compression gaskets between jambs and sill frame and surrounding construction.

E. Repair finishes damaged by cutting, welding, soldering, and grinding operations required for fitting and jointing. Restore finishes so there is no evidence of corrective work. Return items which cannot be refinished in field to shop, make required alterations and refinish entire unit, or provide new units.

F. Protect galvanized and nonferrous metal surfaces from corrosion or galvanic action by application of a heavy coating of bituminous paint on surfaces which will be in contact with concrete, masonry, or dissimilar metals.

3.03 ADJUSTING AND PROTECTION

A. Protect louvers from damage of any kind during construction period including use of temporary protective coverings where needed and approved by louver manufacturer. Remove protective covering at time of Substantial Completion.

B. Restore louvers damaged during installation and construction period, so that no evidence remains of correction work. If results of restoration are unsuccessful, as judged by the Architect, remove damaged units and replace with new units.

3.04 CLEANING

A. Periodically clean exposed surfaces of louvers which are not protected by temporary covering, to remove fingerprints and soil during construction period; do not let soil accumulate until final cleaning.

B. Before final inspection, clean exposed surfaces with water and with a mild soap or detergent not harmful to finishes.

END OF SECTION

SECTION 10800 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Includes: The extent of each type of toilet accessory is shown on the drawings and herein specified.

B. Related Work Described Elsewhere:

1. Section 06100 - ROUGH CARPENTRY: Blocking.

1.02 QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish inserts and anchoring devices for toilet accessories. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

B. The structural strength of all grab bars, shower seats and all fasteners and mounting devices shall meet or exceed the accessibility requirements of the 2010 ADA Standards for Accessible Design Section 609.8

C. Products:

1. Provide products of the same manufacturer for each type of accessory unit and for units exposed in the same areas, wherever possible.

2. Coordinate with the Architect for acceptable designs and finishes.

3. Stamped names of labels on exposed faces of units will not be permitted, except where otherwise specified.

4. Provide locks where specified or standard with the manufacturer. One key shall fit all locks of one brand. Provide a minimum of 6 keys.

D. Accessibility: Mount accessories for accessible toilets in accordance with the 2010 ADA Standards for Accessible Design Sections 308.2.1, 609, 604.9.6, 603.3, 604.5, 604.9.5 where either in an accessible stall or accessible by all.

E. Drawings may be general in nature. Accessories shown for one stall or room shall be repeated in similar stalls or rooms unless noted otherwise.

1.03 SUBMITTALS

A. Submit in accordance with Section 01330 - SUBMITTALS.

1. Manufacturer's Data: For information only, submit copies of manufacturer's specifications and installation instructions for each toilet accessory.

2. Schedule: Submit a schedule listing types, quantities, and installation locations by room for each toilet accessory to be provided.

3. Samples: When requested, submit full-size samples of units to Architect for review of finishes. Acceptable samples will be returned and may be used in the work. Compliance with all other requirements is the exclusive responsibility of the Contractor.

1.04 DELIVERY, STORAGE AND HANDLING

A. Toilet accessories shall be wrapped for shipment and storage, delivered to the jobsite in manufacturer's original packaging and stored in a clean, dry area protected from construction damage and vandalism.

1.05 WARRANTY

A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.

B. Warranty Period: 15 years from date of Project Acceptance. The Surety will not be held liable beyond 2 years of the Project Acceptance date.

C. The warranty shall not deprive HHSC of other rights HHSC may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Stainless Steel: ASTM A 666 AISI, Type 304. Provide satin finish, in 0.0312-inch minimum nominal thickness, unless otherwise specified.

B. Galvanized Steel Sheet: ASTM A 653/A 653M, G60.

C. Fasteners: Screws, bolts and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

D. Galvanized Steel Mounting Devices: Hot-dip galvanized after fabrication ASTM A A 153/A 153M.

2.02 MANUFACTURERS

A. Product manufacturers as scheduled in the Drawings are basis-of-design manufacturers. Subject to compliance with the requirements manufacturers offering comparable products will be considered.

2.03 LIST OF TOILET ACCESSORIES

1. TR-1 – Trash Receptacle Free Standing 23 Gallon Square with swing lid – Carlisle 34352323 with swing lid – Grey LDPE.
2. PTD-1 Paper Towel Dispenser - Bobrick B-2620
3. SD-1 – Hand Soap Dispenser – Bobrick B-4112
4. P-Trap Cover - Plumberex Model 307 White ADA Compliant.

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer must examine the areas and conditions under which toilet accessories are to be installed. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Determine that all blocking and concealed backer plates have been installed to allow mounting of accessories.

3.02 INSTALLATION

A. Use concealed fastenings wherever possible.

B. Provide anchors, bolts, backer plates, and other necessary fasteners, and attach accessories securely to walls and partitions in locations as shown or directed.

C. Install concealed mounting devices and fasteners fabricated of the same material as the accessories or of galvanized steel.

D. Install exposed mounting devices and fasteners finished to match the accessories.

E. Provide theft-resistant stainless steel fasteners for all accessory mountings.

F. Secure toilet room accessories to adjacent walls and partitions complying with the manufacturer's instructions for each item and each type of substrate construction.

G. Where accessories transition uneven substrates such as between ceramic tile wainscot and wall surface above, provide finish wood spacers to completely fill all voids. Finish to match wall surface or as directed.

H. Provide solid backing for all accessories.

3.03 CLEAN UP

A. Clean exposed surfaces as recommended by the manufacturer and restore damaged work to its original condition or replace with new.

END OF SECTION