SECTION 01 43 00 – QUALITY ASSURANCE

PART 1 - GENERAL

1.01 SUMMARY: The Contractor is responsible for establishing and implementing a Quality Assurance program that ensures timely and cost-effective completion of the Work.

1.02 STATEMENT OF AGREEMENT: The Contract Documents have been checked by the Architect and to the best of the Architect's knowledge and belief are reasonably free from errors, omissions, conflicts, inconsistencies, code violations, and improper use of materials. To identify any problems which may remain in the Contract Documents, and to expedite their resolution, the Contractor shall follow the procedures described herein.

A. Contractor's Examination: The Contractor shall carefully study and compare all Contract Documents and at once report to the Architect in writing any error, omission, conflict, inconsistency, or code violation the Contractor may discover.

B. Subcontractor Examination: The Contractor shall require that each Subcontractor read and comply with requirements of this Section, study and compare Specification Sections which cover the Work of each Subcontractor, and report to Contractor in writing any error, omission, conflict, inconsistency, or code violation any Subcontractor may discover.

C. Non-Responsibility: Compliance with these requirements does not obligate the Contractor, or any Subcontractor, to correct the problems that are so identified without written instructions from the Owner or Architect.

D. Statements: Before awarding any subcontract, or starting any Work with Contractor's own forces, the Contractor, and each Subcontractor through the Contractor, shall complete and submit to the Owner a Statement of Agreement as specified herein. The Statement of Agreement is included in this Section for information, reproduction, and distribution by the Contractor. Complete the item entitled "Exceptions" by indicating "No Exceptions", or list exceptions together with any errors, omissions, conflicts, inconsistencies, code violations, improper use of materials, usage of materials contrary to the involved manufacturer's instructions or usage that voids the manufacturer's guarantee or warranty, discovered in the Contract Documents.

E. Resolution of Exceptions: Contractor shall resolve all exceptions which are identified as described above with the Owner and Architect before awarding applicable subcontracts. If any of the completed Statements of Agreement identify conflicts or conditions which interfere with structural integrity, function, or architectural appearance of the Work, and which cannot be resolved without additional cost to the Contractor, the Contractor shall inform the Owner in writing. Any Work involving identified exceptions performed prior to receipt of instructions from the Owner will be done at Contractor's risk.

F. Delivery: All Statements of Agreement required herein shall be delivered to the Owner prior to execution of the Owner-Contractor Agreement.

(Section Continues)

STATEMENT OF AGREEMENT

Undersigned acknowledges that, in the process of preparing a bid for referenced category of Work, undersigned has examined, read and understands requirements of all of the Contract Documents (including specifications and drawings) describing Work categories for which undersigned is directly responsible, and all those related Sections which include additional requirements for cooperation, coordination, and compliance.

Undersigned acknowledges the obligation to identify below any errors, omissions, conflicts, code violations, and improper use of materials, including usage that is contrary to manufacturers' instructions or voids manufacturer's guarantee or warranty, discovered in Contract Documents that could interfere with the timely completion of the Work, or increase the cost of that category of Work for which the undersigned is responsible.

Except as noted below, undersigned has no objection to or reservation about the work to be accomplished or the materials to be furnished or conditions under which they will be installed; and is satisfied that the undersigned can fully complete the applicable contractual responsibilities in a workmanlike manner without extensive modifications to the Work or additional expense.

CATEGORY OF WORK:

SPECIFICATION SECTION(S):

EXCEPTIONS:

SUBMITTED BY (Firm):

SIGNED BY: _____ DATE: _____

NAME AND TITLE: _____

SECTION 01 45 00 – QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY: This Section covers general requirements for quality control of the Work, including testing and inspection procedures.

A. Requirements In This Section:

1. Testing laboratory or agency.
2. Coordination of tests and inspections.
3. Test costs and reports.
4. Inspections, continuous and special, and inspection costs.
5. Contractor-furnished assistance.
6. Verification of conditions.

B. Requirements Specified Elsewhere:

1. Specific test procedures to be performed in accordance with this Section.
2. Testing of mechanical and electrical systems.
3. Testing of conveying systems.
4. Testing of materials specified to be tested by other agencies under other Sections.

1.02 GENERAL QUALITY CONTROL REQUIREMENTS: Materials to be furnished under the Contract are subject to testing and inspection for compliance with the requirements of the Contract Documents.

A. Testing Laboratory: The licensed Testing Laboratory certified as meeting requirements of ASTM D3666, D3740, E329, E543, and E548, as applicable to Work involved and approved by Owner, referred to hereafter as Testing Laboratory. Perform all testing under the supervision and control of a registered civil engineer employed by the Testing Laboratory and registered in the State where the Work is located.

B. Disqualified Material: Any material shipped or delivered to the site by Contractor from the source of supply prior to having satisfactorily passed required testing and inspection, or prior to the receipt of a notice from the Architect that such testing and inspection will not be required, shall not be incorporated in the Work.

1.03 COORDINATION OF TESTS AND INSPECTIONS: The Contractor shall initiate and coordinate testing and inspections required by the Contract Documents and public authorities having jurisdiction of the Work.

A. Notification: Contractor shall notify Owner a sufficient time in advance of manufacture of material to be supplied by Contractor which, by requirements of Contract Documents, must be specially tested at the source of supply or the factory (excluding standard factory tests) in order that Owner may arrange for testing.

1.04 TEST SAMPLES: Furnish and deliver Samples of materials to be tested at no extra cost to Owner. Test samples will be selected by the Architect, Inspector, or Testing Laboratory and not by the Contractor.

1.05 TEST PROCEDURES: Testing Laboratory shall perform tests according to ASTM or other methods of test specified for various materials in other Sections. If no procedure or test method is specified, testing shall conform to the material specification referenced except as otherwise directed. Testing Laboratory shall tag, seal, label, record, or otherwise adequately identify materials for testing and no such materials shall be used or installed in the Work until test result reports are submitted and approved, excepting only those materials specified to be placed or installed prior to testing. Repeat applicable tests at specified intervals, whenever source of supply is changed, or whenever the characteristics of materials change or vary in the opinion of Owner or Architect.

1.06 TEST COSTS: The Owner will pay for tests performed by the Testing Laboratory except Contractor shall reimburse Owner for retesting costs caused by failure of materials to pass initial tests. Contractor shall arrange and pay for all other testing.

1.07 TEST REPORTS: Furnish and deliver copies of each test report, signed and certified by Testing Laboratory supervising engineer, as follows:

	Copies:
Owner	1
Architect	1
Structural Engineer (structural tests only)	1
Contractor	2
Building Department	1

1.08 INSPECTIONS, CONTINUOUS AND SPECIAL:

A. Inspections: Continuous and special inspections shall be performed by Registered Deputy or Special Inspectors (hereafter referred to as Inspector) as required by the Contract Documents and Building Code. During course of Work under inspection, each Inspector shall submit detailed reports relative to the progress and condition of the Work including variances from Contract Documents, and stipulating dates, hours, and locations of the inspections.

B. Inspection Costs: The Owner will employ the Inspector and pay for continuous and special inspections.

C. Reimbursement of Inspection Cost: Contractor shall reimburse to the Owner all or any part, as the Owner may deem just and proper, of the actual excessive inspection costs incurred by the Owner due to any or all of the following:

1. Contractor's failure to complete entire Work within the Contract Time stated in the Agreement, and any previously authorized extensions thereof.
2. Claims between separate contractors.
3. Covering of Work before required inspections or tests are performed.
4. Extra inspections for Contractor's correction of defective Work.
5. Overtime costs for acceleration of Work for Contractor's convenience.

D. Approvals Required by Others: If the laws, ordinances, rules, regulations or orders of any public agency having jurisdiction require any of the Work to be specifically inspected, tested, or approved by some authority other than Owner, Architect, or Contractor, the Contractor shall give required notices, make all arrangements, deliver to Architect certificates of inspection, testing, or

approval of such authority, and pay all costs therefor unless otherwise provided in the Contract Documents.

1.09 CONTRACTOR-FURNISHED ASSISTANCE: When requested, Contractor shall furnish access, facilities, and labor assistance as necessary for the duties to be performed at the site by Testing Laboratory and Inspector including furnishing ladders, hoisting, temporary lighting, water supply, hoses, and like services.

PART 2 – PRODUCTS (Not Applicable to this Section)

PART 3 – EXECUTION (Not Applicable to this Section)

END OF SECTION

SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY: This Section covers general requirements for construction facilities and temporary controls for the Work.

A. Work In This Section: Principal items include:

1. Temporary barricades.
2. Temporary storage facilities.
3. Temporary offices and telephones.
4. Construction project sign.
5. Removal of temporary facilities.

1.02 GENERAL: Drawings indicate building site and related areas of the Owner's property available for the Work. Keep areas orderly, free of hazards, and leave in clean condition acceptable to Architect, Owner, and public authorities.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 TEMPORARY BARRICADES: Provide solid or fencing barricades. Construct and relocate or alter as required by the Architect, Code, or the public authorities having jurisdiction. Paint solid barricades exposed to public view with two coats of paint in colors designated by the Architect. Secure and pay for building and street use permits and inspections required by Code.

3.02 TEMPORARY STORAGE FACILITIES: Provide such temporary storage facilities as are necessary to protect materials and equipment delivered to the site from damage. Maintain all sheds in a clean and sightly condition. Distribute materials stored within the permanent structures to prevent overloading of the floors or structure. If on-site storage area is inadequate, arrange and pay for necessary off-site facilities.

3.03 OFFICES AND TELEPHONES: Provide office space on site as required. The office may be of temporary construction but waterproof, weathertight, insulated, fully lighted and floored, insulated, heated and cooled, and accessible to Owner, Architect, and their representatives; approved movable type office units having equivalent facilities may be furnished. Provide an approved separate office for the Owner, Architect, and Inspector of the same type, equipped with adequate plan table, plan rack and plan file, file cabinets, office desks and chairs, lockable storage closet, and a non-pay telephone with loud exterior bell for business use without charge. The offices, equipment, and furniture shall remain the property of the Contractor.

3.04 PROJECT SIGN: Provide a temporary project sign of 3/4" by 6'-0" by 10'-0" (maximum size) exterior grade Douglas fir plywood face with a rigid frame, having painted background and lettered name of the Work and names of the Owner, Architect, and Contractor, and a painted rendering of the Work, all in accordance with sketches prepared by the Architect. Do not place

other signs on or adjacent to premises. Locate the project sign where directed. Obtain and pay for building permit for sign, if required by law.

3.05 TOILET FACILITIES: Install temporary toilets for workers. Maintain in a clean and sanitary condition. Locate as approved and connect to existing sewers when feasible. Chemical toilets may be used if approved by governing Code.

3.07 TEMPORARY HEAT: Furnish and pay for heat, fuel, and services to protect the Work against injury from dampness and cold until final acceptance. Building heating system may be used for temporary heating. Furnish a competent engineer to operate system. The Contractor shall be solely responsible for damage to the heating equipment and system during such temporary heating operations. Operate the heating system as necessary to maintain correct temperatures within the building during finishing operations, and include provisions for venting obnoxious, flammable, or hazardous fumes to the exterior.

A. Drywall: Maintain building temperature at a minimum 55°F for not less than 7 days prior to drywall application and during the application, drying of tape, and finishing. Maintain adequate ventilation during taping and finishing.

B. Finishes: Maintain building temperature at a minimum 65°F before any finish lumber and millwork are delivered, and during the placing of finish and finishing operations such as painting and installation of resilient coverings.

C. Ventilation: Furnish and operate ventilation fans or equivalent equipment discharging to the exterior as required to ensure drying of materials installed in enclosed or below-grade building levels and spaces. Attention is directed to the removal of moisture released from concrete and other cementitious materials in such areas and spaces.

D. Filters: During the temporary heating and ventilating, equip air distribution systems with temporary throwaway filters to prevent dust entering air supply and return systems. Be responsible for delivering the air systems free of dust and lint at time of final acceptance of the Work.

3.08 REMOVAL AND RESTORATION: Remove construction facilities and temporary controls, and all other construction of temporary nature, from the building and construction site as soon as progress of Work permits. Without limitation, items to be removed include temporary barricades of any kind, project sign, and temporary utility services. Before Substantial Completion of the Work, recondition and restore all portions of the site and building occupied by temporary construction facilities and controls to acceptable condition.

3.09 BUILDING USE BY CONTRACTOR: When authorized by the Owner, the Contractor may move all the temporary office facilities into designated areas of completed portions of the building but shall vacate, restore, and recondition all areas so occupied prior to Substantial Completion.

END OF SECTION

SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations and procedures.

1.02 RELATED REQUIREMENTS

A. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting packaging and substitutions.

1.03 REFERENCE STANDARDS

A. 16 CFR 260 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; current edition.

1.04 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Do not use products having any of the following characteristics:
   1. Made using or containing CFC's or HCFC's.

C. Where all other criteria are met, Contractor shall give preference to products that:
   1. Are extracted, harvested, and/or manufactured closer to the location of the project.
   2. Result in less construction waste.

2.02 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

B. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

C. Substitution Submittal Procedure:
   1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Prevent contact with material that may cause corrosion, discoloration, or staining.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 63 00 – PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY: This Section covers general requirements pertaining to product substitution procedures.

1.02 SUBMITTALS: Submittals required for proposed substitutions shall conform to Section 01 33 00.

1.03 PROPOSED SUBSTITUTION PROCEDURES:

A. Prior to Receipt of Bids: Submit proposed substitutions to Architect not less than 10 working days prior to Bid Date. The Architect may require submission of Drawings, Product Data, Samples, and other information in approved form for consideration of proposed substitutions. All Bidders will be notified of approved substitutions. Contractors are strongly encouraged to make substitutions prior to bidding. Substitutions after the award of Contract that are not related to product availability will be carefully scrutinized for cost advantages that were not available to other bidders.

B. After Award of Contract: Submit proposed substitutions to Architect within 35 days after the date a Notice to Proceed is issued or the Agreement is executed, whichever is the earlier. Submit proposed substitutions relating to a particular Subcontract or trade at one time on the specified Substitution Request Form listing proposed items to be substituted for indicated or specified items, and stating amounts for variations in costs. Include Shop Drawings, Product Data, Samples, and other information to extent requested by the Architect. After said time period, proposed substitutions will not be considered unless a specified product is no longer available for causes beyond control of the Contractor, and the Contractor verifies this fact and furnishes complete evidence thereof satisfactory to the Owner and Architect, or a change in governing regulatory requirements makes a revision in design or material usage mandatory.

C. Approval or Rejection: Approval or rejection of proposed substitutions is at the Owner's discretion. The Owner's judgment will be final and will include consideration of the following factors among others in comparing equality of proposed substitutions with indicated or specified requirements: (1) Quality of the materials, structural strength, construction, fabrication, and performance and function, mechanically and technically; (2) Appearance and finish, or surface characteristics permitting required finish to be applied; (3) If proposed substitutions require altering arrangement of adjoining or related Work, resulting arrangements must be equal in convenience, practicality, and appearance to the original arrangement; (4) Products equal in quality and utility are usually competitive products and nominally equal in price. If approval is requested for materials or equipment more economical than the specified products the Owner may require the specified products with no increase to the Contract Sum; (5) An inequality in the availability of replacement parts or in maintenance services may be a determining factor, and; (6) Code approvals and service history.

D. Resubmission of Proposed Substitutions: Do not resubmit any previously rejected proposed substitutions in modified form. Upon rejection of a proposed substitution, Bidder may submit another proposed substitution within time limits stated above. If the second proposed substitution is rejected or not received by the Architect within the specified time, provide only indicated and specified Work at no additional cost to Owner.

E. Compliance: Use of approved substitutions does not relieve the Contractor from full compliance with the Contract Documents. The Contractor shall bear all extra expense resulting from approved substitutions where approved substitutions affect adjoining or related Work.

F. Unauthorized Substitutions: If substitute materials are installed without prior approval, remove all the unauthorized materials and install those indicated or specified, at no extra cost to the Owner.

1.04 SUBSTITUTION REQUEST FORM: Submit proposed substitutions on the following Substitution Request Form which may be duplicated for use. Attach additional pages and/or data as specified and required for consideration of proposed substitutions.

END OF SECTION

SECTION 01 64 00 – OWNER FURNISHED PRODUCTS

PART 1 - GENERAL

1.01 SUMMARY: This Section covers general requirements for Owner-furnished Contractor-installed materials or equipment, referred to herein collectively as OFCI items.

1.02 SUBMITTALS: Refer to Section 01 33 00 for procedures. Obtain necessary information from Owner as to manufacturer, model, and type of each OFCI item to be furnished. Submit Shop Drawings showing dimensioned rough-in diagrams for each OFCI item requiring utility connections, dimensioned locations of backing plates required in walls and partitions, and details of connections to supports for all OFCI items.

1.03 CONDITIONS: In each case, Contractor is responsible for correct and properly located installation of the OFCI items in accordance with the various manufacturers' specifications and instructions.

A. Conflicts: If conflict occurs between the requirements for the OFCI items and actual field conditions, Contractor shall not install the affected items until the conflict is resolved. No extra payment will be made to the Contractor for correction of improper installation of OFCI items when reasonably adequate data and instructions for installation were furnished by the Owner or various OFCI item manufacturers.

B. Installation: Install OFCI items complete in every detail with each product accurately and correctly placed, connected, and tested.

C. Delivery: OFCI items will be delivered to the site. Contractor shall receive and unload OFCI items, place in covered storage or enclosed building, and be responsible therefor after delivery. OFCI items that are damaged, abused, lost, or stolen while in Contractor's custody and control or damaged or defaced during installation shall be repaired, replaced, or otherwise made good to the Owner's satisfaction at the Contractor's expense.

D. Inspection of Delivered OFCI Items: Within 10 working days after delivery of the OFCI items, the Contractor shall open and uncrate the items for inspection. The Owner's representative and Contractor shall inspect each item and maintain a written record of all damage, missing parts, and other defects disclosed, all of which will be made good by the Owner. After the inspection, Contractor shall be solely responsible for the OFCI items as specified above.

E. Templates: Templates furnished by various OFCI item manufacturer's shall be kept at the site for reference and stored readily available to both the Owner and Architect. Deviations from manufacturers' templates will not be approved.

F. Additional Information: Contractor may request and receive from Owner any necessary additional information, specifications, templates, and like items from any of the manufacturers of the OFCI items. The Contractor may request a manufacturer's representative to supervise installation of any OFCI item, but at no extra cost to the Owner.

PART 2 - PRODUCTS

2.01 OFCI EQUIPMENT: The list of OFCI items is shown on the Drawings. Contractor shall provide attachments, fittings, fasteners, connectors, and other ancillary materials required for the installations but not usually furnished by the OFCI item manufacturers, types as approved.

PART 3 - EXECUTION

3.01 INSTALLATION: Conform installation to each OFCI item manufacturer's specifications, templates, and information, including the necessary assembling of components or sub-assemblies.

3.02 TESTS: Theall opera Contractor shte and test each operable OFCI item when installed and connected. If malfunction occurs through no fault of the Contractor, the Owner will make the defect good; otherwise, the Contractor shall effect all the necessary corrections so the OFCI item operates properly and as intended, at the Contractor's expense.

END OF SECTION

SECTION 01 70 00 – PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Contract General Conditions.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for project close-out, including but not limited to:

1. Final inspection procedures.
2. Operating and maintenance manual submittal
3. HVAC balance report
4. Spare parts/materials
5. Keys/keying
6. Submittal of warranties
7. Training
8. Record drawings and specifications
9. Fire Marshal inspection
10. Other regulatory inspections
11. Removal of temporary facilities
12. Final cleaning
13. Commissioning/equipment startup

1.03 PUNCH-LIST INSPECTION

A. When each building/phase is, in the opinion of the Contractor, complete in all respects, the Contractor shall call for a punch-list inspection.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will schedule the Inspection. The Architect will then perform a preliminary walk-through. If, in the judgment of the Riverside County Representative and the Architect, the project is not sufficiently complete in all respects, the Architect will so advise the Contractor and discontinue the inspection.

1. The Riverside County Representative and Architect will repeat inspection when requested and assured that the work has been completed.

2. Results of the completed inspection will form the basis of requirements for final acceptance punch-list.

1.04 RECORD DOCUMENT SUBMITTAL

A. General: Do not use record documents set as a working drawing set for construction purposes. Protect from deterioration and loss in a secure, fire-resistive location. Provide access to record documents for The Trustees' and the Architect's reference during normal working hours throughout the course of the Project.

B. Record Drawings: Maintain a clean, undamaged set of black line prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the

installation varies from the Work as originally shown or specified. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the work.

2. Mark new information that is important to Riverside County, but was not shown on Contract Drawings or Shop Drawings. Show all utilities, obstructions, etc. not previously noted in the Contract Documents, but discovered through completion of the work.

3. Note related Change Order, Field Instruction and RFI numbers where applicable.

4. Update Record Drawings at a minimum of once per week throughout the course of the Project.

5. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

6. Upon completion of the work, submit Record Drawings to the Riverside County Representative for further processing.

C. Record Specifications: Maintain one complete copy of the Project Specifications, including addenda, and one copy of other written construction documents such as Change Orders, Field Instructions, RFI's and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the work, submit record Specifications to the Architect for Riverside County's records.

D. Operating and Maintenance Manuals: Submit three (3) sets to the Architect for review and approval.

1.05 CLOSE-OUT PROCEDURES: Close-out Meeting

A. The Contractor will call for a Project close-out meeting approximately four to six weeks prior to the anticipated completion date.

1. At this meeting a completion Action List will be provided by the contractor listing all major items required to be completed prior to the issuance of the Notice of completion.

2. The action-list shall assign a responsibility and a projected completion date to each item.

3. The contractor shall be solely responsible for the timely completion of all required close-out items.

1.06 FINAL CLEANING

A. General Cleaning: General cleaning during the construction period is required by the General Conditions and included in Section 01 50 00 "Temporary Facilities".

B. Cleaning Standards: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for Certification of Completion.

a. Remove labels that are not permanent labels. Remove temporary protective coverings from finish hardware, toilet accessories and other items.

b. Clean transparent materials, including mirrors and glass in doors and windows (inside and outside). Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition.

d. Leave concrete floors broom clean. Thoroughly clean all finish flooring materials in accordance with manufacturer recommendations to as-new condition. Remove any stains, films, or foreign materials. Thoroughly vacuum all carpets and shampoo if necessary.

e. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean and polish plumbing fixtures to a sanitary condition. Clean light fixtures, lamps and lenses.

f. Clean the site, including landscape development areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.

C. Pest Control: Engage an experienced licensed exterminator to make a final inspection, and rid the project of rodents, insects and other pests.

D. Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction and repair site to previous conditions.

E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner. Where extra materials of value remaining after completion of associated work have become the Riverside County's property, arrange for disposition of

these materials as directed.

1.07 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of Riverside County and Architect's final acceptance, complete the following:

1. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect and the Riverside County Representative.

B. Re-inspection Procedure: The Riverside County Representative and Architect will re-inspect the work upon receipt of notice that the work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

1. Upon completion of re-inspection, the Architect will prepare and submit to Riverside County Representative, a certificate of final acceptance, or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

2. Upon final acceptance by the Architect, the Riverside County Representative will then prepare a letter to the Board of Supervisors stating that the project has been constructed in accordance with the contract documents and is complete in all respects.

C. Completion Schedule: All punchlist corrections shall be completed by Contractor within 30 days after Substantial Completion or the contract completion date, whichever is earlier. The Trustees reserve the right to complete any outstanding punchlist work remaining after the thirty day period at Contractor's expense.

D. Additional Inspections: Should additional re-inspections be required, Contractor shall reimburse the County of Riverside for Riverside County Representative's and Architect's account for time spent in conducting additional re-inspections at a rate of 2.5 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of Riverside County Representative's and Architect's personnel engaged on Project and portion of costs of mandatory and customary contributions and benefits related thereto, including employment taxes and other statutory benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.

END OF SECTION

SECTION 01 71 00 - EXAMINATION

PART 1 - GENERAL

1.01 SUMMARY: This Section covers general requirements for examination of Work in place and conditions, correction of unsatisfactory conditions, and manufacturer participation where specified.

1.02 VERIFICATION OF CONDITIONS:

A. Examination of Work In Place: Prior to installing any part of the Work, the installing Contractor, Subcontractor, or Sub-subcontractor of any tier shall inspect the Work in place to receive the Work to be installed and arrange for correction of defects in the existing workmanship, material, or conditions that may adversely affect Work to be installed. Such inspections shall include test applications of materials to be installed as required to establish the correct condition of surfaces and substrates involved.

B. Acceptance of Conditions: Installation of products, materials, or equipment on, into, or connected to the Work in place is acceptance by the installing Contractor, Subcontractor, or Sub-subcontractor of any tier of such Work in place as being in proper condition to receive the products, materials, or equipment to be applied, installed, or connected and waiver of claim that the Work in place is defective as pertains to warranty requirements, excluding unascertainable or concealed conditions.

1.03 MANUFACTURER PARTICIPATION: Where Specifications require any product, material, or item of equipment to be installed or applied under the supervision or inspection of the material manufacturer or its representative, the manufacturer or its representative also shall inspect the Work in place and, if the Work in place is satisfactory to the manufacturer, issue a letter of approval of the existing conditions, surfaces, or substrates, as applicable, to the Architect and the Contractor; however, if such conditions, surfaces, or substrates are not satisfactory, the manufacturer or its representative shall issue a letter to Architect and Contractor fully detailing and describing the unsatisfactory conditions and corrections required. When all corrections so required are done, manufacturer or its representative shall re-inspect the Work involved and, if satisfactory, issue the said letter of approval. The Contractor shall give timely notice to the involved manufacturers, make necessary arrangements for manufacturers' supervision or inspection, and verify the specified manufacturers' letters are issued.

END OF SECTION

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 Related Documents

A. Contract General Conditions.

C. Section 01 31 00: Project Coordination.

D. Section 01 33 00: Submittals.

1.02 Summary

A. This Section specifies administrative and procedural requirements for cutting and patching.

B. Work included in this Section:

1. Cutting and patching not required to be performed as part of the work of other sections.

2. Cutting and patching existing work altered or disturbed to accommodate new construction.

3. Cutting and patching existing work damaged or defaced during new construction as required to restore to previously existing (or better) condition.

4. Cutting and patching required to:
   a. Install or correct non-coordinated work.

   b. Remove and replace defective and non-conforming work.

   c. Remove samples of installed work for testing.

C. Refer to other Sections and drawings for specific requirements of the extent and limitations applicable to cutting and patching, demolishing, or altering existing work of specific trades and/or divisions.

1. Requirements of this Section also apply to mechanical and electrical installations. Refer to Division 23 and Division 26 Sections for additional requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.03 Submittals

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required and how it is to be performed.

2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.

3. List products to be used and firms or entities that will perform work.

4. Indicate dates when cutting and patching is to be performed.

5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6. Where cutting and patching involves addition of reinforcement to structural elements, submit details to show how reinforcement is integrated with the original structure.

7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

8. Effects on Riverside County operations and on concurrent operations construction by other contractors.

1.04 Quality Assurance

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load- carrying capacity or load-deflection ratio.

1. Obtain approval from the Architect of the cutting and patching proposal before cutting and patching the following structural elements:

Bearing and retaining walls
Structural concrete
Structural steel
Lintels
Timber and primary wood framing
Structural decking
Stair systems
Miscellaneous structural metals
Equipment supports
Piping, ductwork, vessels and equipment

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

   Primary operational systems and equipment
   Air or smoke barriers
   Water, moisture, or vapor barriers
   Membranes and flashings
   Fire protection systems
   Noise and vibration control elements and systems
   Control systems
   Communication systems
   Electrical wiring systems

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace work cut and patched in a visually unsatisfactory manner.

D. If possible retain the original installer or fabricator throughout construction phases to cut and patch the following categories of exposed work. If it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:

   Concrete finishes
   Masonry
   Stucco and ornamental plaster
   Acoustical ceilings
   Painting
   Wall covering
   HVAC enclosures, cabinets or covers

PART 2 - PRODUCTS

2.01 Materials

A. Use materials that are identical to existing materials unless not available. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. BEFORE PROCEEDING CONTRACTOR SHALL OBTAIN APPROVAL OF THE ARCHITECT.

B. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.01 Inspection

A. Before cutting existing surfaces, examine surfaces to be cut and patched and

conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

1. Before proceeding, meet at the site with parties involved in cutting and patching, including asbestos abatement, mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 Preparation

A. Temporary Support: Provide temporary support of Work to be cut where required.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 Performance

A. General

1. Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

2. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting

1. Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

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

3. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

4. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

6. Provide fire-safe seals to maintain fire rating at all penetrations.

C. Patching

1. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

2. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

3. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

4. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials if necessary to achieve uniform color and appearance. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken wall section containing the patch, after the patched area has received primer and second coat.

5. Patch, repair or re-hang existing ceilings as necessary to provide an even p plane surface of uniform appearance.

6. Replace concrete walkways to nearest construction joint. Any required repair to a portion of a walkway panel shall require full replacement of said panel from joint to joint in both the north-south and east-west direction.

D. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated.

3.04 Cleaning

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 74 00 - CLEANING

PART 1 - GENERAL

1.01 SUMMARY: This Section covers general requirements for cleaning up during the Work and for final cleaning.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 CLEAN UP AND DISPOSAL: Requirements herein are part of all other Sections of the Specifications and shall be coordinated with such additional clean up and disposal requirements as may be specified in other Sections.

A. General: Leave the entire Work broom clean except where vacuum clean or another condition is indicated or specified. Where Work in place is damaged, defaced, stained, or otherwise defective and cleaning does not eliminate the defective condition, the Contractor shall remove the defective Work and provide new conforming Work as directed and approved, at no extra cost to the Owner.

1. Control During Work: Take care to avoid spread of dust, dirt, debris, water, paint, cement, sprayed materials, and other substances about the site or to adjacent property. Clean up splatterings or spills of materials at time of occurrence. Remove dirt, debris, waste, and rubbish frequently, and do not allow to accumulate in the structure or on the site. Do not store flammable or toxic materials in the structure.

2. Contractor's Supervision: Inform all trades and workmen of cleaning up requirements specified, and monitor where Work is in progress to ensure full compliance with all clean up requirements in this and other Sections.

3. Architect's Inspection: Give the Architect at least 3 working days advance notice of readiness for inspection as each phase or area of the Work is completed for occupancy. Correct deficient cleaning operations as determined and directed by Architect.

B. Final Clean Up - Interior: Leave all surfaces in vacuum clean condition with all dust, dirt, stains, handmarks, paint spots, droppings, and other blemishes and defects completely removed, and conform to following requirements:

1. Hard Floors: Wash and dry concrete, tile, elastomeric, and similar floors, free of streaks or stains.

2. Resilient Flooring: Freshly wax and buff resilient flooring specified to be waxed in accordance with requirements in Division 9.

3. Resilient Bases: Clean off adhesive smears and dirt, and wipe clean.

4. Carpet: Vacuum clean free of lint, soil, and dust.

5. Bare and Painted Surfaces: Clean of dust, lint, streaks, or stains.

6. Tile Walls: Clean and polish.

7. Wall Coverings: Remove all adhesive, dirt, or stains on surfaces.

8. Hardware and Natural Metal: Clean and polish all the exposed surfaces using non-corrosive and non-abrasive materials.

9. Ceilings: Clean and free of stains, handmarks, and defacing.

10. Fixture and Equipment Items: Clean and polish all plumbing fixtures, air diffusers, grilles, and registers, mechanical and electrical fixtures and devices, and like items. Leave lighting fixtures free of dust, dirt, stains, or waste material, diffusers cleaned both sides and reflectors polished. Clean and service operating equipment and machinery, ready for use.

C. Glass: Wash and polish all vision glass both sides, free of dirt, spots, streaks, and labels. Remove labels and clean and polish mirrors.

D. Surfaces Not Mentioned: Clean according to the intent of this Section and as required for Architect's approval.

3.02 DISPOSAL: Do not dispose of any rubbish or waste material in fills or backfills. Remove debris, rubbish, and waste material from Owner's property to a lawful disposal area and pay hauling and dumping charges. Conform to Federal, State, and local laws, ordinances, rules, regulations, and orders pertaining.

END OF SECTION

SECTION 01 79 00 -WARRANTIES AND GUARANTEES

PART 1 - GENERAL

1.01 SUMMARY: This Section specifies general requirements for the written warranties and guarantees required by the Contract Documents. Submission to and approval by the Owner of the warranties and guarantees is a prerequisite to the final payment under the Contract.

1.02 MANUFACTURERS' WARRANTIES AND GUARANTEES: Deliver all manufacturers' warranties and guarantees required by the Contract Documents, with Owner named as beneficiary. In addition, for such equipment and machinery, or components thereof, bearing a manufacturers' warranty or guarantee extending for a longer time period than the Contractor's warranty and guarantee, deliver the manufacturers' extended warranties or guarantees in the same manner. Refer to Section 01330, Article "Equipment Data Submittals", for submission of manufacturers' warranty or guarantee data.

1.03 FORM OF WARRANTIES OR GUARANTEES: All written warranties and guarantees, excepting manufacturers' standard printed warranties and guarantees, shall be submitted on the Contractor's, Subcontractor's, supplier's, or manufacturer's letterhead, as applicable, countersigned by the Contractor, all addressed to the Owner. Warranties and guarantees shall be submitted in duplicate, and in the form shown on the following page, signed by all pertinent parties and by the Contractor in every case, with modifications as may be approved by the Owner to suit the conditions pertaining to the warranty or guarantee.

1.04 SUBMISSION OF WARRANTIES: The Contractor shall collect and assemble written warranties and guarantees into two bound books and deliver the bound books to the Architect for delivery to the Owner for final review and approval.

1.05 WARRANTY PERIOD - Warranty period shall commence on the date noted in Article 14 of the General Conditions of the Contract and shall be in force for the period stated.

(CONTINUED)

WARRANTY/GUARANTEE FOR _____ WORK

We, the undersigned, do hereby warranty and guarantee that the parts of the Work described above which we have furnished and/or installed for:

COUNTY OF RIVERSIDE
LARSON JUSTICE CENTER COURTROOMS REMODEL
INDIO, CALIFORNIA

is in accordance with the Contract Documents and that all said Work as installed will fulfill or exceed all of the Warranty and Guarantee requirements. We agree to repair or replace Work installed by us, together with any adjacent Work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or operation within a period of _____( ) year(s) from date of final acceptance of the Work by the Owner or from the Date of Certificate of Substantial Completion, whichever is earlier, ordinary wear and tear and unusual neglect or abuse excepted.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the Owner, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the Owner to have said defective Work repaired and/or replaced and made good, and agree to pay to the Owner upon demand all moneys the Owner may expend in making good said defective Work including collection costs and reasonable attorneys' fees.

Date:_____ _____
(Subcontractor, Sub-subcontractor, Manufacturer, or Supplier)

By
Title
License No.

Date:_____ _____
(Contractor)

By
Title
License No.

Local Representative: For maintenance, repair, or replacement service, contact:

Name:
Address:
Phone Number:

END OF SECTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

B. Related Requirements:

1. Division 1 for restrictions on the use of the premises and Owner-occupancy requirements..
2. Section 017329 "Cutting and Patching".

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

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

2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
4. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTA LS

A. Proposed Protection Measures: Submit 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.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

C. Predemolition Photographs or Video: Submit before Work begins.

1.7 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

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

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

D. 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 selective building demolition operations.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Arrange to shut off indicated utilities with utility companies.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

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

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. 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.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
4. Maintain adequate ventilation when using cutting torches.
5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
7. Dispose of demolished items and materials promptly.

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable,

protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 03 20 00 -CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SUMMARY:

A. This section includes the furnishing and installing of reinforcing steel for cast-in-place concrete as indicated and specified. The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.02 REFERENCES:

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the concrete reinforcement only to the extent specified by the reference.

American Concrete Institute (ACI)
American Society for Testing and Materials (ASTM)
Concrete Reinforcing Steel Institute (CRSI)
American Welding Society (AWS)

1.03 SUBMITTALS:

A. Product Data: Submit mill affidavits, stating the grades and physical and chemical properties of the reinforcing steel, and conformance with ASTM Specifications, before delivery of the steel to the project site.

1.04 REGULATORY REQUIREMENTS:

A. Except as modified by the requirements specified herein or the details indicated, concrete reinforcing shall conform to the California Building Code, Chapter 19A.

1.05 DELIVERY, STORAGE, AND HANDLING:

A. Delivery: Deliver reinforcement bundled and tagged to identify placement and certify testing.

B. Reinforcing steel shall be transported to the construction site, stored and covered in a manner which will insure that no damage occurs to it from moisture, dirt, grease, or other cause that might impair bond to concrete. Store a sufficient supply of approved reinforcing steel on the construction site at all times to insure that there will be no delay of the construction. Maintain identification of steel after bundles are broken.

1.06 COORDINATION:

A. Review architectural, structural, mechanical, and electrical drawings for anchor bolt schedules and locations, anchors, inserts, conduits, sleeves, and other items which are required to be cast in concrete, and make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Reinforcing Bars: New, deformed, billet steel bars, meeting the requirements of ASTM A 615, Grade 40 for No. 3, Grade 60 for all others. Welded reinforcing, reinforcing in braced frame footings and grade beams shall comply with ASTM A706. Deliver bars new and free from rust and mill scale in original bundles with mill tags intact. The carbon equivalent (C.E.) of reinforcing bars or splice material shall be calculated from the chemical composition as shown in the mill report by the following formula:

$$C.E. = \%C + \%Mn/6 + \%Cu/40 + \%Ni/20 + \%Cr/10 - \%Mo/50 - \%V/10$$

If mill test reports are not available, chemical analysis shall be made of bars representative of the bars to be welded. ASTM A 706 bars may be assumed to have a C.E. = 0.55. No welds should be made at bends in reinforcing bars.

B.. Accessories: Reinforcement accessories, consisting of spacers, chairs, ties, and similar items shall be provided as required for spacing, assembling, and supporting reinforcement in place. Accessories shall be galvanized steel or approved plastic accessories, conforming to the applicable requirements of the CRSI "Manual of Standard Practice".

C. Tie Wire: Tie wire for reinforcement shall be 16 gage or heavier, where indicated or specified, black or galvanized steel wire, meeting the requirements of ASTM A 82.

D. Welding Electrodes: AWS A5.1, Grade E70XX or E90XX for welding A706 bars. Weld only A706 bars.

PART 3 EXECUTION

3.01 FABRICATION:

A. Fabrication of steel reinforcement shall be in accordance with the details indicated. Where specific details are not indicated or noted, comply with the applicable requirements of CBC and ACI 315.

B. Bars shall be accurately bent, cut, and placed as indicated. Bars shall be bent cold; heating of bars will not be permitted. Bars shall not be bent or straightened in any manner that will injure the material.

3.02 PLACING:

A. General: Reinforcing steel shall be placed in accordance with the drawings and the applicable of the latest edition of the CRSI "Manual of Standard Practice". Install reinforcement accurately and secure against movement, particularly under the weight of workmen and placement of concrete.

B. Reinforcing Supports: Bars and welded wire fabric larger than 8 gage shall be supported by

metal chairs or spacers on metal hangers, accurately placed and securely fastened to steel reinforcement in place. Support legs of accessories in forms without embedding in form surface. Spacing chairs and accessories in conformance with CRSI's "Recommended Practice for Placing Bar Supports". No wood will be permitted inside forms. Precast concrete cubes may be used to support footings and slabs on grade reinforcing.

C. Placing and Tying: Reinforcing shall be set in place, spaced, and securely tied or wired with 16 gage steel tie wire at splices and at crossing points and intersections in the position indicated, or as directed. Point ends of wire away from forms.

D. Spacing: Bars shall be spaced as indicated. Where not indicated, the clear spacing for main longitudinal column reinforcement shall be not less than 1.5 times the nominal bar diameter, or 1½ inches, or 1-1/3 times the maximum size aggregate, whichever is greater. For other parallel bars, where spacing is not indicated, the minimum clear spacing shall not be less than the nominal bar diameter, or one inch, or 1-1/3 times the maximum size aggregate, whichever is less. The clear distance limitations above also apply between the bars being spliced at a contact lap splice and adjacent bars.

E. Splices: Except for temperature bars in slabs and horizontal wall reinforcing no splicing will be allowed for reinforcing bars unless detailed locations are indicated, or approval is given. Stagger lapped splices for horizontal wall reinforcing and slab temperature bars by the required minimum lap splice length. Wherever possible, stagger splices of adjacent bars.

F.. Dowels: Dowels shall be tied securely in place before concrete is deposited. In the event there are no bars in position to which dowels may be tied, No. 3 minimum shall be added to provide proper support and anchorage. Bending of dowels after placement of concrete will not be permitted unless approval is obtained. Dowels extended for future construction shall be protected from weather exposure as indicted. Compliance with safety law requirements for extended dowel is required.

G. Cleaning: Reinforcement, at time of pour, shall be free of coatings that would impair bond to concrete.

H. Welding: Welding of reinforcing steel shall comply with CBC Edition 2010 chapter 17A and 19A, AWS D12.1. Weld only reinforcing steel which conforms to ASTM A706. The carbon equivalent shall not exceed 0.55.

3.03 FIELD QUALITY CONTROL:

A. Provide notification at least 2 working days ahead of each concrete pour. No concrete shall be placed until all reinforcing steel has been installed and reviewed. All reinforcing shall be complete in every way by the end of the working day before concrete placing. Testing and inspections are specified in Section 01 45 00.

3.04 DEFECTIVE WORK:

A. The following reinforcing steel construction will be considered defective and shall be removed and replaced at no additional cost to the Owner.

Bars with kinks or bends not indicated.

Bars damaged by bending or straightening.

Bars heated for bending.

Reinforcement not placed in accordance with the drawings or specifications.

END OF SECTION

SECTION 03 30 00 -CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete.

B. Concrete for floor infill.

1. Section 03 20 00, Concrete Reinforcement

1.02 REFERENCES

A. CBC - 2010 California Building Code

1. CBC-19 – CBC Chapter 19, Concrete

B. ADA – Americans with Disabilities Act of 1990

1. ADA/Standards – ADA Title II Regulations and the DOJ/Standards for Accessible Design.
2. ADA Standards – ADA Title III Regulations and their referenced DOJ Standards for Accessible Design.

C. ACI 301 - Structural Concrete for Buildings.

D. ASTM C33 - Concrete Aggregate.

E. ASTM C150 - Portland Cement.

F. ASTM C171 - Sheet Materials for Curing Concrete.

G. ASTM C 311 – Standard Methods of Sampling and Testing Fly Ash and Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete.

H. STM C330 - Lightweight Aggregates for Structural Concrete.

I. ASTM C618 - Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Concrete.

J. ASTM C1107 - Packaged Dry, Hydraulic - Cement Grout (Nonshrink).

K. ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Bituminous Type).

L. ASTM E96 - Water Vapor Transmission of Materials.

M. ASTM F1869 - Test Method for Measuring Moisture Vapor Emission.

N. ASTM F2170 – Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes.

1.03 SUBMITTALS

A. Product data for each type of manufactured material and product included.

B. Design mix for each concrete mix stamped & signed by a Registered California Engineer.

C. Steel reinforcement shop drawings, including material, grade bar schedules, spacing, bent bar diagrams, arrangement and supports.

1.04 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of embedded utilities and components that are concealed from view.

B. Maintain an accurate record showing date and time of concrete placement in each portion of structure. Correlate placing record for test cylinders made by testing laboratory. Maintain a separate record giving date of removal of forms, shoring, including first and second halves and re-shoring, if used. Keep records available for inspection at site. Upon completion, deliver two copies of each to Architect in approved form.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with Section 1905, 2010 California Building Code, and ACI 318.

B. Maintain one copy of all records.

C. Acquire cement and aggregate from same source for all work.

D. Conform to Section 1905.13, 2010 California Building Code, when concreting during hot weather. No concrete placement permitted above 90 degrees Fahrenheit.

1.06 COORDINATION

A. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement: ASTM C150, Type I or II. Portland Cement Type, conforming to Section 1903, California Building Code.

B. Aggregates:

1. Aggregate for Stone Concrete: ASTM C33.

C. Conform to requirements specified herein for maximum size of aggregate permitted in individual applications.

D. Water: Clear, from potable source, and not detrimental to concrete.

E. Fly ash: may be used at 15% - 25% replacement of the Portland cement, at a 1:1 replacement ratio by weight. The fly ash shall meet the requirements of ASTM C 618 with the exception that the Loss on Ignition (LOI is a measure of the loss in mass of a fly ash sample when placed in a 750 degrees C oven) shall not exceed 1.0%. Only Class F material is permitted.

F. When fly ash is used the quantity of water shall be determined on a water-cement plus fly ash basis.

2.02 ACCESSORIES

A. Bonding Agent: ASTM C631, Polyvinyl Acetate Latex emulsion; HIBOND, manufactured by Lambert Corporation, Orlando FL, LOCK BOND NO. 906, manufactured by Macklanburg-Duncan Co., City of Industry, CA, or equal as approved in accordance with Division 01, General Requirements for Substitutions.

B. Curing Film: ASTM C171; 10 mil thick, clear polyethylene film, single sheet, manufactured from virgin resin with no scrap or additives, free of visible defects, uniform in appearance, conforming to the following:

1. Moisture Loss: 0.055 g per sq. cm.
2. Tensile Strength: 1700 psi longitudinal, 1200 psi transverse.
3. Elongation: 225 percent longitudinal, 350 percent transverse.

C. Non-Shrink Grout: ASTM C1107, Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 5,000 psi in 24 hours and 8,000 psi in 7 days; of consistency suitable for application and a 30 minute working time.

D. Vapor Barrier: ASTM E 1745, Class A, 15 mils thick, Permeance as tested before and after mandatory conditioning (ASTM E 1745 Section 7.1 and sub-paragraphs 7.1.1 – 7.1.5): less than 0.01 grains/($ft^2 \cdot hr \cdot inHg$).

1. Acceptable Products
   a. 15 mil Stegowrap Vapor Barrier, Stego Industries LLC
   b. Reef Industries, VaporGuard
   c. Reflex Super, Monarflex USA
   d. Or equal

E. Reinforcement: In accordance with Section 03 20 00.

F. Vapor Emission Treatment Systems: In accordance with Section 07 25 00. Do not use for curing compound.

G. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8" and that can be feathered at edges to match adjacent floor elevations. Products by Tile-Tex by Flintkote Co., Webtex #60 or Fixallatex by Dowman Products Co or equal.

H. Combination Hardener, and Sealer: ASHFORD FORMULA by Curecrete Chemical Co., Springville, UT; SHUR-SEAL by Paul M. Wolff Co., Orange, CA; Chemprobe CT Densifier 201 by Tnemec Company; LIQUI-HARD by W.R, Meadows, or equal.

2.03 JOINT DEVICES AND FILLER MATERIALS

A. Expansion Joint Filler - ASTM D1751: Close cell bituminous aturated fiberboard, 1/2 inch thick; Fiber Expansion Joint manufactured by American Highway Technology, Kankakee, IL, W. R. Meadows, or approved equal.

B. Expansion Joint Top: Integral extruded polystyrene plastic; 1/2 inch thick, with removable top strip exposing sealant trough, JOINT CAPS manufactured by The Burke Company, or equal as approved in accordance with Division 01, General Requirements for substitutions.

C. Joint Backing: ASTM C1330, Cylindrical, Type C, closed cell, polyethylene backer rod; oversized 30 to 50 percent larger than joint width. Green Rod by Nomaco Inc. or equal.

D. Sealant: Polyurethane multi-component type, non-sagging or self leveling at flatwork, as specified in Section 07 90 05.

E. Primer: As recommended by sealant manufacturer.

2.04 CONCRETE MIX

A. Mix and deliver concrete in accordance with Section 1905, 2010 California Building Code. Deliver concrete in transit mixers only. Discharge loads in less than 1-1/2 hours after water is first added.

1. Design Mix: Section 1905.3, ingredients and proportions for design mix by a Testing Laboratory certified by a registered civil engineer licensed in California.
2. Do not exceed 0.50 water-cement ratio by weight for floor slabs and for other concrete.
3. Required Strength: As noted on the structural drawings and below.
4. Grout Mix: 1:3:2 Portland Cement, to sand, to pea gravel, minimum 2000 psi at 28 days.

B. Provide concrete to the following criteria:

Element	Min 28 day Strength PSI	Max Slump	Max Size Aggregate Type
Foundations	3,000	4 inch	1-1/2 inch Normal wt. Concrete
Floor Slabs on Grade	3,000	4 inch	3/4 inch Normal wt. Concrete
Miscellaneous	2,500	4 inch	3/4 inch Normal wt. Concrete

C. Do not use admixtures containing chlorides.

2.05 GRANULAR FILL

A. Crushed Aggregate Base (capillary break): 3/4 inch maximum grading, crushed rock and rock dust conforming to requirements of Section 200-2.2, SSPWC, with 3/8 inch sieve requirement waived, or Class 2 Aggregate Base as defined in Section 26, CSS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify site conditions.

B. Verify 90% compaction for slab-on-grade.

C. Verify requirements for concrete cover over reinforcement.

D. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely and will not cause hardship in placing concrete.

3.02 PREPARATION

A. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

B. When approved by the Architect, clean previously placed concrete with steel brush and apply bonding agent in accordance with manufacturer's instructions.

C. Under Interior Slabs on Grade: Install 4 inches thick crushed aggregate base per Section 200-2.2, SSPWC or Class 2 CCS as capillary break. Over aggregate base place 15-mil vapor barrier in largest practical sections. Seal all 6-inch lapped seams, penetrations and foundation perimeters using manufacturer-approved tape only and install per manufacturer instructions. Install pipe boots at pipe penetrations. Install a minimum of 2" of clean sand above vapor barrier. Install reinforcement and concrete as scheduled.

1. Installation of vapor barrier shall be in accordance with ASTM E 1643 and manufacturer's instructions.
2. Tapes, mastics, sealants, and other products used with vapor barrier shall be from same manufacturer as, and certified compatible with, vapor barrier.

D. Install steel reinforcing per Section 03 20 00. Place concrete slab as scheduled.

3.03 PLACING CONCRETE

A. Place concrete in accordance with Section 1905, California Building Code. Remove loose dirt from excavations.

B. Notify Architect minimum 24 hours prior to commencement of operations. All excavations, forms and reinforcing shall be inspected and approved by the Architect prior to placement.

C. Ensure reinforcement, inserts, embedded parts, formed joint fillers, joint devices and accessories are not disturbed during concrete placement.

D. Install joint fillers, primer and sealant in accordance with manufacturer's instructions.

E. When detailed on the drawings, separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.

F. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface using two-component polyurethane sealant as specified in Section 07 90 05.

G. Install joint devices in accordance with manufacturer's instructions as detailed.

H. Install construction joint device in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.

I. Maintain joint device in correct position to allow joint cover flush with finish.

J. Install joint covers in longest practical length.

K. Do not interrupt successive placement; do not permit cold joints to occur.

L. Avoid segregation of materials. Perform vibrating so as to produce a dense, smooth application free of rock pockets and voids. Do not use vibrators to move concrete horizontally.

M. The unconfined vertical drop of concrete shall not be greater than 5 feet. Do not allow concrete to fall free from any height that will cause materials to segregate. Maximum height of free fall permitted in any case: 5 feet. Utilize trunks or additional chutes where doubt occurs. Conform to requirements of the 2010 CBC, Section 1905.10.

N. Construction Joints: Wash surface of each joint shortly after pouring to expose clean, sound aggregate. Sandblast surface to remove laitance remaining or loose aggregate as approved by the Architect. Conform to Section 1906, 2010 CBC. Apply bonding agent in accordance with manufacturer's instructions. Locate joints within the middle third of spans of slabs, beams and girders. Coincide construction joints with contraction, isolation, or expansion joints when possible. Locate where they least affect the structural integrity of the element under consideration and are compatible with building's appearance.

O. Screed floors and slabs on grade level, maintaining surface flatness of maximum 1/8 inch in 10 ft. Slope floors for drains.

P. Contraction Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch, place joints at column lines and at 15 ft. o.c. each way, maximum. Remove groover tool marks on exposed concrete surfaces. Contractor's option: Saw cut joints, early-entry dry-cut, per ACI 302.1R.

Q. Saw cut slabs when indicated on drawings or as approved by Architect at 15 ft. on center, within 4-12 hours after placing concrete. Saw cut joints with power saws equipped with shatterproof abrasive re diamond-rimmed blades, cut 1/8" wide joint into concrete when cutting action will not tear, abrade, or otherwise damage surface. Cut no deeper than 1/4 depth of slab thickness. Fill cuts with non-hardening epoxy. Completely fill cut to surface of slab. Saw cut joints, early-entry dry-cut, per ACI 302.1R.

3.04 SEPARATE FLOOR TOPPINGS

A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.

B. Place required dividers, edge strips, reinforcing and other items to be cast in.

C. Apply bonding agent to substrate in accordance with manufacturer's instructions.

D. Place concrete floor toppings to required lines and levels. Place topping in checkerboard panels, maximum dimension not to exceed 20 ft.

E. Screed toppings level, maintaining surface flatness of maximum 1/8 inch in 10 ft.

3.05 CONCRETE FINISHING

A. Finish concrete floor surfaces in accordance with ACI 302.1R.

1. Finish floor slabs with highway straightedge with tolerances of FF = SOV: 35 and FL = SOV: 25. And FF = MLV: 24 and FL = MLV: 17. (SOV-Specified Overall Value and MLV - Minimum Local Value).

B. Install Vapor Emission Treatment Systems in accordance with Section 07 25 00 if tests reveal presence of more than acceptable moisture level in accordance with Test Method ASTM F1869 or ASTM F2170.

3.06 FIELD QUALITY CONTROL

A. Provide free access to Work and cooperate with Testing Laboratory.

B. Measure floor and slab flatness and levelness according to ASTM E1155 within 72 hours of finishing.

C. Proposed mix design of each class of concrete shall conform to Section 1905, California Building Code and shall be approved by the Architect prior to commencement of work.

3.07 PATCHING

A. Architect will inspect concrete surfaces and determine imperfections, if any.

B. Patch imperfections as approved and in accordance with ACI 301.

1. Clean all exposed concrete surfaces and all adjoining work stained by leakage of concrete. Remove all fins, butts and projections by grinding. Patch voids, rock pockets, holes, cracks and similar imperfections by chipping loose concrete and exposing clean, sound aggregate.

3.08 DEFECTIVE CONCRETE

A. Defective Concrete: Remove concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replacement of defective concrete will be determined by the Architect.

C. Do not patch, fill, touch-up, repair or replace exposed concrete except upon express approval of Architect for each individual area.

3.09 MOISTURE TEST FOR CONCRETE FLOORS

A. It shall be the Contractor's responsibility to provide a concrete floor slab meeting the maximum moisture vapor emissions here-in specified and the Contractor shall exercise care in all aspects of mixing, placing, and curing the concrete floor slabs so that a minimum of mitigation treatment will be required.

B. Prior to ordering adhesives applied floor covering materials or coatings, conduct Calcium-Chloride Test Method in accordance with ASTM F1869 or ASTM F2170 to verify that concrete floor slabs are dry with maximum moisture vapor emissions of 3 pounds per 1,000 square feet in 24 hours and that slabs exhibit negative alkalinity, carbonation or dusting. Apply the moisture test in four (4) different areas of each floor location, with at least one test for each 1,000 square feet of floor area.

C. The test area should be at the same temperature and humidity expected during normal use, minimum testing conditions shall be 75+ 10 degrees F. and 50+ 10% relative humidity. Maintain these conditions 48 hours prior to, and during testing.

D. Install Concrete Slab Vapor Emission Treatment as specified in Section 07 25 00 when moisture emissions exceed 3 pounds per 1,000 square feet in 24 hours as specified herein at the time of installation of floor coverings. Submit results to Architect of testing. In the event the moisture tests indicated moisture levels are less than the maximums allowed and results are acceptable to the Architect, and the Concrete Slab Vapor Emissions Treatment is not required as determined by the Architect, Contractor shall provide the Owner a credit for deleting the work specified in Section 07 25 00.

END OF SECTION

SECTION 035413 - GYPSUM CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes gypsum-cement-based, self-leveling underlayment for application below interior floor coverings.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: Signed by manufacturers of underlayment and floor-covering systems certifying that products are compatible.

C. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

B. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.

C. Fire-Resistance Ratings: Where indicated, provide gypsum-cement underlayment systems identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

D. Sound Transmission Characteristics: Where indicated, provide gypsum-cement underlayment systems identical to those of assemblies tested for STC and IIC ratings per ASTM E 90 and ASTM E 492 by a qualified testing agency.

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.

1. Place gypsum-cement-based underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F (10 and 27 deg C).

1.8 COORDINATION

A. Coordinate application of underlayment with requirements of floor-covering products and adhesives, to ensure compatibility of products.

PART 2 - PRODUCTS

2.1 GYPSUM-CEMENT-BASED UNDERLAYMENTS

A. Underlayment: Gypsum-cement-based, self-leveling product that can be applied in minimum uniform thickness of 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Allied Custom Gypsum; AccuCrete.
b. ARDEX GmbH; GS-4 Self-Leveling Repair Underlayment.
c. Bonsal American, an Oldcastle company; ProSpec Level Set G.
d. or approved equal
e. Substitutions: See Section 01 60 00 – Product Requirements.

2. Cement Binder: Gypsum or blended gypsum cement as defined by ASTM C 219.
3. Compressive Strength: Not less than **2000 psi (13.8 MPa)** at 28 days when tested according to ASTM C 109/C 109M.
4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

B. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm); or coarse sand as recommended by underlayment manufacturer.

1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.

C. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).

D. Reinforcement: For underlayment applied to wood substrates, provide galvanized metal lath or other corrosion-resistant reinforcement recommended in writing by underlayment manufacturer.

E. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

1. Primer shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D.
2. Primer shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. Corrosion-Resistant Coating: Recommended in writing by underlayment manufacturer for metal substrates.

1. Coating shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D.
2. Coating shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 ACCESSORIES

A. Sound Mat:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Allied Custom Gypsum; AccuQuiet.
b. Dura Undercushions Ltd; Duracoustic.
c. Hacker Industries, Inc; Sound Mat II.
d. or approved equal
e. Substitutions: See Section 01 60 00 – Product Requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance.

1. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent underlayment from leaking.

B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.

1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft. (1.36 kg of water/100 sq. m)** in 24 hours.

C. Wood Substrates: Mechanically fasten loose boards and panels to eliminate substrate movement and squeaks. Sand to remove coatings that might impair underlayment bond and remove sanding dust.

1. Install underlayment reinforcement recommended in writing by manufacturer.

D. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond, and prepare surfaces according to manufacturer's written instructions.

E. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

F. Sound Control Mat: Install sound control materials according to manufacturer's written instructions.

1. Do not install mechanical fasteners that penetrate through the sound control materials.

3.3 APPLICATION

A. General: Mix and apply underlayment components according to manufacturer's written instructions.

1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply underlayment to produce uniform, level surface.

1. Apply a final layer without aggregate to product surface.

2. Feather edges to match adjacent floor elevations.

D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 035413

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Roof deck.
2. Composite floor deck.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for structural concrete fill over steel deck
2. Section 055000 "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.
3. Section 099123 "Interior Painting" for repair painting of primed deck and finish painting of deck.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Evaluation Reports: For steel deck.

D. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

C. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

D. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 ROOF DECK

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ASC Profiles, Inc.; a Blue Scope Steel company.
2. Nucor Corp.; Vulcraft Group.
3. Verco Manufacturing Co.

4. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33 (230) zinc coating.
2. Deck Profile: As indicated
3. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.3 COMPOSITE FLOOR DECK

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ASC Profiles, Inc.; a Blue Scope Steel company.
2. Nucor Corp.; Vulcraft Group.
3. Verco Manufacturing Co.
4. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

B. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33 (230), G30 (Z90) zinc coating.
2. Profile Depth: 3 inches (76 mm) As indicated.

2.4 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 (4.8-mm) minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi (230 MPa), not less than 0.0359-inch (0.91-mm) design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi (230 MPa), of same material and finish as deck, and of thickness and profile as indicated.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

I. Galvanizing Repair Paint: ASTM A 780.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

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

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.3 ROOF-DECK INSTALLATION

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches (38 mm) long, and as follows:

1. Weld Diameter: 3/4 inch (19 mm), nominal.
2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 12 inches (305 mm) apart in the field of roof and 6 inches (150 mm) apart in roof corners and perimeter, based on roof-area definitions in FMG Loss Prevention Data Sheet 1-28.
3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches (457 mm) and as follows:

1. Mechanically fasten with self-drilling, No. 10 (4.8-mm-) diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch- (38-mm-) long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches (38 mm), with end joints as follows:

1. End Joints: Lapped 2 inches (51 mm) minimum or butted at Contractor's option.

D. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

3.4 FLOOR-DECK INSTALLATION

A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

1. Weld Diameter: 3/4 inch (19 mm), nominal.
2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches (305 mm) apart, but not more than 18 inches (457 mm) apart.
3. Weld Spacing: Space and locate welds as indicated.
4. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches (914 mm), and as follows:

1. Mechanically fasten with self-drilling, No. 10 (4.8-mm-) diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.
3. Fasten with a minimum of 1-1/2-inch- (38-mm-) long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of [1-1/2 inches (38 mm), with end joints as follows:

1. End Joints: Lapped or butted at Contractor's option.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

F. Install piercing hanger tabs at 14 inches (355 mm) apart in both directions, within 9 inches (228 mm) of walls at ends, and not more than 12 inches (305 mm) from walls at sides unless otherwise indicated.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.6 PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 053100

SECTION 05 40 00 - COLD FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Load-bearing cold-formed structural steel studs.

B. Interior wall framing using Cold Formed Metal Framing at plumbing walls, wall openings and cabinet-supporting walls and where shown on the drawings.

C. Related Sections

1. Section 06 41 00, Laminate – Clad Wood Casework
2. Section 07 21 00, Insulation.
3. Section 07 90 05, Joint Sealers.
4. Section 09 22 16, Non-Structural Metal Studs.
5. Section 09 21 16, Gypsum Board.

1.02 REFERENCES

A. ASTM A1003/A1003M - Specification for Steel Sheet, Carbon, Metallic and Nonmetallic Coated for Cold-Formed Framing Members.

B. ASTM A653/A653M - Steel Sheet, Zinc-Coated (galvanized) or Zinc-Iron Alloy - Coated (Galvannealed) by the Hot-Dip Process.

C. ASTM C955 - Load-Bearing Steel Studs, Runners, and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.

D. ASTM C954 - Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 to 0.112 Inches in Thickness.

E. AWS D1.3 – American Welding Society, Structural Welding Code, Sheet Steel.

F. SSMA/ICC ES - 4943P - Steel Stud Manufacturers Association.

G. AISI - American Iron and Steel Institute, Standard for Cold-Formed Steel Framing – General Provisions.

1.03 SUBMITTALS

A. Provide product data on standard framing members. Describe materials and finish, product criteria, limitations and properties.

B. Mill certificates: signed by the steel sheet producer indicating steel sheet complies with requirements.

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specializing in steel studs framing and components with five years minimum experience.

B. Welding: welders certified by AWS.

PART 2 PRODUCTS

2.01 FRAMING MATERIALS

A. Studs: ASTM A1003, Structural Grade 33, Type H, sheet steel, formed to "wide flange" shape or "C" shape, punched web, 16 gauge (0.056", SSMA designation 54) thick unless noted otherwise on drawings, 33 ksi steel unless noted otherwise on drawings, sizes required to conform to details and scheduled wall thicknesses, and as required for structural performance. Studs shall be rolled from new sheet steel and shall not be produced from re-rolled steel.

1. Properties: As listed in manufacturer's standard tables for applicable grade of steel and sizes.
2. Conform to SSMA, ICC ES-4943P.
3. Coating: Zinc coated per ASTM A653, G60 or prime painted.

B. Track: ASTM A1003, Structural Grade 33, Type H, sheet steel, channel shaped, deep leg, 16 gauge (0.056", SSMA designation 54) thick unless noted otherwise on drawings, 33 ksi steel unless noted otherwise on drawings, solid web, long leg at ceilings, profile to produce snug fit over adjacent components.

1. Conform to SSMA, ICC ES-4943P.
2. Approved pre-fabricated slotted slip track for top of wall: Slip track, 16 gauge, slotted with bend tab for fire safing, SLP-TRK System by Brady Construction Innovations Inc. ICC ESR 1042, or equal as approved in accordance with Division 01, General Requirements for substitutions.
3. Provide stand-off washers for fasteners.
4. Install in accordance with manufacturer's recommendations and fire rating requirements.
5. Coating: Zinc coated per ASTM A653, G60 or prime painted.

C. Header and Jambs: Dietrich Metal Framing, Heavy Duty Studs and Header Brackets.

1. ProX Header, Brady Construction Innovations Inc. or equal.

D. Stiffener U- Channels and Angles: Minimum Weights as Follows:

1. 3/4 inch - .3 pound per foot, cold- or hot-rolled channel.
2. 1-1/2 inches - .475 pound per foot, cold-rolled channel.
3. 1-1/2 inches - 1.12 pounds per foot, hot-rolled channel.
4. 2 inches - 1.26 pounds per foot, hot-rolled channel.
5. 2 inches - .59 pound per foot, cold-rolled channel.
6. 1-1/2 x 1-1/2 x 3/16 inch angle.

E. Fastening: Self-drilling, Self-tapping Screws, ASTM C954, galvanized, Buildex/Tomarco Type S-12 point, low profile head screws #10 or equal, 1/2 inch long for two layers 16 gauge metal for non load-bearing framing, welded connections for load-bearing framing and for framing of 16 gauge studs and thicker.

1. 1. Welding: In conformance with AWS D1.3, minimum weld size 3/32".

F. Anchorage Devices, Powder Actuated:

1. Conform to Division 01, General Requirements.

G. Powder actuated fasteners

1. Install to conform to the load requirements of this Section and Tables 1, 2, 3 and 4 of ICC-ESR 1663 Hilti. Minimum diameter: 0.145" diameter.
   a. Utilize tools as recommended by the manufacture in compliance with ICC numbers.
   b. ICC-ESR 1663 Hilti Inc., Fasteners – Manual, Pneumatic, or Powder-Driven Steel Studs and Nails

2. Allowable Loads: ICC approved values. Testing required, refer to Division 01.
3. Use of Powder actuated fasteners for tension loads is limited to support of minor loads such as suspended acoustical ceilings, ductwork and conduit:

H. Anchorage Devices, Drilled Expansion Anchors:

1. Conform to Division 01, General Requirements.

I. Anchorage Devices, Drilled Expansion Anchors:

1. Wedge Type: KWIK Bolt TZ Concrete Anchor, 3/8 to 3/4 inch diameter, ICC ESR-1917, by Hilti Inc., Tulsa, OK.
   a. Eyebolt HHDCA drill-in anchor for suspended ceilings. Provide minimum ¼-inch size anchor, requires testing refer to Division 01.
   b. For fully grouted CMU, lightweight concrete, construction per ICC ES-1385, Hilti KWIK Bolt KB3.

2. Adhesive Anchors System:
   a. For Normal Weight concrete with min. compressive of 2000 psi or 4000 psi. Per ICC ESR-2322, Hilti HIT RE 500 SD Adhesive Anchor System.

J. Backing: As indicated on drawings or 6" x 1-1/4" x 14 gauge flush mount backing, preformed with pre-punched screw holes, FLUSH-MOUNT BACKING by Metal-Lite, Inc., Anaheim, CA.

K. Track Bedding Sealant: Per Section 07 92 00.

L. Wall finishes: Per Division 09 Finishes.

2.02 FINISHES

A. Primer: Series L69 Hi Build Epoxoline II, Low VOC epoxy, red color, air dried to minimum 0.001 inch or .026 mm thickness, by Tnemec or equal as approved in accordance with Division 01, General Requirements for substitutions.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that substrate surfaces and building framing components are ready to receive work.

B. Beginning of installation means acceptance of existing conditions.

3.02 ERECTION OF STUDDING

A. Perform work in accordance with, AISI and SSMA/ ICC ES - 4943P.

B. Align floor and ceiling tracks; locate to wall or partition layout. Secure in place with specified fasteners at spacing as indicated on drawings or maximum 32 inches on centers.

1. Set floor track on continuous sealant, each side of track. Sealant type: Butyl Rubber per ASTM C920.
2. Track Splices: notch flanges to allow sliding tracks past each another 12". Attach as approved by manufacturer of system.

C. Place studs at 16 inches o.c. typically, or 12 inches o.c. in plumbing walls or as noted on drawings. Connect studs to tracks using fastener or welding method.

D. Construct corners using minimum three studs.

E. Install double (boxed) studs at each head, jamb and sill of each exterior and interior door and window opening. Extend studs from floor to underside of structure above. Weld all boxed jamb and header members with interrupted 1/8" welds, one inch long at 12 inches on center.

F. Install 1-1/2 inch standard steel furring channels at right angles to king stud at each door hinge point as permitted by perforations. Weld channel to four studs where possible.

G. Stiffeners: Install 3/4 inch standard steel furring channel stiffeners within 24 inches of top and bottom runners and at mid height of walls eight feet high. At higher walls, install stiffeners spaced maximum 48 inches on centers. Weld stiffeners to each stud and at laps.

H. Bridging or Bracing Schedule:

Stud Size	Bracing Spacing
3-5/8 or 4 in, "c"	2'-6"
3-5/8 or 4 in, "w"	3'-0"
6 in, "c"	2'-6"
6 in, "w"	3'-0"

I. Erect studs one piece full length. Splicing of studs is not permitted, except where detailed.

1. Where studs have been cut to receive piping conduits and equipment, weld on two 3/4 inch furring channels to restore stability of weakened stud.

J. Erect studs, brace and reinforce full strength to meet design requirements.

K. Extend stud framing through ceiling to underside of floor or roof structure above unless detailed otherwise.

L. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

M. Install intermediate studs above and below openings to match wall stud spacing.

N. Provide deflection allowance of 1/2 inch minimum in stud track, directly below horizontal building framing for non-load bearing framing.

O. Attach backing as detailed on the drawings for attachment of fixtures anchored to walls.

P. Install framing between studs for attachment of mechanical and electrical items and to prevent stud rotation.

Q. Touch-up field welds and damaged primed surfaces with primer.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/8 inch in 10 feet.

B. Maximum Variation of any Member from Plane: 1/8 inch.

3.04 QUALITY CONTROL

A. Inspection of all field-welding operations shall be performed by qualified and certified Welding Inspector approved by the Structural Engineer.

B. Welding Inspector shall check materials, equipment, procedures, welds and certification of welders. Furnish the Owner with reports verified by the Inspector that welding has been performed in accordance with the Contract Documents.

END OF SECTION

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel and aluminum items.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

B. Section 09 90 00 - Painting and Coating: Paint finish.

1.03 REFERENCE STANDARDS

A. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2002.

B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.

C. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2007.

D. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.

E. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.

F. ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2003 (Reapproved 2007).

G. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength; 2007b.

H. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2007a.

I. ASTM A 325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2007.

J. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2007.

K. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.

L. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.

M. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2006.

N. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2007.

O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.

P. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2006 and Errata.

Q. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).

R. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

S. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

A. Design, fabricate and install metal fabrications in accordance with AISC guidelines.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A 36/A 36M, ASTM A992.

B. Steel Tubing: ASTM A 500, Grade B cold-formed structural tubing.

C. Stainless Steel Mesh: 2.5 lbs/s.f., 36% open

D. Plates: ASTM A 283, ASTM A572.

E. Pipe: ASTM A 500, Grade B, black finish.

F. Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.

G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

A. Extruded Aluminum: ASTM B 221 (ASTM B 221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B 209 (ASTM B 209M), 5052 alloy, H32 or H22 temper.

C. Bolts, Nuts, and Washers: Stainless steel.

D. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

A.. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.

2.05 FINISHES - STEEL

A. Prime paint all steel items.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: One coat.

E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A 123/A 123M requirements.

2.06 FABRICATION TOLERANCES

A. Squareness: 1/8 inch (3 mm) maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch (1.5 mm).

C. Maximum Misalignment of Adjacent Members: 1/16 inch (1.5 mm).

D. Maximum Bow: 1/8 inch (3 mm) in 48 inches (1.2 m).

E. Maximum Deviation From Plane: 1/16 inch (1.5 mm) in 48 inches (1.2 m).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until

completion of erection and installation of permanent attachments.

C. Perform field welding in accordance with AWS D1.1/D1.1M.

D. Obtain approval prior to site cutting or making adjustments not scheduled.

E. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch (6 mm).

C. Maximum Out-of-Position: 1/4 inch (6 mm).

END OF SECTION

SECTION 05 52 13 - PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stainless steel wall mounted handrails.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Placement of anchors in concrete.

B. Section 06 10 00 – Rough Carpentry.

C. Section 09 90 00 - Painting and Coating: Paint finish.

1.03 REFERENCE STANDARDS

A. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2007.

B. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.

C. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2007.

D. ASTM E 935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).

E. ASTM E 985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).

F. SSPC-Paint 15 - Steel Joist Shop Paint; The Society for Protective Coatings; 1999 (Ed. 2004).

G. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); The Society for Protective Coatings; 2002 (Ed. 2004).

1.04 SUBMITTALS

A. See Section 01 33 00 – Submittal Procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E 985 and applicable local code.

B. Design railing assembly, wall rails, and attachments to resist lateral force of 200 lbs at any point without damage or permanent set. Test in accordance with ASTM E 935.

C. Allow for expansion and contraction of members and building movement without damage to connections or members.

D. Dimensions: See drawings for configurations and heights.

E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

F. Provide welded connections as indicated on the drawings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STAINLESS STEEL

A. Tubing: ASTM A 554, Grade MT316L.

B. Pipe: ASTM A 312/A 312M, Grade TD316L.

C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured.

D. Welded Joints:
1. Interior Components: Continuously seal joined pieces by continuous welds.
2. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Wood blocking and nailers.
3. Wood furring.

B. Related Requirements:
1. Section 061600 "Sheathing."

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that

periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

C. Application: Treat all rough carpentry as follows unless otherwise indicated.

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking and similar concealed members in contact with masonry or concrete.
3. Wood floor plates that are installed over concrete slabs-on-grade.
4. Wood framing members for raised platforms.

2.3 DIMENSION LUMBER FRAMING

A. Floor Joist: Construction or No. 1 grade.

1. Application: All interior floor framing.
2. Species:
   a. Douglas fir-larch; WCLIB or WWPA

2.4 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.
4. Grounds.

B. For items of dimension lumber size, provide Construction or No. 1:
   a. Douglas fir-larch; WCLIB or WWPA.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1

2.6

A. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.7 METAL FRAMING ANCHORS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
   1. Simpson Strong-Tie Co., Inc.
   2. Or approved equal

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those **indicated**. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

   1. Use for wood-preservative-treated lumber and where indicated.

D. Joist Hangers: U-shaped joist hangers with 2-inch- (50-mm-) long seat and 1-1/4-inch- (32-mm-) wide nailing flanges at least 85 percent of joist depth.

   1. Thickness: 0.050 inch (1.3 mm)

E. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

   1. Strap Width: 1-1/2 inches (38 mm)
   2. Thickness: 0.050 inch (1.3 mm)

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locatenailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

D. Do not splice structural members between supports unless otherwise indicated.

E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

F. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
1. Fire block concealed spaces between floor framing with same material as joists to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.

G. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

H. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

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

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

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

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

3.3 FLOOR JOIST FRAMING INSTALLATION

A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches (38 mm) of bearing on wood or metal, or 3 inches (76 mm) on masonry. Attach floor joists as follows:

1. Where supported on wood members, by[**toe nailing or by**] using metal framing anchors.
2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.

B. Fire Cuts: At joists built into masonry, bevel cut ends 3 inches (76 mm) and do not embed more than 4 inches (102 mm).

C. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches (1200 mm).

D. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches (50 mm) from top or bottom.

E. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist at ends of joists unless nailed to header or band.

F. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches (102 mm) or securely tie opposing members together. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist over supports.

G. Anchor members paralleling masonry with 1/4-by-1-1/4-inch (6.4-by-32-mm) metal strap anchors spaced not more than 96 inches (2438 mm) o.c., extending over and fastening to three joists. Embed anchors at least 4 inches (102 mm) into grouted masonry with ends bent at right angles and extending 4 inches (102 mm) beyond bend.

H. Provide solid blocking between joists under jamb studs for openings.

I. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.

1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.

J. Provide bridging of type indicated below, at intervals of 96 inches (2438 mm) o.c., between joists.

1. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal- (19-by-64-mm actual-) size lumber, double-crossed and nailed at both ends to joists.
2. Steel bridging installed to comply with bridging manufacturer's written instructions.

3.3 PROTECTION

A. Protect work in place until covered

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Subflooring.
   2. Underlayment.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

   1. Preservative-treated plywood.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

2.2 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Plywood in contact with concrete or otherwise as code-required.

2.3 SUBFLOORING AND UNDERLAYMENT

A. Underlayment, General: Provide underlayment in nominal thicknesses indicated or, if not indicated, not less than 1/4 inch (6.4 mm) over smooth subfloors and not less than 3/8 inch (9.5 mm) over board or uneven subfloors.

B. Plywood Underlayment for Carpet: DOC PS 1, Interior, Underlayment.

C. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

D. Nails, Brads, and Staples: ASTM F 1667.

E. Power-Driven Fasteners: NES NER-272.

F. Wood Screws: ASME B18.6.1.

2.4 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. 2010 CBC, Chapter 23, Table 2304.7(4).

3.2 PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Subflooring:

a. Glue and nail to wood framing.
b. Space panels 1/8 inch (3 mm) apart at edges and ends.

END OF SECTION 061600

SECTION 06 20 00 - FINISH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY: Division 1 applies to this Section. Provide and perform finish carpentry as indicated, specified, and required, complete.

A. Work In This Section: Principal items include:

1. Wood paneling and trim to include installation.
2. Back priming to extent specified.
3. Hollow frames.
4. Installation of wood doors.
5. Installation of finish hardware except as otherwise specified.

B. Related Work Not In This Section:

1. Finish painting.
2. Furnishing hollow metal frames.
3. Furnishing wood doors.
4. Furnishing finish hardware for doors.
5. Installation of hardware on aluminum entrance doors.

1.02 SUBMITTALS: Refer to Section 01 33 00 for procedures.

A. Shop Drawings: Submit for the following items, bearing the WI Certified Compliance Grade Stamp.

1. Steel backing plate or wood blocking locations required for anchoring of cabinets, casework, and other Work of this Section.

B. Certificates: Submit as required in Article "Quality Assurance" above for fabricator and for installer.

1.03 QUALITY ASSURANCE: Work of this Section shall conform to the Manual of Millwork of the Woodwork Institute (WI), Current Edition, grades as specified herein or indicated.

A. Installation: Installer of Work of this Section shall be certified by WI and, upon completion of installation, shall furnish to Architect a WI Certified Compliance Certificate for Installation covering all Work of this Section.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING: Deliver millwork and casework to the site covered and protected from the weather. Store in a clean dry protected area meeting requirements of WI Manual of Millwork. Handle and transport items by methods that prevent damage or defacing.

1.05 JOB CONDITIONS: After installing, temporarily cover and protect millwork to prevent damage, staining, or marring by subsequent construction operations.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURE: Conform to WI Manual unless otherwise shown or specified. Details on Drawings and requirements specified herein govern the type, arrangement, sizes, construction, and fabrication. In all other respects, manufacture Work of this Section to conform to the WI grades specified.

A. Back Priming: Use exterior wood primer or enamel undercoater of the type specified in Section 09 90 00, except use a tinted resin sealer on natural finished woodwork with care not to coat exposed surfaces.

PART 3 - EXECUTION.

3.01 INSTALLATION OF FINISH CARPENTRY: Conform to requirements indicated, WI Manual, and approved submittals. Repair all damage as approved.

A. Base and Trim: Conform to WIC "Custom" at base, "Premium" at trim; fasten tightly to walls and frames with countersunk nails, base end joints beveled together; casing and trim in full length pieces; internal angles coped, external angles mitered. Leave no tool marks, blemishes, or gaps.

3.02 INSTALLATION OF HOLLOW METAL WORK: Conform installations to submittals approved under Section 08 11 13 and manufacturer's instructions. Install frames plumb, straight, in correct alignment, rigidly connected to walls and building structure. Erect in proper sequence with other trades to prevent delays. Erect within the tolerances specified or shown in the approved submittals.

3.03 INSTALLATION OF PLASTIC FACED AND/OR WOOD VANEER DOORS: Trimming of doors is not permitted. Drill pilot holes for all screws in plastic surfaces, holes of same diameters as screw shanks. Fit doors square and plumb with frames.

3.04 INSTALLATION OF FINISH HARDWARE: Install hardware supplied under Section 08710, excluding only hardware specified to be installed at the factory or under other Sections. Drill pilot holes for screws and screw home; hammer driving of screws is not allowed. After installation and fitting, remove finish hardware items on surfaces to be painted, except prime coat items, repack in original containers, and perform final installation, testing, and adjustment after finish painting is completed. Adjust hinges to swing smoothly but not loosely, without sticking or hingebound conditions. Adjust other hardware for correct operation.

END OF SECTION

SECTION 06 41 00 - LAMINATE-CLAD WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Countertops.

C. Cabinet hardware.

D. Factory finishing.

E. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 1999.

B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2002.

C. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

D. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2003 (ANSI/BHMA A156.9).

E. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

F. WI (MAN) - Manual of Millwork; Woodwork Institute 11th edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 33 00 – Submittal Procedures

B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.

E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom quality, unless other quality is indicated for specific items.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.

C. Quality Certification: Provide inspection and quality certification of completed custom cabinets in accordance with AWI/AWMAC Quality Certification Program.

1.07 MOCK-UP

A. Provide mock-up of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.

B. Locate where directed.

C. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.09 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. K&Z Cabinets

B. Stolo Cabinets

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 PANEL MATERIALS

A. Particleboard: ANSI A208.1; medium density industrial type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, composed of wood chips bonded with interior grade adhesive under heat and pressure; sanded faces; thickness as shown on the drawings; use for components indicated on drawings.

B. Medium Density Fiberboard (MDF): ANSI A208.2; type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated; composed of wood fibers pressure bonded with moisture resistant adhesive to suit application; sanded faces; thickness as shown on the drawings.

2.04 LAMINATE MATERIALS

A. Manufacturers:
   1. Formica Corporation; www.formica.com.
   2. Wilsonart International, Inc; www.wilsonart.com.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

2.05 COUNTERTOPS

A. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL, conventionally fabricated and self-edge banded.

B. Provide solid surfacing on countertops where indicated on the drawings. See also Sec. 12 3600.

2.06 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness, color as selected from manufacturer's standards.
   1. Use at all exposed plywood edges.
   2. Use at all exposed shelf edges.

C. Fasteners: Size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel, or chrome-plated finish in exposed locations.

E. Concealed Joint Fasteners: Threaded steel.

F. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.07 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.

C. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers.

D. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish.

E. Catches: Magnetic.

F. Drawer Slides:
   1. Type: Standard extension.
   2. Static Load Capacity: Commercial grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Manufacturers:
      a. Accuride International, Inc; www.accuride.com.
      b. Knape & Vogt Manufacturing Company; www.knapeandvogt.com.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

G. Hinges: European style concealed self-closing type, steel with polished finish.
   1. Manufacturers:
      a. Grass America Inc; www.grassusa.com.

b. Hardware Resources; www.hardwareresources.com.
c. Julius Blum, Inc; www.blum.com.
d. Substitutions: See Section 01 63 00 - Substitution Requirements.

2.08 FABRICATION

A. Cabinet Style: Flush overlay.

B. Cabinet Doors and Drawer Fronts: Flush style.

C. Drawer Construction Technique: Dovetail joints.

D. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

E. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

F. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

G. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

H. Mechanically fasten back splash to countertops with steel brackets at 16 inches on center.

I. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

B. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

C. Secure cabinets to floor using appropriate angles and anchorages. Refer to details.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 06 42 16 - WOOD VENEER PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Flush wood paneling (wood-veneer wall surfacing).
2. Wood furring, blocking and shims for installing flush wood paneling unless concealed within other construction before paneling installation.
3. Shop finishing of flush wood paneling.

B. Related Requirements:
1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing paneling and that are concealed within other construction before paneling installation.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product including panel products, adhesives and finishing materials and processes.

B. Shop Drawings: Show location of paneling, large-scale details, attachment devices, and other components. Include dimensioned plans and elevations.

1. Show details full size..
2. For paneling produced from premanufactured sets, show finished panel sizes, set numbers, sequence numbers within sets, and method of cutting panels to produce indicated sizes.
3. For paneling veneered in fabrication shop, show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
4. Apply WI Certified Compliance Program label to first page of Shop Drawings.

C. Samples for Initial Selection:

1. Shop-applied transparent finishes.

D. Samples for Verification:
1. Veneer leaves representative of and selected from flitches to be used for transparent-finished paneling.
2. Veneer-faced panel products for transparent finish, 12 by 24 inches, for each species and cut. Include at least one face-veneer seam and finish as specified.

1.5 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: Minimum 3 years experience installing architectural wood veneer wallcovering.

C. Testing Agency Qualifications: An inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver paneling until painting and similar operations that could damage paneling have been completed in installation areas. If paneling must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install paneling until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Environmental Limitations: Do not deliver or install paneling until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature between 65 and 85 deg F (16 and 32 deg C) and relative humidity between 17 and 50 percent during the remainder of the construction period.

C. Field Measurements: Where paneling 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 paneling by field measurements before being enclosed and indicate measurements on Shop Drawings.

D. Established Dimensions: Where paneling is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

PART 2 - PRODUCTS

2.1 PANELING FABRICATORS

A. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of wood veneer paneling

B. Fabricators: Subject to compliance with requirements, provide products by one of the following:
1. Armstrong, Woodworks
2. MCI, Inc.
3. Equal fabricator

2.2 PANELING, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of flush wood paneling (wood-veneer wall surfacing) indicated for construction, finishes, installation, and other requirements.

2.3 FLUSH WOOD PANELING (WOOD-VENEER WALL SURFACING):

A. Wood Species and Cut: Quarter sliced Dark Cherry

B. Assemble panels by gluing and concealed fastening.

2.4 MATERIALS

A. Materials, General: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.

B. Wood Moisture Content: Less than 7 percent.

1. Veneer-Faced Panel Products: Five-ply product that shall consist of genuine wood veneer, bonded to paper, foil glue line barrier and paper.

C. Adhesives: Do not use adhesives that contain urea formaldehyde.

D. Adhesives: Use adhesives that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.5 INSTALLATION MATERIALS

A. VOC Limits for Installation Adhesives: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Multipurpose Construction Adhesives: 70 g/L.
3. Contact Adhesive: 80 g/L.
4. Special-Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, rubber, or wood veneer 1/16 inch (1.6 mm) or less in thickness to any surface): 250 g/L.

2.6 FABRICATION

A. Arrange paneling in shop or other suitable space in proposed sequence for examination by Architect. Mark units with temporary sequence numbers to indicate position in proposed layout.
1. Notify Architect seven days in advance of the date and time when layout will be available for viewing.
2. Provide lighting of similar type and level as that of final installation for viewing layout unless otherwise approved by Architect.
3. Rearrange paneling as directed by Architect until layout is approved.
4. Do not trim end units and other nonmodular-size units to less than modular size until after Architect's approval of layout.
5. Obtain Architect's approval of layout before start of assembly. Mark units and Shop Drawings with assembly sequence numbers based on approved layout.

B. Complete fabrication, including assembly and finishing, 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.

1. Notify Architect seven days in advance of the dates and times paneling fabrication will be complete.

2.7 SHOP FINISHING

A. General: Finish paneling at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Shop Priming: Shop apply the prime coat including backpriming, if any, for[transparent-finished paneling specified to be field finished.

C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing paneling, as applicable to each unit of work.

1. Backpriming: Apply two coats of sealer or primer, compatible with finish coats, to concealed surfaces of paneling. Concealed surfaces of plastic-laminate-clad paneling do not require backpriming when surfaced with plastic laminate.

D. Transparent Finish:
1. Finish: Manufacturer's urethane sealer and finish as approved by the Architect.
2. Sheen: Satin, 31-45.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition paneling to average prevailing humidity conditions in installation areas.

B. Before installing paneling, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install paneling to comply with same grade as paneling to be installed.

B. Install paneling level, plumb, true, and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm). Install with no more than 1/16 inch in 96-inch (1.6 mm in 2400-mm) vertical cup or bow and 1/8 inch in 96-inch (3 mm in 2400-mm) horizontal variation from a true plane.

1. For flush paneling with revealed joints, install with variations in reveal width, alignment of top and bottom edges, and flushness between adjacent panels not exceeding 1/16 inch **(1.5 mm)**.

C. Complete finishing work specified in this Section to extent not completed at shop or before installation of paneling. Fill nail holes with matching filler where exposed.

1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective paneling, where possible, to eliminate defects; where not possible to repair, replace paneling. Adjust for uniform appearance.

B. Clean paneling on exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

SECTION 07 21 00 -THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Batt insulation and vapor retarder in exterior wall.

B. Batt insulation in interior sound-rated walls.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Supporting construction for batt insulation.

B. Section 07 84 00 - Firestopping.

C. Section 09 21 16 - Gypsum Board Assemblies: Acoustic insulation.

1.03 REFERENCE STANDARDS

A. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2006.

B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.

C. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2009.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

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

C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Insulation:
   1. Ecobatt, Knauf Insulation
   2. Manville Corp.
   3. Certain Teed Corp.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 APPLICATIONS

A. Insulation in Metal Framed Walls: Batt insulation with integral vapor retarder at exterior.

B. Insulation in sound-rated walls as shown on the drawings.

2.03 BATT INSULATION MATERIALS

A. Batt Insulation: ASTM C 665; preformed batt; friction fit, conforming to the following:
1. Material: Glass or mineral fiber.
2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E 84.
3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E 84.
4. Combustibility: Non-combustible, when tested in accordance with ASTM E 136, except for facing, if any.
5. Formaldehyde Content: Zero.
6. Thermal Resistance: R of 19 (61/4").Exterior walls and ceilings where shown.
7. R-11 (3 1/2") at acoustical walls
8. Facing: Kraft facing.

2.04 ACCESSORIES

A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch (50 mm) wide.

B. Nails or Staples: Steel wire; electroplated, or galvanized; type and size to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BATT INSTALLATION

A. Install insulation in accordance with manufacturer's instructions.

B. Install in exterior wall and ceiling spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Staple or nail facing flanges in place at maximum 6 inches (150 mm) on center.

F. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

G. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over member face.

H. Tape seal tears or cuts in vapor retarder.

I. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

3.03 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 072413 - POLYMER-BASED EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. EIFS-clad barrier-wall assemblies that are field applied over substrate.

B. Related Requirements:

1. Section 07 25 00 Weather Resistive Barriers.
2. Section 07 90 05 "Joint Sealants" for sealing joints in EIFS with elastomeric joint sealants and for perimeter joints between EIFS and other materials.

1.3 DEFINITIONS

A. Definitions in ASTM E 2110 apply to Work of this Section.

B. EIFS: Exterior insulation and finish system(s).

C. IBC: International Building Code.

D. Polymer-Based Exterior Insulation and Finish System: Class PB EIFS, as defined in ASTM E 2568.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each EIFS component, trim, and accessory.

B. Samples: For each exposed product and for each color and texture specified, 8 inches (200 mm) square in size.

C. Samples for Initial Selection: For each type of finish-coat color and texture indicated.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Manufacturer Certificates: Signed by EIFS manufacturer certifying the following:

1. EIFS substrate is acceptable to EIFS manufacturer.
2. Accessory products installed with EIFS, including joint sealants, flashing and water resistant barriers, whether or not furnished by EIFS manufacturer and whether or not specified in this Section, are acceptable to EIFS manufacturer.

C. Product Certificates: For insulation.

D. Product Test Reports: For each EIFS assembly and component, for tests performed by a qualified testing agency.

E. Field quality-control reports.

F. Evaluation Reports: For EIFS, including insulation and fasteners from ICC-ES.

G. Sample Warranty: For manufacturer's special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For EIFS to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An installer certified in writing by EIFS manufacturer as qualified to install manufacturer's system using trained workers..

B. Fabricator/Erector Qualifications: Certified in writing by EIFS manufacturer as qualified to fabricate and erect manufacturer's prefabricated panel system using skilled and trained workers.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, to set quality standards for materials and execution, and to set quality standards for fabrication and installation.

1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original, unopened packages with manufacturers' labels intact and clearly identifying products.

B. Store materials inside and under cover; keep them dry and protected from weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes.

1. Stack insulation board flat and off the ground.
2. Protect plastic insulation against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.10 FIELD CONDITIONS

A. Weather Limitations: Maintain ambient temperatures above 40 deg F (4.4 deg C) for a minimum of 24 hours before, during, and after adhesives or coatings are applied. Do not apply EIFS adhesives or coatings during rainfall. Proceed with installation only when existing and forecasted weather conditions and ambient outdoor air, humidity, and substrate temperatures permit EIFS to be applied, dried, and cured according to manufacturers' written instructions and warranty requirements.

1.11 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace EIFS that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Bond integrity and weathertightness.
   b. Deterioration of EIFS finishes and other EIFS materials beyond normal weathering.

2. Warranty coverage includes the following EIFS components:

   a. EIFS finish, including base and finish coats and reinforcing mesh.
   b. Insulation installed as part of EIFS.
   c. Insulation adhesive and mechanical fasteners.
   d. EIFS accessories, including trim components and flashing.

3. Warranty Period: Ten (10) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide one of the following:

1. BASF Wall Systems.
2. Corev America, Inc.
3. Dryvit Systems, Inc.

4. Master Wall, Inc.
5. Omega Products International, Inc.
6. Parex USA, Inc.
7. Sto Corp.
8. Total Wall, Inc.

C. Source Limitations: Obtain EIFS from single source from single EIFS manufacturer and from sources approved by EIFS manufacturer as tested and compatible with EIFS components.

2.2 PERFORMANCE REQUIREMENTS

A. EIFS Performance: Comply with ASTM E 2568 and ICC-ES AC219 and with the following:

1. Weathertightness: Resistant to water penetration from exterior.
2. Structural Performance: EIFS assembly and components shall comply with ICC-ES AC219 when tested according to ASTM E 2568.
3. Impact Performance: ASTM E 2568, impact resistance.
4. Bond Integrity: Free from bond failure within EIFS components or between EIFS and substrates, resulting from exposure to fire, wind loads, weather, or other in-service conditions.
5. Abrasion Resistance of Finish Coat: Sample consisting of 1-inch- (25.4-mm-) thick EIFS mounted on 1/2-inch- (12.7-mm-) thick gypsum board; cured for a minimum of 28 days and shows no cracking, checking, or loss of film integrity after exposure to 528 quarts (500 L) of sand when tested according to ASTM D 968, Method A.
6. Mildew Resistance of Finish Coat: Sample applied to 2-by-2-inch (50.8-by-50.8-mm) clean glass substrate; cured for 28 days and shows no growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274.

B. Performance of Prefabricated Panels: Shall be designed as follows and withstand the structural performance indicated for Class PB EIFS and thermal movement limits indicated below without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Delegated Design: Design prefabricated panels, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
2. Structural Performance: EIFS shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
3. Deflection Limits: Design prefabricated panels to withstand design loads without deflections greater than 1/240.
4. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
    a. Temperature Change: [100 deg F (55 deg C).

2.3 EIFS MATERIALS

A. Prefabricated Panels: Comply with requirements in Section 054000 "Cold-Formed Metal Framing" for metal framing supporting sheathing beneath EIFS and Section 061600 "Sheathing" for sheathing and sheathing joint treatment.

B. Primer/Sealer: EIFS manufacturer's standard substrate conditioner designed to protect substrates from moisture penetration and to improve the bond between substrate and insulation adhesive.

C. Flexible-Membrane Flashing: Cold-applied, self-adhering, self-healing, rubberized-asphalt and polyethylene-film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.

D. Insulation Adhesive: EIFS manufacturer's standard formulation designed for indicated use; compatible with substrate and complying with the following:

1. Job-mixed formulation of portland cement complying with ASTM C 150/C 150M, Type I, and polymer-based adhesive specified for base coat.

E. Molded, (Expanded) Rigid Cellular Polystyrene Board Insulation (EPS): Comply with ASTM C 578, Type I; and with EIFS manufacturer's requirements for most stringent requirements for material performance and qualities of insulation, including dimensions and permissible variations, and the following:

1. Aging: Before cutting and shipping, age insulation in block form by air drying for not less than six weeks.
2. Flame-Spread and Smoke-Developed Indexes: 25 and 450 or less, respectively, according to ASTM E 84.
3. Dimensions: Provide insulation boards of not more than 24 by 48 inches (610 by 1219 mm) thick or in other thickness indicated, but not more than 4 inches (102 mm) thick or less than the thickness allowed by ASTM C 1397.
4. Foam Build-Outs: Provide with profiles and dimensions indicated on Drawings.

F. Reinforcing Mesh: Balanced, alkali-resistant, open-weave, glass-fiber mesh treated for compatibility with other EIFS materials, made from continuous multiend strands with retained mesh tensile strength of not less than 120 lbf/in. (21 dN/cm) according to ASTM E 2098 and the following:

1. Reinforcing Mesh for EIFS, General: Not less than weight required to meet impact-performance level specified in "Performance Requirements" Article.
2. Strip Reinforcing Mesh: Not less than as recommended by EIFS manufacturer.
3. Detail Reinforcing Mesh: Not less than as recommended by EIFS manufacturer..
4. Corner Reinforcing Mesh: Not less as recommended by EIFS manufacturer.

G. Base-Coat Materials: EIFS manufacturer's standard mixture complying with[**one of**] the following:

1. Job-mixed formulation of portland cement complying with ASTM C 150/C 150M, Type I, white or natural color; and manufacturer's standard polymer-emulsion adhesive designed for use with portland cement.

2. Job-combined formulation of manufacturer's standard polymer-emulsion adhesive and manufacturer's standard dry mix containing portland cement.
3. Factory-blended dry formulation of portland cement, dry polymer admixture, and inert fillers to which only water is added at Project site.
4. Factory-mixed noncementitious formulation of polymer-emulsion adhesive and inert fillers that is ready to use without adding other materials.

H. Waterproof Adhesive/Base-Coat Materials: EIFS manufacturer's standard waterproof formulation and complying with the following:

1. Job-mixed formulation of portland cement complying with ASTM C 150/C 150M, Type I, white or natural color; and manufacturer's standard polymer-emulsion adhesive designed for use with portland cement.

I. Mechanical Fasteners: EIFS manufacturer's standard corrosion-resistant fasteners consisting of thermal cap, standard washer and shaft attachments, and fastener indicated below; designed to resist Project's design loads; capable of pulling fastener head below surface of insulation board; and complying with the following:

1. For attachment to steel studs from 0.033 to 0.112 inch (0.84 to 2.84 mm) in thickness, provide steel drill screws complying with ASTM C 954.
2. For attachment to light-gage steel framing members not less than 0.0179 inch (0.45 mm) in thickness, provide steel drill screws complying with ASTM C 1002.

J. Primer: EIFS manufacturer's standard factory-mixed, elastomeric-polymer primer for preparing base-coat surface for application of finish coat.

K. Finish-Coat Materials: EIFS manufacturer's standard acrylic-based coating complying with the following:
1. Factory-mixed formulation of polymer-emulsion binder, colorfast mineral pigments, and fillers used with stone particles for embedding in finish coat to produce an applied-aggregate finish.
2. Colors: Match existing La Habra Stucco, X-434 Fallbrook.
3. Textures: Match existing.

L. Sealer: Manufacturer's waterproof, clear acrylic-based sealer for protecting finish coat.

M. Water: Potable.

N. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with EIFS manufacturer's written instructions; manufactured from UV-stabilized PVC; and complying with ASTM D 1784 and ASTM C 1063.

1. Casing Bead: Prefabricated, one-piece type for attachment behind insulation, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg.
2. Drip Screed/Track: Prefabricated, one-piece type for attachment behind insulation with face leg extended to form a drip, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg.
3. Expansion Joint: Prefabricated, one-piece V profile; designed to relieve stress of movement.

2.4 MIXING

A. Comply with EIFS manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as recommended by EIFS manufacturer. Mix materials in clean containers. Use materials within time period specified by EIFS manufacturer or discard.

2.5 PANEL FABRICATION

A. Panel Framing: Fabricate panel framing to comply with requirements in Section 054000 "Cold-Formed Metal Framing."

1. Connect panel framing by welding unless otherwise indicated.
2. Connections: Provide connections capable of adjustment, complying with erection tolerance requirements, to anchor panels to structure.

B. Sheathing: Install on metal framing to comply with requirements in Section 061600 "Sheathing."

C. EIFS Application: Apply EIFS to sheathed metal-framed panels to comply with requirements in "Substrate Protection Application," "Trim Installation," "Insulation Installation," "Base-Coat Installation," and "Finish-Coat Installation" articles and as follows:

1. Wrap base coat and reinforcing mesh at edges of panels, and extend coverage not less than full thickness to cover edges of metal framing unless otherwise indicated.
2. Continue finish coat around corners at edges of panels unless otherwise indicated, and extend to location indicated for sealant application. Do not extend finish coat over surfaces where sealant is applied.
3. Continue finish coat around corners at edges of panels, and extend over edges to cover base coat unless otherwise indicated.

D. Panel Fabrication Tolerances: Comply with the following:

1. Overall Height and Width: Plus or minus 1/8 inch (3 mm).
2. Cumulative Height and Width over Length of Building: Not more than 3/8 inch (10 mm).
3. Openings within One Unit: Plus or minus 1/8 inch (3 mm) for window and door frames.
4. Out of Square: Plus or minus 1/8 inch (3 mm).
5. Locations of Reveals and Architectural Features: Plus or minus 1/8 inch (3.2 mm).
6. Thickness: Plus or minus 1/16 inch (1.5 mm).
7. Flatness: Not more than 1/8 inch in 8 feet (3.0 mm in 2.5 m) across face of panel.

2.6 SOURCE QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform shop tests and inspections indicated below and to prepare test reports:

1. Shop welds are subject to testing and inspection.

2. Testing and inspecting agency shall interpret tests and report whether tested Work complies with or deviates from requirements.
3. Correct deficiencies in or replace EIFS prefabricated panels that test reports and inspections indicate do not comply with requirements.
4. Additional testing and inspection, at Contractor's expense, shall be performed to determine compliance of corrected Work with requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roof edges, wall framing, flashings, openings, substrates, and junctures at other construction for suitable conditions where EIFS will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Begin coating application only after surfaces are dry.
2. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Protect contiguous work from moisture deterioration and soiling caused by application of EIFS. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.

B. Protect EIFS, substrates, and wall construction behind them from inclement weather during installation. Prevent penetration of moisture behind EIFS and deterioration of substrates.

C. Prepare and clean substrates to comply with EIFS manufacturer's written instructions to obtain optimum bond between substrate and adhesive for insulation.

1. Concrete Substrates: Provide clean, dry, neutral-pH substrate for insulation installation. Verify suitability of substrate by performing bond and moisture tests recommended by EIFS manufacturer.

3.3 EIFS INSTALLATION, GENERAL

A. Comply with ASTM C 1397, ASTM E 2511, and EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate.

3.4 SUBSTRATE PROTECTION APPLICATION

A. Primer/Sealer: Apply over gypsum sheathing substrates and where required by EIFS manufacturer for improving adhesion of insulation to substrate.

B. Flexible-Membrane Flashing: Apply and lap to shed water; seal at openings, penetrations, terminations, and where required by EIFS manufacturer. Prime substrates if required and install flashing to comply with EIFS manufacturer's written instructions and details.

3.5 TRIM INSTALLATION

A. Trim: Apply trim accessories at perimeter of EIFS, at expansion joints at windowsills, and elsewhere as indicated. Coordinate with installation of insulation.

1. Drip Screed/Track: Use at bottom edges of EIFS unless otherwise indicated.
2. Expansion Joint: Use where indicated on Drawings.
3. Casing Bead: Use at other locations.

3.6 INSULATION INSTALLATION

A. Board Insulation: Adhesively and mechanically attach insulation to substrate in compliance with ASTM C 1397 and the following:

1. Sheathing: Apply adhesive to insulation by notched-trowel method in a manner that results in coating the entire surface of sheathing with adhesive once insulation is adhered to substrate. Apply adhesive to a thickness of not less than 1/4 inch (6.4 mm) for factory mixed and not less than 3/8 inch (9.6 mm) for field mixed, measured from surface of insulation before placement.
2. Concrete or Masonry: Apply adhesive by ribbon-and-dab method.
3. Press and slide insulation into place. Apply pressure over the entire surface of insulation to accomplish uniform contact, high initial grab, and overall level surface.
4. Allow adhered insulation to remain undisturbed for not less than 24 hours, before installing mechanical fasteners, beginning rasping and sanding insulation or before applying base coat and reinforcing mesh.
5. Mechanically attach insulation to substrate. Install top surface of fastener heads flush with plane of insulation. Install fasteners into or through substrates with the following minimum penetration:

    a. Steel Framing: 5/16 inch (8 mm).
    b. Wood Framing: 1 inch (25 mm).
    c. Concrete and Masonry: 1 inch (25 mm).

6. Apply insulation over dry substrates in courses with long edges of boards oriented horizontally.
7. Begin first course of insulation from a level base line and work upward.
8. Begin first course of insulation from screed/track and work upward. Work from perimeter casing beads toward interior of panels if possible.

9. Stagger vertical joints of insulation boards in successive courses to produce running bond pattern. Locate joints so no piece of insulation is less than 12 inches (300 mm) wide or 6 inches (150 mm) high. Offset joints not less than 6 inches (150 mm) from corners of window and door openings.

a. Adhesive Attachment: Offset joints of insulation not less than 6 inches (150 mm) from horizontal and 4 inches (100 mm) from vertical joints in sheathing.
b. Mechanical Attachment: Offset joints of insulation from horizontal joints in sheathing.

10. Interlock ends at internal and external corners.
11. Abut insulation tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between boards. If gaps greater than 1/16 inch (1.6 mm) occur, fill with insulation cut to fit gaps exactly; insert insulation without using adhesive or other material.
12. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes complying with details indicated.
13. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than [1/32 inch (0.8 mm)] [1/16 inch (1.6 mm)] from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than 1/16 inch (1.6 mm). Prevent airborne dispersal and immediately collect insulation raspings or sandings.
14. Cut aesthetic reveals in outside face of insulation with high-speed router and bit configured to produce grooves, rabbets, and other features that comply with profiles and locations indicated. Do not reduce insulation thickness at aesthetic reveals to less than 3/4 inch (19 mm).
15. Interrupt insulation for expansion joints where indicated.
16. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
17. Fully wrap board edges with strip reinforcing mesh.
18. Treat exposed edges of insulation as follows:

    a. Except for edges forming substrates of sealant joints, encapsulate with base coat, reinforcing mesh, and finish coat.
    b. At edges trimmed by accessories, extend base coat, reinforcing mesh, and finish coat over face leg of accessories.

19. Coordinate installation of flashing and insulation to produce wall assembly that does not allow water to penetrate behind flashing and EIFS lamina.

B. Expansion Joints: Install at locations indicated, where required by EIFS manufacturer, and as follows:

1. At expansion joints in substrates behind EIFS.
2. Where EIFS adjoin dissimilar substrates, materials, and construction, including other EIFS.
3. Where panels abut one another.

3.7 BASE-COAT INSTALLATION

A. Base Coat: Apply to exposed surfaces of insulation in minimum thickness recommended in writing by EIFS manufacturer, but not less than 1/16-inch (1.6-mm) dry-coat thickness.

B. Reinforcing Mesh: Embed reinforcing mesh in wet base coat to produce wrinkle-free installation with mesh continuous at corners, overlapped not less than 2-1/2 inches (64 mm) or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written instructions. Do not lap reinforcing mesh within 8 inches (200 mm) of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are invisible.

3.8 FINISH-COAT INSTALLATION

A. Primer: Apply over dry base coat according to EIFS manufacturer's written instructions.

B. Finish Coat: Apply over dry base coat, maintaining a wet edge at all times for uniform appearance, in thickness required by EIFS manufacturer to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations.

1. Embed aggregate in finish coat according to EIFS manufacturer's written instructions to produce a uniform applied-aggregate finish of color and texture matching approved sample.

C. Sealer Coat: Apply over dry finish coat, in number of coats and thickness required by EIFS manufacturer.

3.9 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. As stipulated in Ch. 17 of the 2010 CBC

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. EIFS Tests and Inspections: According to ASTM E 2568

D. EIFS will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.10 CLEANING AND PROTECTION

A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and door frames and other surfaces outside areas indicated to receive EIFS coatings.

END OF SECTION 072413

SECTION 07 25 00 -WEATHER RESISTIVE BARRIERS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Weather barrier membrane
B. Seam Tape
C. Flashing
D. Fasteners

1.02 REFERENCES

A. ASTM International
   1. ASTM C920; Standard Specification for Elastomeric Joint Sealants
   2. ASTM C1193; Standard Guide for Use of Joint Sealants
   3. ASTM D882; Test Method for Tensile Properties of Thin Plastic Sheeting
   4. ASTM D1117; Standard Guide for Evaluating Non-woven Fabrics
   5. ASTM E84; Test Method for Surface Burning Characteristics of Building Materials
   6. ASTM E96; Test Method for Water Vapor Transmission of Materials
   7. ASTM E1677; Specification for Air Retarder Material or System for Framed Building Walls
   8. ASTM E2178; Test Method for Air Permeance of Building Materials
B. AATCC – American Association of Textile Chemists and Colorists
   1. Test Method 127 Water Resistance: Hydrostatic Pressure Test
C. TAPPI
   1. Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area)
   2. Test Method T-460; Air Resistance (Gurley Hill Method)

1.3 SUBMITTALS

A. Refer to Section 01 33 00 Submittal Procedures.
B. Product Data: Submit manufacturer current technical literature for each component.
C. Samples: Weather Barrier Membrane, minimum 8-1/2 inches by 11 inch.
D. Quality Assurance Submittals
   1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
   2. Manufacturer Instructions: Provide manufacturer's written installation instructions.
   3. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier assembly installation.
E. Closeout Submittals
   1. Refer to Section 01 70 00 Project Closeout.
   2. Weather Barrier Warranty: Manufacturer's executed warranty form with authorized signatures and endorsements indicating date of Substantial Completion.

1.4 QUALITY ASSURANCE

A. Qualifications

1. Installer shall have experience with installation of commercial weather barrier assemblies under similar conditions.
2. Installation shall be in accordance with weather barrier manufacturer's installation guidelines and recommendations.
3. Source Limitations: Provide commercial weather barrier and accessory materials produced by single manufacturer.

requirements for full and proper installation, integration and protection.

1.5 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01 60 00 Product Requirements.

B. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Store weather barrier materials as recommended by weather barrier manufacturer.

1.6 WARRANTY

A. Refer to General Conditions.

B. Special Warranty

1. Special weather-barrier manufacturer's warranty for weather barrier assembly for a period of ten (10) years from date of final weather barrier installation.
2. Approval by weather barrier manufacturer for warranty is required prior to assembly installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. DuPont Building Innovations; Tyvek, Commercial Wrap

B. Dow Chemical Co., Weathermate

C. Or equal.

2.2 MATERIALS

A. Performance Characteristics:

1. Air Penetration: 0.001 cfm/ft^2 at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677.
2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.
3. Water Penetration Resistance: 280 cm when tested in accordance with AATCC Test Method 127.
4. Basis Weight: 2.7 oz/yd^2, when tested in accordance with TAPPI Test Method T-410.
5. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
6. Tensile Strength: 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.
7. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117.
8. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E 84. Flame Spread: 10, Smoke Developed: 10.

2.3 ACCESSORIES

A. Seam Tape: 3 inch wide, manufacturer's tape for commercial applications.

B. Fasteners:

1. Manufacturer's fasteners ASTM F 1667: 1-5/8 inch rust resistant screw with 2-inch diameter plastic cap or manufacturer approved 1-1/4" or 2" metal gasketed washer

C. Sealants

1. Provide sealants that comply with ASTM C920, elastomeric polymer sealant to maintain watertight conditions. Refer also to Section 07 90 05 Sealants.
2. Products:
   a. Tremco 830
   b. Tremco Butyl
   c. Sealants recommended by the weather barrier manufacturer.

D. Adhesives:

1. Provide adhesive recommended by weather barrier manufacturer.
2. Products:
   a. Liquid Nails® LN-109
   b. Polyglaze® SM 5700
   c. Denso Butyl Liquid
   d. 3M High Strength 90
   e. SIA 655
   f. Adhesives recommend by the weather barrier manufacturer.

E. Primers:

1. Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.
2. Products:
   a. 3M High Strength 90
   b. Denso Butyl Spray
   c. SIA 655
   d. Permagrip 105
   e. ITW TACC Sta' Put SPH
   f. Primers recommended by the flashing manufacturer

F. Flashing

1. Flexible flashing: flexible membrane flashing materials for window openings and penetrations.
2. Refer also to Section 07 60 00 Flashing and Sheet Metal and the drawing details.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.

3.2 INSTALLATION – WEATHER BARRIER

A. Install weather barrier over exterior face of exterior wall substrate in accordance with

manufacturer recommendations.

B. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.

C. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather barrier plumb and level.

D. Sill Plate Interface: Extend lower edge of weather barrier over sill plate interface 3-6 inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer.

E. Overlap weather barrier

1. Exterior corners: minimum 12 inches.
2. Seams: minimum 6 inches.

F. Weather Barrier Attachment:

1. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommended fasteners, space 12 -18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.

G. Apply 4 inch by 7 inch piece of flashing to weather barrier membrane prior to the installation cladding anchors.

3.3 SEAMING

A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.

B. Seal any tears or cuts as recommended by weather barrier manufacturer.

3.4 OPENING PREPARATION

A. Flush cut weather barrier at edge of sheathing around full perimeter of opening.

B. Cut a head flap at 45-degree angle in the weather barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

3.5 FLASHING

A. Cut 12-inch wide flexible flashing a minimum of 12 inches longer than width of sill rough opening. Apply primer as required by manufacturer.

B. Cover horizontal sill by aligning flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.

C. Fan flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.

D. Apply 9-inch wide strips of flashing at jambs. Align flashing with interior edge of jamb framing. Start at head of opening and lap sill flashing down to the sill.

E. Spray-apply primer to top 6 inches of jambs and exposed sheathing.

F. Install flexible flashing at opening head using same installation procedures used at sill. Overlap jamb flashing a minimum of 2 inches.

G. Coordinate flashing with window installation.

H. Position weather barrier head flap across head flashing. Adhere using 4-inch wide flashing over the 45-degree seams.

3.6 PROTECTION

A. Protect installed weather barrier from damage.

END OF SECTION

SECTION 07 60 00 -FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY: Division 1 applies to this Section. Provide flashing and sheet metal items, complete.

A. Work Included:

1. Reglet and counterflashing assemblies.
2. Miscellaneous metal flashing and counterflashing as required, except where provided by mechanical and electrical trades.
3. Shop priming and field touch-up.
4. Calking.

B. Related Work:

1. Sheet metal flashings in connection with plumbing, air conditioning, and electrical.
2. Metal accessories for drywall, lathing, and acoustical treatments.
3. Finish painting.
4. Sleeves for embedded items.

1.02 SUBMITTALS: Refer to Section 01 33 00 for procedures. Submit Shop Drawings for fabricated sheet metal showing details, methods of joining, anchoring and fastening, thicknesses and gages of metals, concealed reinforcement, expansion joint details, sections, and profiles.

A. Submit material cost data for all materials required to construct the Work in place. The cost data should be as marked up to the General Contractor. If the Work is self performed, the material cost shall reflect the actual cost of material without mark up.

B. Submit manufacturer's information/data sheets or a letter from the manufacturer indicating the amount of recycled content, post consumer and post industrial in the product.

1.03 QUALITY ASSURANCE: Drawings and requirements specified govern. Conform to the current "Architectural Sheet Metal Manual" published by Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) for conditions not indicated or specified and for general fabrication of sheet metal items.

PART 2 - PRODUCTS

2.01 BASIC MATERIALS:

Galvanized steel:	ASTM A525 with coating G90, mill phosphatized for paint adhesion, 24 gage unless otherwise shown or specified.
Aluminum extrusions: .	ASTM B221, 6063-T5 or T6.
Aluminum sheet:	ASTM B209, Alclad or 5052 alloy.
Stainless steel:	ASTM A167, Type 302 or 304, 18-8.
Solder:	ASTM B32, type required for welding conditions.

Solder flux:	Standard brand non-corrosive acid-base type.
Fasteners:	Zinc or cadmium coated steel or stainless steel.
Felt:	ASTM D226, 15-pound type.
Primer:	Galvanized metal primer approved for use under Section 09900 with manufacturer's pretreatment materials.
Sealant:	Conforming to Section 07920.

2.02 RELATED MATERIALS:

A. Reglets and Counterflashings: Fry Reglet Corp. flashing systems complete with unions and preformed corners of necessary types for particular locations, of 24 gage galvanized iron, or approved equals by Metco Metal Products Co., Pacific Loxtite Flashing Co., National Cornice Works, Redco, Lane-Air, or equal. Use a single manufacturer's products, equivalent to Type CO at concrete, Type MA at masonry, Type ST at plaster, or Type SM, as required by Drawings and details.

2.03 GENERAL FABRICATION REQUIREMENTS: Fabricate items to avoid distortion and overstressing of fastenings due to expansion and contraction. Provide expansion joints where necessary in continuous runs of sheet metal, constructed watertight and spaced 30-feet apart maximum. Lock and solder corners and blind hem exposed edges. Make joints with 4" lap and solder unless otherwise shown or specified. Fill single lock seams with sealant where soldering is infeasible. Run flanges 4" minimum onto roof and wall surfaces. Fabricate sheet metal items in nominal 8-foot lengths unless otherwise shown or specified.

A. Soldering: Do soldering slowly immediately after application of flux, all seams showing evenly flowed solder. Clean and neutralize finished soldering.

B. Shop Priming: Clean completed items, apply pretreatment, and prime all exposed surfaces with specified primer.

C. Miscellaneous Flashing: Unless otherwise indicated, miscellaneous flashing shall be fabricated of galvanized iron. Exterior doors and windows, unless covered by overhangs shall be provided with 22 gage galvanized iron drip flashing as detailed.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS: Install sheet metal items as shown, according to approved submittals, and as required to complete the entire Work. Securely fasten and assemble, and make watertight and weathertight.

A. Coordination: Coordinate sheet metal items in connection with roofing for correct installation, and furnish in sufficient time to avoid delay in roofing construction. Install roofing sheet metal simultaneously with roofing.

B. Calking: Provide sealant calking as indicated and as required to seal and complete Work of this Section. Conform to Section 07 90 05.

C. Isolation: Isolate sheet metal from contact with concrete or masonry with one layer of roofing felt or, where shown, vinyl underlayment, except embedded items. Isolate all aluminum from dissimilar metals and materials other than non-magnetic stainless steel. At metals, apply a heavy coat of alkali-resistant bituminous paint; or coat both surfaces with a fluid-applied neoprene or urethane membrane material. Conceal all isolation in the finished Work.

3.02 COMPLETION: Examine installed sheet metal items, water test if necessary or directed, and correct damaged or defective items.

END OF SECTION

SECTION 078100 - APPLIED FIREPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes sprayed fire-resistive materials (SFRM) to patch and repair existing damaged or required replacement to perform new work.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Framing plans, schedules, or both, indicating the following:

1. Extent of fireproofing for each construction and fire-resistance rating.
2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
3. Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
4. Treatment of fireproofing after application.

C. Samples: For each exposed product and for each color and texture specified, in manufacturer's standard dimensions in size.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and testing agency.

B. Product Certificates: For each type of fireproofing.

C. Evaluation Reports: For fireproofing, from ICC-ES.

D. Preconstruction Test Reports: For fireproofing.

E. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on fireproofing.

1. Provide test specimens and assemblies representative of proposed materials and construction.

B. Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.

1. Bond Strength: Test for cohesive and adhesive strength according to ASTM E 736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
2. Density: Test for density according to ASTM E 605. Provide density indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
3. Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with fireproofing.
4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
5. For materials failing tests, obtain applied-fireproofing manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 44 deg F (7 deg C) or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.

B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

B. Source Limitations: Obtain fireproofing for each fire-resistance design from single source.

C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Steel members are to be considered unrestrained unless specifically noted otherwise.

D. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction and the following VOC limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Primers, Sealers, and Undercoaters: 200 g/L.
4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.

E. Low-Emitting Materials: Fireproofing used within the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. Asbestos: Provide products containing no detectable asbestos.

2.2 SPRAYED FIRE-RESISTIVE MATERIALS

A. SFRM: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carboline Company, subsidiary of RPM International, Fireproofing Products Div.; AD Southwest Fireproofing Type 5GP.
b. Grace, W. R. & Co. - Conn.; Grace Construction Products; Monokote MK-6 Series.
c. or approved equal.

2. Application: Designated for exterior use by a qualified testing agency acceptable to authorities having jurisdiction.
3. Bond Strength: Minimum **150-lbf/sq. ft. (7.18-kPa)** cohesive and adhesive strength based on field testing according to ASTM E 736.

4. Density: Not less than **15 lb/cu. ft. (240 kg/cu. m)** as specified in the approved fire-resistance design, according to ASTM E 605.
5. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch (9 mm).
6. Combustion Characteristics: ASTM E 136.
7. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

    a. Flame-Spread Index: 10 or less.
    b. Smoke-Developed Index: 10 or less.

8. Compressive Strength: Minimum **10 lbf/sq. in. (68.9 kPa)** according to ASTM E 761.
9. Corrosion Resistance: No evidence of corrosion according to ASTM E 937.
10. Deflection: No cracking, spalling, or delamination according to ASTM E 759.
11. Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
12. Air Erosion: Maximum weight loss of **0.025 g/sq. ft. (0.270 g/sq. m)** in 24 hours according to ASTM E 859.
13. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21 or rating of 10 according to ASTM D 3274 when tested according to ASTM D 3273.
14. Sound Absorption: NRC of not less than 0.60 according to ASTM C 423 for Type A mounting according to ASTM E 795.
15. Finish: Spray-textured finish. Apply separate topcoat after finishing.

    a. Color(of Topcoat): Match existing color.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.

B. Substrate Primers: Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:

1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
2. Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.

C. Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.

D. Metal Lath: Expanded metal lath fabricated from material of weight, configuration, and finish required, according to fire-resistance designs indicated and fireproofing manufacturer's written

recommendations. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive fireproofing.

E. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.

F. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:

1. Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
2. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
3. Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.

B. Verify that concrete work on steel deck has been completed before beginning fireproofing work.

C. Verify that roof construction, installation of roof-top HVAC equipment, and other related work is complete before beginning fireproofing work.

D. Conduct tests according to fireproofing manufacturer's written recommendations to verify that substrates are free of substances capable of interfering with bond.

E. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.

B. Clean substrates of substances that could impair bond of fireproofing.

C. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.

D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

3.3 APPLICATION

A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.

B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.

D. Metal Decks:

1. Do not apply fireproofing to underside of metal deck substrates until concrete topping, if any, has been completed.
2. Do not apply fireproofing to underside of metal roof deck until roofing has been completed; prohibit roof traffic during application and drying of fireproofing.

E. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

F. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.

G. Extend fireproofing in full thickness over entire area of each substrate to be protected.

H. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.

I. For applications over encapsulant materials, including lockdown (post-removal) encapsulants, apply fireproofing that differs in color from that of encapsulant over which it is applied.

J. Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.

K. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.

L. Cure fireproofing according to fireproofing manufacturer's written recommendations.

M. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.

N. Finishes: Where indicated, apply fireproofing to produce the following finishes:

1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.
2. Spray-Textured Finish: Finish left as spray applied with no further treatment.
3. Rolled, Spray-Textured Finish: Even finish produced by rolling spray-applied finish with a damp paint roller to remove drippings and excessive roughness.
4. Skip-Troweled Finish: Even leveled surface produced by troweling spray-applied finish to smooth out the texture and neaten edges.
5. Skip-Troweled Finish with Corner Beads: Even, leveled surface produced by troweling spray-applied finish to smooth out the texture, eliminate surface markings, and square off edges.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Test and inspect as required by the IBC, 1704.10.

B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.

C. Fireproofing will be considered defective if it does not pass tests and inspections.

1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

D. Prepare test and inspection reports.

3.5 CLEANING, PROTECTING, AND REPAIRING

A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.

C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.

D. Repair fireproofing damaged by other work before concealing it with other construction.

E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 078100

SECTION 07 84 00 - FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 01 70 00 - Project Closeout Requirements: Cutting and patching.

B. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

A. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2008a.

B. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; 2006.

C. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

D. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.

E. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

F. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in the current-year classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Licensed by authority having jurisdiction.

1.06 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use any system listed by UL and tested in accordance with ASTM E 814 that has F Rating equal to fire rating of penetrated assembly and T Rating Equal to F Rating and that meets all other specified requirements.

2.02 MATERIALS

A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. Foam Firestoppping: Single component silicone foam compound; conforming to the following:
   1. Manufacturers:
      a. 3M Fire Protection Products; www.3m.com/firestop.
      b. Hilti, Inc; www.us.hilti.com.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Fibered Compound Firestopping: Formulated compound mixed with incombustible non-asbestos fibers; conforming to the following:
   1. Manufacturers:
      a. USG; www.usg.com.
      b. Thermafiber; www.thermafiber.com
      c. Substitutions: See Section 01 60 00 - Product Requirements.

D. Firestop Devices - Wrap Type: Mechanical device with incombustible filler and sheet stainless steel jacket, intended to be installed after penetrating item has been installed; conforming to the following:

E. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authority having jurisdiction.

END OF SECTION

SECTION 078446 - FIRE-RESISTIVE JOINT SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Joints in or between fire-resistance-rated constructions.
2. Joints in smoke barriers.

B. Related Sections:

1. Section 078400 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Installer Certificates: From Installer indicating fire-resistive joint systems have been installed in compliance with requirements and manufacturer's written recommendations.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fire-resistive joint systems.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm experienced in installing fire-resistive joint 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 fire-resistive joint system products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.

B. Fire-Test-Response Characteristics: Fire-resistive joint systems shall comply with the following requirements:

1. Fire-resistive joint system tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
2. Fire-resistive joint systems are identical to those tested per testing standard referenced in "Fire-Resistive Joint Systems" Article. Provide rated systems complying with the following requirements:

a. Fire-resistive joint system products bear classification marking of qualified testing agency.
b. Fire-resistive joint systems correspond to those indicated by reference to designations listed by the following:

1) UL in its "Fire Resistance Directory."
2) Intertek ETL SEMKO in its "Directory of Listed Building Products."

C. Preinstallation Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Install and cure fire-resistive joint systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.

B. Coordinate sizing of joints to accommodate fire-resistive joint systems.

C. Notify Owner's testing agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 FIRE-RESISTIVE JOINT SYSTEMS

A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

B. Joints in or between Fire-Resistance-Rated Construction: Provide fire-resistive joint systems with ratings determined per ASTM E 1966 or UL 2079:

1. Joints include those installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies.
2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. 3M Fire Protection Products.
   b. Grace Construction Products; W.R. Grace & Co. -- Conn.
   c. Hilti, Inc.
   d. Tremco, Inc.
   e. USG Corporation.
   f. Or approved equal.
   g. Substitutions: See Section 01 60 00 – Product Requirements.

C. Joints in Smoke Barriers: Provide fire-resistive joint systems with ratings determined per UL 2079.

1. L-Rating: Not exceeding 5.0 cfm/ft (0.00775 cu. m/s x m) of joint at 0.30 inch wg (74.7 Pa) at both ambient and elevated temperatures.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. 3M Fire Protection Products.
   b. Grace Construction Products; W.R. Grace & Co. -- Conn.
   c. Hilti, Inc.
   d. Tremco, Inc.
   e. USG Corporation.
   f. Or approved equal.
   g. Substitutions: See Section 01 60 00 – Product Requirements.

D. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

E. VOC Content: Fire-resistive joint system sealants shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

F. Low-Emitting Materials: Fire-resistive joint system sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

G. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:

1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. 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 fire-resistive joint 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 fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates.

3.3 INSTALLATION

A. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support fill materials during their application and in 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 fire-resistive joint system.

C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
2. Apply fill materials so they contact and adhere to substrates formed by joints.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Identify fire-resistive joint systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of joint edge so labels will be visible to anyone seeking to remove or penetrate joint system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Fire-Resistive Joint System - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Where deficiencies are found or fire-resistive joint systems are damaged or removed due to testing, repair or replace fire-resistive joint systems so they comply with requirements.

C. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which joints occur.

B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

SECTION 07 90 05 - JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.

B. Precompressed foam sealers.

1.02 RELATED REQUIREMENTS

A..Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders.

B. Section 07 84 00 - Firestopping: Firestopping sealants.

C. Section 08 11 13 – Hollow Metal Frames

D. Section 09 21 16 - Gypsum Board Assemblies: Acoustic sealant.

E. Section 09 30 00 - Tiling: Sealant used as tile grout.

1.03 REFERENCE STANDARDS

A. ASTM C 834 - Standard Specification for Latex Sealants; 2010.

B. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 2008.

C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2010.

D. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2009.

E. ASTM D 1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2007.

F. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with other sections referencing this section.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Product Data: Provide data indicating sealant chemical characteristics.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years experience.

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.08 WARRANTY

A. See Section 01 79 00 – Warranties for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Silicone Sealants:
   1. Bostik Inc; www.bostik-us.com.
   2. Pecora Corporation; www.pecora.com.
   3. Tremco;
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Polyurethane Sealants:
   1. Bostik Inc; www.bostik-us.com.
   2. Pecora Corporation; www.pecora.com.
   3. Tremco;
   4. Substitutions: See Section 01 60 00 - Product Requirements.

C. Acrylic Sealants:
   1. Tremco Global Sealants; www.tremcosealants.com.
   2. Pecora Corp.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

D. Butyl Sealants:
   1. Bostik Inc; www.bostik-us.com.
   2. Pecora Corporation; www.pecora.com.
   3. Tremco;
   4. Substitutions: See Section 01 60 00 - Product Requirements.

E. Acrylic Emulsion Latex Sealants:
   1. Bostik Inc; www.bostik-us.com.
   2. Pecora Corporation; www.pecora.com.
   3. Tremco;
   4. Substitutions: See Section 01 60 00 - Product Requirements.

F. Preformed Compressible Foam Sealers:
   1. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SEALANTS

A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. Type B - General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; multi- component.
   1. Color: Standard colors matching finished surfaces.
   2. Applications: Use for:

a. Control, expansion, and soft joints in masonry.
b. Joints between concrete and other materials.
c. Joints between metal frames and other materials.
d. Other exterior joints for which no other sealant is indicated.

C. Type E - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NS single component, paintable.
1. Color: Standard colors matching finished surfaces.
2. Applications: Use for:
a. Interior wall and ceiling control joints.
b. Joints between door and window frames and wall surfaces.
c. Other interior joints for which no other type of sealant is indicated.

D. Type C - Plumbing Fixture/Tile Sealant: White silicone; ASTM C 920, Uses I, M and A; single component, mildew resistant.
1. Applications: Use for:
a. Joints between plumbing fixtures and floor and wall surfaces.
b. Joints between toiletroom countertops and wall surfaces.

E. Type D - Acoustical Sealant: Butyl or acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
1. Applications: Use for concealed locations only:
a. Sealant bead between top stud runner and structure and between bottom stud track and floor.
b. Junction boxes and gypsum board.
c. Under thresholds

F. Type A - Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, non-acid curing, non-sagging, non-staining, fungus resistant, non-bleeding.
1. Color: Standard colors matching finished surfaces.
2. Applications: Use for:
a. Exterior door, entrance and window frames.
b. Vertical joints in concrete and masonry flashing.

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width;

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C 1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C 1193.

C. Perform acoustical sealant application work in accordance with ASTM C 919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

3.04 PROTECTION

A. Protect sealants until cured.

END OF SECTION

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated steel doors and frames.

1.02 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware.

B. Section 08 81 00 - Glazing: Glass for doors and borrow lites.

C. Section 09 90 00 - Painting and Coating: Field painting.

1.03 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.

C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2004).

D. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.

E. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2004.

F. ASTM E 413 - Classification for Rating Sound Insulation; 2004.

G. ASTM E 1408 - Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems; 1991 (Reapproved 2000).

H. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.

I. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.

J. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.

K. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

L. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; 1998.

1.04 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and

identifying location of different finishes, if any.

D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.

B. Maintain at the project site a copy of all reference standards dealing with installation.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with NAAMM HMMA 840.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Doors and Frames:
   1. Assa Abloy Ceco, Curries, or Fleming: www.assaabloydss.com.
   2. Windsor Republic Doors; www.republicdoor.com.
   3. Steelcraft; www.steelcraft.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS AND FRAMES

A. Requirements for All Doors and Frames:
   1. Accessibility: Comply with ANSI/ICC A117.1.
   2. Door Top Closures: Flush with top of faces and edges.
   3. Door Edge Profile: Beveled on both edges.
   4. Door Texture: Smooth faces.
   5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
   6. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
   7. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed), manufacturer's standard coating thickness.
   8. Finish: Factory primed, for field finishing.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 STEEL DOORS

A. Exterior Doors, (Refer to schedule for types):
   1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 2, seamless.
   2. Core: Polystyrene or mineral core with 16-20 lb density (non-combustible).
   3. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A 653/A 653M, with manufacturer's standard coating thickness.

B. Interior Doors, Non-Fire-Rated:
   1. Grade: ANSI A250.8 Level 1, physical performance Level C, Model 1, full flush.
   2. Core: Impregnated Cardboard honeycomb.
   3. Thickness: 1-3/4 inches.

2.04 STEEL FRAMES

A. General:
   1. Comply with the requirements of grade specified for corresponding door, except:
      a. ANSI A250.8 Level 3 Doors: 14 gage frames.
      b. Frames for Wood Doors: Comply with frame requirements specified in ANSI A250.8 for Level 1, 16 gage
   2. Finish: Same as for door.
   3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
   4. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

B. Exterior Door Frames: Face welded, seamless with joints filled.
   1. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A 653/A 653M, with manufacturer's standard coating thickness.
   2. Weatherstripping: Separate, see Section 08 71 00.

C. Interior Door Frames, Non-Fire-Rated: Face welded type.

2.05 ACCESSORY MATERIALS

A. Louvers: Roll formed steel with overlapping frame; factory-painted finish, color as selected; factory-installed.

B. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

C. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.06 FINISH MATERIALS

A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.

B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.

B. Coordinate frame anchor placement with wall construction.

C. Coordinate installation of hardware.

3.04 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

B. Adjust sound control doors so that seals are fully engaged when door is closed.

END OF SECTION

SECTION 08 11 17 - PRE-FINISHED STEEL DOOR FRAMES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: This Section specifies knocked down, site assembled, prefinished metal, frames for:

1. Doors.

B. Related Requirements:

1. Section 08 71 00, Door Hardware: Hardware, silencers and weatherstripping.

1.02 REFERENCES

A. Reference Standards:

1. American Architectural Manufacturers Association (AAMA) - AAMA 611Voluntary Standards for Anodized Architectural Aluminum.
2. ASTM International (ASTM):
   a. ASTM A366 Standard Specification for Commercial Steel (CS) Sheet, Carbon (0.15 Maximum Percent) Cold-Rolled.
   b. ASTM A879 Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface
   c. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
   d. ASTM B455 Standard Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays. Comply with Section 01 31 00 - Project Coordination.

1.04 SUBMITTALS

A. General: Submit listed submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.

B. Product Data: Submit specified products as follows:

1. Manufacturer's product data.
2. Manufacturer's installation instructions.
3. Catalog pages illustrating products to be incorporated into project.
4. Material Safety Data Sheets (MSDS).

C. Shop Drawings: Indicate information on shop drawings as follows:

1. Frame elevations.
2. Details of frame anchorage.
3. Details of reinforcements.
4. Rough opening requirements.

5. Finishes.

D. Samples: Submit as follows:

1. Frame samples illustrating each finish specified.

1.05 INFORMATION SUBMITTALS

A. General: Submit listed submittals in accordance with Contract Conditions and Section 01 33 00 - Submittal Procedures.

B. Test and Evaluation Reports:

1. Certified test reports showing compliance with specified performance characteristics and physical properties.

1.06 QUALITY ASSURANCE

A. Installer shall have 10 years experience installing similar door frames.

1.07 DELIVERY, STORAGE & HANDLING

A. Delivery and Acceptance Requirements:

1. Deliver material in accordance with Section 01 60 00 - Product Requirements and in accordance with manufacturer's written instructions.

2. Deliver materials in manufacturer's original packaging with identification labels intact and in sizes to suit project.

B. Storage and Handling Requirements:

1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.08 WARRANTY

A. Warranty: Refer to Contract Conditions and Section 01 79 00 - Warranties for project warranty provisions.

PART 2 PRODUCTS

2.01 MANUFACTURER:

A. Timely Industries, 10241 Norris Avenue, Pacoima, CA 91331-2218; Telephone: 800-247-6242; Fax: 818-492-3530; E-mail: sales@timelyframes.com; Website: www.timelyframes.com.

1. Single Source Responsibility: Provide all frames from single manufacturer.

2. Substitution Limitations:

a. Substitutions: In accordance with Contract Conditions and Section 01 63 00 - Substitution Procedures.

2.02 FRAMES:

A. Frame Material:

1. Cold rolled steel to ASTM A366.

B. Size: As indicated on drawings.

C. Frame Profile:

1. "C" Series: 1.2 mm (18 gauge) thick.

a. Rabbet profile: Equal.

D. Frame Casings:

1. TA-08: Standard Steel with 1/4 inch (6 mm) reveal; corner alignment clips.

E. Regulatory Requirements:

a. In accordance with Section 01 41 00 - Regulatory Requirements.

F. Fabrication:

1. Cut, notch and fabricate frames at manufacturer's facility.
2. Provide minimum 14 gauge hinge reinforcement plate, tapped for machine screws supplied with hinges. Mechanically attach hinge plate to hinge emboss on frame.
3. Casing Clips: Fabricate frames with factory applied, heat treated clips to prevent deflection in the clip upon application or removal of casing. Attachment clips may not be of same material as frame.
4. Provide notches and tabs or stops (or both) for positive alignment of frame parts at all corners.
5. Provide corner alignment clips.

G. Finishes:

1. Steel, Colonial Steel and Galvanized Steel: Polyurethane-based, 3-coat paint system.

a. Standard Color(s): Color by Architect.

2.03 ACCESSORIES

A. Frame Reinforcements for Site Installation: Manufacturer's standard reinforcements for hardware as indicated in Section 08 71 00, Door Hardware.

B. Adjustable strikes: Emboss frames for TA-1 strike for cylindrical lock. Provide TA-1 strike in finish compatible with hardware finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that conditions of substrates previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's instructions prior to door frame installation.

1. Inform Architect of unacceptable conditions immediately upon discovery.

3.02 INSTALLATION

A. Coordinate frame work with work of other trades for proper time and sequence to avoid construction delays.

B. Install frame in accordance with manufacturer's instructions.

C. Install frame plumb and level.

D. Accurately fit, align, securely fasten and install free from distortion or defects.

3.03 CLEANING

A. Upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Final Cleaning.

B. Waste Management:

1. Coordinate recycling of waste materials with Section 01 74 19 - Construction Waste

Management.

3.04 PROTECTION

A. Repair damage to adjacent materials caused by door frame installation.

END OF SECTION

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush configuration; fire rated, non-rated, and acoustical.

1.02 RELATED REQUIREMENTS

A. Section 06 20 00 - Finish Carpentry.

B. Section 08 11 13 - Hollow Metal Doors and Frames.

C. Section 08 71 00 - Door Hardware.

D. Section 08 81 00 - Glazing.

E. Section 09 90 00 - Painting and Coating: Site finishing of doors.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

B. ICC (IBC) - International Building Code; 2006.

C. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

D. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.

E. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

F. WDMA I.S.1-A - Architectural Wood Flush Doors; Window and Door Manufacturers Association; 2004.

1.04 SUBMITTALS

A. See Section 01 33 00 -Submittal Procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Specimen warranty.

D. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing.

E. Samples: Submit two samples of door veneer, 4 x 4 inch in size illustrating wood grain, stain color, and sheen.

F. Warranty, executed in Riverside Community College District's name.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.

B. Installed Fire Rated Door Assembly: Conform to NFPA 80 for fire rated class as indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 79 00 for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. High Pressure Decorative Laminate Faced Doors:
1. Ampco Products, Inc; www.ampco.com.
2. Poncraft Door Co; www.poncraft.com.
3. VT Industries, Inc; www.vtindustries.com.
4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS AND PANELS

A. All Doors: See drawings for locations and additional requirements.
1. Quality Level: Premium Grade, in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Section 1300.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
1. Provide solid core doors at all locations.
2. Laminate facing.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated above.

B. Sound Retardant Doors: Equivalent to Type PC construction with core as required to achieve rating specified; plies and faces as indicated above.

2.04 PLASTIC LAMINATE DOOR FACING

A. Grade: Premium
B. Plastic-Laminate Faces: High-pressure decorative laminates complying with NEMA LD 3, Grade HGS.
C. Colors, Patterns, and Finishes: As selected by Architect from laminate manufacturer's full range of products.
D. Exposed Vertical Edges: plastic laminate that matches faces, applied before faces.
1. Polymer Edging Color: Same color as faces.

2.05 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Grade: Premium, with Grade AA faces.

B. Species: Cherry.

C. Cut: Quarter sliced.

D. Match between Veneer Leaves: Book match.

E. Assembly of Veneer Leaves on Door Faces: Balance match.

F. Pair and Set Match: Provide for doors hung in same opening.

G. Blueprint Match: Where indicated, provide doors with faces produced from same flitches as adjacent wood paneling and arranged to provide blueprint match with wood paneling. Comply with requirements in Section 064216 "Flush Wood Paneling."

H. Exposed Vertical and Top Edges: Same species as faces or a compatible species - edge Type A.

I. Core: Particleboard.

J. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.

K. WDMA I.S.1-A Performance Grade: Heavy Duty.

2.06 ACCESSORIES

A. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.

B. Astragals for Fire Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge, specifically for double doors.

2.07 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with Stiles and Rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
   1. Exception: Doors to be field finished.

E. Provide edge clearances in accordance with AWI Quality Standards Illustrated Section 1700.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.
   1. Install fire-rated doors in accordance with NFPA 80 requirements.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.03 TOLERANCES

A. Conform to specified quality standard for fit and clearance tolerances.

B. Conform to specified quality standard for maximum diagonal distortion.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE - See Drawings

END OF SECTION

SECTION 08 31 00 - ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Access door and frame units, fire-rated and non-fire-rated, in ceiling and/or wall locations.

1.02 RELATED REQUIREMENTS

C. Section 09 21 16: Openings in ceilings.

D. Section 09 90 00 - Painting and Coating: Field paint finish.

E. Division 23: Mechanical components requiring access.

1.03 REFERENCE STANDARDS

A. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

B. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Project Record Documents: Record actual locations of all access units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Access Doors:
   1. Acudor Products Inc; www.acudor.com.
   2. Karp Associates, Inc; www.karpinc.com.
   3. Milcor Inc; www.milcorinc.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACCESS DOORS AND PANELS

A. All Units: Factory fabricated, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.

B. Units in Fire Rated Assemblies: Fire rating equivalent to the fire rated assembly in which they are to be installed.
   1. Provide products listed and labeled by UL or ITS (Warnock Hersey) as suitable for the purpose specified and indicated.

2.03 WALL AND CEILING UNITS

A. Door and Frame Units: Formed steel.
   1. Frames and flanges: 0.058 inch steel.
   2. Door panels: 0.070 inch single thickness steel sheet.
   3. Size: As indicated.

4. Hardware:
   a. Hinge: Concealed constant force closure spring type.
   b. Lock: Screw driver slot for quarter turn cam lock.
5. Galvanized, hot dipped finish.
6. Prime coat with alkyd primer.
7. Finish: One coat baked enamel, color as selected.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings. Secure rigidly in place.

C. Position units to provide convenient access to the concealed work requiring access.

END OF SECTION

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Door Hardware.
2. Entrance door hardware.
3. Cylinders.

B. Related Sections:

1. Section 061000 - Finish Carpentry: Finish Hardware Installation
2. Section 079005 - Joint Sealers – exterior thresholds
3. Section 081113 - Metal Doors and Frames
4. Section 081416 - Wood Doors
5. Section 283111 - Fire/Life-Safety System

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets.
3. Signs.
4. Toilet accessories.
5. Installation.
6. Rough hardware.

1.2 REFERENCES:

Use date of standard in effect as of Bid date.

A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.

B. BHMA – Builders Hardware Manufacturers Association

C. DHI – Door and Hardware Institute

D. NFPA – National Fire Protection Association

1. NFPA 80 – Fire Doors and Windows
2. NFPA 105 – Smoke and Draft Control Door Assemblies
3. NFPA 252 – Fire Tests of Door Assemblies

E. UL – Underwriters Laboratories

1. UL10C – Positive Pressure Fire Tests of Door Assemblies.

2. UL 305 – Panic Hardware

F. WHI – Warnock Hersey Incorporated

G. 2010 State of California Building Code

H. Local applicable codes

I. SDI – Steel Door Institute

J. WI – Woodwork Institute

K. AWI – Architectural Woodwork Institute

L. NAAMM – National Association of Architectural Metal Manufacturers

1.3 SUBMITTALS & SUBSTITUTIONS

A. SUBMITTALS: Submit six copies of schedule per Section 013300. Only submittals printed one sided will be accepted and reviewed. Organize vertically formatted schedule into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Type, style, function, size, quantity and finish of hardware items.
2. Use BHMA Finish codes per ANSI A156.18.
3. Name, part number and manufacturer of each item.
4. Fastenings and other pertinent information.
5. Description of door location using space names and numbers as published in the drawings.
6. Explanation of abbreviations, symbols, and codes contained in schedule.
7. Mounting locations for hardware.
8. Door and frame sizes, handing, materials, fire-rating and degrees of swing.
9. List of manufacturers used and their nearest representative with address and phone number.
10. Catalog cuts.
11. Wiring Diagrams.
12. Manufacturer's technical data and installation instructions for electronic hardware.

B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.

C. Deviations: Highlight, encircle or otherwise identify deviations from "Schedule of Finish Hardware" on submittal with notations clearly designating those portions as deviating from this section.

D. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, note the discrepancy in the submittal and request direction from Architect for resolution.

E. Substitutions per Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.

F. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4 QUALITY ASSURANCE:

A. Qualifications:

1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course of work for project hardware consultation to Owner, Architect and Contractor.

a) Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.

B. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

D. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / California State Fire Marshal Standard 12-7-4 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.

1. Note: scheduled resilient seals may exceed selected door manufacturer's requirements.

2. See 2.6.E for added information regarding resilient and intumescent seals.

E. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Delivery: coordinate delivery to appropriate locations (shop or field).

1. Permanent keys and cores: secured delivery direct to Owner's representative.

B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.6 PROJECT CONDITIONS AND COORDINATION:

A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.

B. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents. Furnish related trades with the following information:

1. Location of embedded and attached items to concrete.
2. Location of wall-mounted hardware, including wall stops.
3. Location of finish floor materials and floor-mounted hardware.
4. Locations for conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
5. Manufacturer templates to door and frame fabricators.

C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation. Do not order hardware until the submittal has been reviewed by the frame and door suppliers for compatibility with their products.

D. Prior to submittal, carefully inspect existing conditions at each opening to verify finish hardware required to complete Work, including sizes, quantities, existing hardware scheduled for re-use, and sill condition material. If conflict or incompatibility between the specified/scheduled hardware and existing conditions, submit request for direction from Architect. Include date of jobsite visit in the submittal.

1. Submittals prepared without thorough jobsite visit by qualified hardware expert will be rejected as non-compliant.

1.7 WARRANTY:

A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties:

1.	Locksets:	Three years
2.	Exit Devices:	Three years
3.	Closers:	Ten years
4.	Hinges:	One year
5.	Other Hardware	Two years

1.8 COMMISSIONING:

A. Conduct these tests prior to request for certificate of substantial completion:

1. With installer present, test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
2. With installer, access control contractor and electrical contractor present, test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
3. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.

PART 2 PRODUCTS

2.1 MANUFACTURERS:

A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

ITEM:	MANUFACTURER:	ACCEPTABLE SUB:
Hinges	(IVE) Ives	Bommer
Key System	(SAR) Sargent	Or Equal
Locks	(SAR) Sargent	Or Equal
Exit Devices	(SAR) Sargent	Or Equal
Closers	(LCN) LCN	Or Equal
Silencers	(IVE) Ives	Trimco
Kickplates	(IVE) Ives	Trimco
Stops & Holders	(IVE) Ives	Trimco
Thresholds	(NGP) NGP	Zero
Seals & Bottoms	(NGP) NGP	Zero

2.2 HINGING METHODS:

A. Drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.

B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.

C. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.

1. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins and security studs.

2. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.

2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

A. Mortise Locksets and Latchsets:

1. Chassis: cold-rolled steel, handing field-changeable without disassembly.

2. Latchbolts: 3/4 inch throw stainless steel anti-friction type.

3. Universal lock case.

4. Independent lever rotation.

5. Thumbturns: accessible design not requiring pinching or twisting motions to operate.

6. Deadbolts: stainless steel 1-inch throw.

7. Scheduled Lock Series and Design: Sargent 8200 series, LE2J design.

8. Certifications:

a) ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.

2.4 EXIT DEVICES / PANIC HARDWARE

A. General features:

1. Push-through push-pad design.

2. 0.75-inch throw deadlocking latchbolts.

3. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.

4. Comply with CBC Section 1003.3.1.9 and 1008.1.9.

2.5 CLOSERS

A. Surface Closers:

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.

2. ISO 2000 certified. Units stamped with date-of-manufacture code.

3. Independent lab-tested 10,000,000 cycles.

4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.

5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.

6. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.

7. When provided, the sweep period of the closer shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.

8. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.

9. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.

10. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.

11. Exterior doors: seasonal adjustments not required for temperatures from 120 degrees F to -30 degrees F, furnish checking fluid data on request.

12. Non-flaming fluid, will not fuel door or floor covering fires.

13. Pressure Relief Valves (PRV) not permitted.

14. Supply Special Rust Inhibitor(SRI) at corrosive environments. This special corrosion resistant pretreatment, when added to the powder coat finish, gives the closer a tremendous advantage over a potentially corrosive environment.

2.6 OTHER HARDWARE

A. Kick Plates: Rounded and relieved edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

B. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.

2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.

C. Seals: Finished to match adjacent frame color. Resilient seal material: polyurethane, polypropylene, nylon brush, silicone rubber or solid high-grade neoprene as scheduled. Do not furnish vinyl seal material. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability.

1. Proposed substitutions: submit for approval.

2. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.

3. Non-corroding fasteners at in-swinging exterior doors.

4. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door leafs have the necessary sealed-in-place STC ratings. Fasten applied seals over bead of sealant.

5. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.

6. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required

D. Thresholds: As scheduled and per details. Comply with CBC Section 1133B.2.4.1. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

1. Exteriors: Seal perimeter to exclude water and vermin. Use sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).

2. Flat saddle type thresholds shall have a minimum wall thickness of .125".

E. Exposed Through-Bolts: Do not use SNB, grommet nuts, sleeve nuts or other such clamping type fasteners, intent is for minimal exposed hardware. Coordinate with wood doors; ensure provision of proper blocking to support wood screws for mounting panic hardware and door closers. Coordinate with metal doors and frames; ensure provision of proper reinforcement to support machine screws for mounting panic hardware and door closers.

F. Silencers: Interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

2.7 FINISH:

A. Generally BHMA 626 Satin Chromium

1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.

B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.8 KEYING REQUIREMENTS:

A. Key System: existing Sargent system. Initiate and conduct meeting(s) with Owner to determine system structure, furnish Owner's written approval of the system. Furnish temporary construction-keyed and permanent cylinders. Contractor to demonstrate to the Owner that temporary keys no longer operate the locking cylinders at the end of the project. Permanent keys and cores: use secured shipment direct from point of origination to Owner.

1. For estimate: 3 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.

2. For estimate: Visual Key Control(VKC) plus "Do Not Duplicate".

B. Bitting List: use secured shipment direct from point of origination to Owner upon completion.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

A. Contractors' installers are to be trained and certified by a door hardware manufacturer representative on the proper installation and adjustment of fire, life safety, and security products. Installers should understand manufacturers' templates, suppliers' hardware schedules and printed installation instructions. Must also understand that any fasteners other than the manufacturers, voids warranties. Installers must be available to meet with manufacturers' representatives and related trades to discuss installation of hardware.

3.2 PREPARATION:

A. Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation.

B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.

1. Notify Architect of code conflicts before ordering material.

2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor, per CBC Section 1133B.2.5.2.

3. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.

D. Existing frames and doors to be retrofitted with new hardware:

1. Field-verify conditions and dimensions prior to ordering hardware. Fill existing hardware cut outs not being reused by the new hardware. Remove existing hardware not being reused, return to Owner unless directed otherwise.

2. Remove existing floor closers not scheduled for reuse, fill cavities with concrete and finish smooth

3. Cut and weld existing steel frames currently prepared with 2-¾" height strikes. Cut an approx. 8" section from the strike jamb and weld in a reinforced section to accommodate specified hardware's strike.

4. Provide wrap-around repair plates at doors where required to cover the original preparation and allow installation of new hardware.

3.3 INSTALLATION

A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.

1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.

2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.

3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.

4. Replace fasteners damaged by power-driven tools.

B. Locate floor stops no more that 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.

C. Drill pilot holes for fasteners in wood doors and/or frames. Centerpunch hole locations before using self-drilling type screws to prevent skating. Replace screws that are not centered in their holes.

D. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

E. Field verify existing conditions and measurements prior to ordering hardware. Fill existing hardware cut outs not being used by the new hardware. Remove existing hardware not being reused.

F. Disable or remove existing floor closers where they exist. If disabled cut or remove spindle.

G. Where existing wall conditions will not allow door to swing using the scheduled hinges, provide wide-throw hinges and if needed extended arms on closers.

H. Provide proper brackets to accommodate the mounting of closers on doors with flush transoms.

3.4. ADJUSTING

A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

1. Hardware damaged by improper installation or adjustment methods: repair or replace to Owner's satisfaction.
2. Adjust doors to fully latch with no more than 1 pound of pressure.
3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.
4. Adjust door closers per 1.9 this section.

B. Final inspection: Installer to provide letter to Owner that upon completion installer has visited the Project and has accomplished the following:

1. Re-adjust hardware.
2. Evaluate maintenance procedures and recommend changes or additions, and instruct Owner's personnel.
3. Identify items that have deteriorated or failed.
4. Submit written report identifying problems

3.5 DEMONSTRATION:

A. Demonstrate mechanical hardware and electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

C. Hardware items specified to receive antimicrobial coating may be cleaned with a mild detergent, air-dry or dried with a soft cloth. Avoid harsh abrasive cleaners and abrasive cleaning pads.

3.7 SCHEDULE OF FINISH HARDWARE

A. See door schedule in drawings for hardware set assignments.

SPEXTRA: 39824

HARDWARE GROUP NO. 01

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
2	EA	FIRE RATED EXIT DEVICE	12-NB-8713 X ETJ	626	SAR
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B4E CS	630	IVE
2	EA	FLOOR STOP	FS439	682	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 02

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
2	EA	EXIT DEVICE	NB-8713 X ETJ	626	SAR
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B4E CS	630	IVE
2	EA	FLOOR STOP	FS439	682	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 03

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CONST LATCHING BOLT	FB61T	630	IVE
1	EA	STORAGE LOCK	8204 LE2J	626	SAR
2	EA	FLOOR STOP	FS439	682	IVE
2	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 04

PROVIDE EACH PR DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	CONST LATCHING BOLT	FB61T	630	IVE
1	EA	STORAGE LOCK	8204 LE2J	626	SAR
2	EA	OH STOP	450S	630	GLY

2	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 05

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5 NRP	630	IVE
1	EA	STORAGE LOCK	8204 LE2J	626	SAR
1	EA	LOCK GUARD	LG10	630	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E CS	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	THRESHOLD	PER DETAIL		

HARDWARE GROUP NO. 06

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5 NRP	630	IVE
1	EA	STORAGE LOCK	8204 LE2J	626	SAR
1	EA	LOCK GUARD	LG10	630	IVE
1	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E CS	630	IVE
1	EA	FLOOR STOP	FS448	626	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	THRESHOLD	PER DETAIL		

HARDWARE GROUP NO. 07

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	STORAGE LOCK	8204 LE2J	626	SAR
1	EA	FLOOR STOP	FS439	682	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 08

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	STORAGE LOCK	8204 LE2J	626	SAR
1	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E CS	630	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1		THRESHOLD	AS REQUIRED FOR FIRE RATING		

HARDWARE GROUP NO. 09

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	STORAGE LOCK	8204 LE2J	626	SAR
1	EA	OH STOP	450S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 10

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	8266 LE2J	626	SAR
1	EA	FLOOR STOP	FS439	682	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 11

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	8266 LE2J	626	SAR
1	EA	SURFACE CLOSER	4041 DEL	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E CS	630	IVE
1	EA	FLOOR STOP	FS439	682	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 12

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	8205 LE2J	626	SAR
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E CS	630	IVE
1	EA	FLOOR STOP	FS439	682	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 13

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	8205 LE2J	626	SAR
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E CS	630	IVE
1	EA	FLOOR STOP	FS439	682	IVE
1	SET	SEALS	5050B	BRN	NGP
1		THRESHOLD	AS REQUIRED FOR FIRE RATING		

HARDWARE GROUP NO. 14

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	8205 LE2J	626	SAR
1	EA	FLOOR STOP	FS439	682	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 15

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	8237 LE2J	626	SAR
1	EA	FLOOR STOP	FS439	682	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 16

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	8237 LE2J	626	SAR
1	EA	OH STOP	410S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 17

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1		EXISTING DOOR, FRAME AND HARDWARE TO REMAIN		

END OF SECTION

Door Schedule

Door #	HW Set	Mode	Width	Height	Thick	Door	Frame	Rating	Outside Loc	Inside Loc
01	17	SGL	3' 0"	7' 0"	1 3/4"	XWDD	XHMF	NONRTD	EXTERIOR	STAIRS
02	05	SGL	3' 0"	7' 0"	1 3/4"	HMD	HMF	NONRTD	EXTERIOR	JANITOR
03	02	PR	6' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	CORRIDOR	VESTIBULE
04	09	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	COURTROOM	STORAGE
05	12	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	EXTERIOR	A/C CONF
06	01	PR	6' 0"	7' 0"	1 3/4"	WD	HMF	20MIN	CORRIDOR	VESTIBULE
07	10	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	JUDICIAL CHAMBER	TOILET
08	13	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	60MIN	VESTIBULE	A/C CONF
09	02	PR	6' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	VESTIBULE	COURTROOM
10	13	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	60MIN	HALLWAY	JUDICIAL CHAMBER
11	08	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	60MIN	CORRIDOR	HALLWAY
12	11	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	HALLWAY	TOILET
13	06	SGL	3' 0"	7' 0"	1 3/4"	HMD	HMF	NONRTD	EXTERIOR	HALLWAY
14	07	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	COURTROOM	STORAGE
15	15	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	COURTROOM	HALLWAY
16	16	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	COURTROOM	COPIER/SUPPLY AREA
17	15	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	COURTROOM	COPIER/SUPPLY AREA
18	14	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	HALLWAY	JUDICIAL CHAMBER
19	10	SGL	3' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	JUDICIAL CHAMBER	TOILET
20	04	PR	4' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	JUDICIAL CHAMBER	CLOSET
21	03	PR	4' 0"	7' 0"	1 3/4"	WD	HMF	NONRTD	JUDICIAL CHAMBER	CLOSET

SECTION 08 81 00 - GLAZING

PART 1 - GENERAL

1.01 DESCRIPTION: Division 1 applies to this Section. Provide glass, glazing, and glazing accessories, complete.

A. Related sections include:

1. 08 14 16 Flush Wood Doors

1.02 QUALITY ASSURANCE:

A. Quality Standards: In addition to Code, glass installations shall comply with ANSI Z97.1, as applicable, and Federal Safety Standard 16 CFR 1201.

B. Glass Manufacturers' Usage Recommendations: Furnish each manufacturer's written analysis of glass usage for the exterior glass installations regarding adverse shading conditions and other problems that may occur as a result of the building geometry and glass exposures, with recommended solutions. If no such problems are anticipated by a glass manufacturer, the pertinent written analysis shall so state.

C. Safety Glazing: Provide safety glazing at all openings subject to human impact per CBC.

1.03 SUBMITTALS: Refer to Section 01 33 00 for procedures.

A. Samples and Product Data: Obtain color instructions from the Architect prior to submission. Submit the following:

1. Each glass manufacturer's detailed recommendations and instructions for preparation of glazed openings and installation of glass. With the instructions, submit glass manufacturer's written recommendations for setting blocks and shims, jamb blocks and shims, wedge glazing gaskets, and fixed glazing gaskets to be used for installation of the manufacturer's glasses; include type and placement for each item.
2. Glazing channels or gaskets, 12" long.
3. Manufacturer's technical data for glazing gaskets, weathering gaskets, tapes, separators, setting and side blocks, and other glass setting material showing conformance with requirements specified, including warranties, coordinated with glass manufacturer's recommendations and instructions.
4. Samples of cured glazing sealants in designated colors, with technical Product Data.
5. Wall mirrors, 12" square with manufacturer's data for mirror, stainless steel J-moldings, primer and adhesive, and warranty.

B. Full-Size Samples: Install full-size samples of glasses specified below, installed in the frames forming a part of the Work. Locations shall be designated by the Architect. Glass showing defects, including excessive distortion, which detract from artistic effect, appearance, and design concept of the building, in the Architect's opinion, shall be removed and acceptable glass installed

at no extra cost to the Owner. Approved sample installations establish the standard of quality required for glass installations of the same kinds and types. Full-size samples are required for:

1. Each type of tempered glass.

C. Certificates: Submit from manufacturer stating the quality, thickness, and type of all unlabeled glass delivered to the site for field cutting.

1.04 JOB CONDITIONS: Protect glazing until completion and final acceptance of the Work. Repair or replace damaged or defective glazing to original specified condition, at no extra cost to the Owner. Damaged or defective glazing includes glass that cannot be properly cleaned.

1.05 WARRANTY: Warranty exterior glass installations against loosening, air or water leakage, glass pop-outs, deterioration, and all other defects for 5 years from the date of final acceptance by the owner.

A. Glazing Channels and Gaskets: Warranty for 5 years against all defective material or deterioration including, without limitation, shrinkage causing loss of seal and physical failure due to exposure to sun, ozone, elements, smog and other air pollution, and commercial glass cleaners.

PART 2 - PRODUCTS

2.01 GLASS MATERIALS: Glass of domestic manufacture, conforming to ASTM C1036 and ASTM C1048, except total distortion tolerances of ASTM C1048 do not govern over requirements in this Section, and to ANSI Z97.1, by Viracon, PPG Industries, Inc., Libby-Owens-Ford or approved equal. Label all factory cut panes and do not remove labels until directed. Do not cut unlabeled glass delivered to site as material for field cutting until glass is approved by Architect.

A. Heat Strengthened and Tempered Glass: Heat strengthen or temper the above glasses as shown, required by Code, or required to meet wind load or performance requirements. Handle and size glass according to manufacturer's instructions. On each sheet of tempered vision glass, provide an inconspicuous visible label fused to glass and placed in lower corner, identifying tempered glass. Provide fireman's tempered glass label where shown or required by local Fire Department. Furnish clear, tinted plate glass, or reflective glass as indicated, specified, or required.

1. Process: Perform heat strengthening and tempering by the horizontal roller gas hearth process only. Process that produce tong or gripper marks are not acceptable.

B. Intent: Tempered glasses are an important part of the artistic effect of the building design, and shall conform to the standard of quality established by the approved full-size Sample installations.

2.02 GLASS SETTING MATERIALS:

A. Glazing Channels and Gaskets: Extruded neoprene conforming to AAMA SG-1, meeting 5 year warranty requirements, approved colors, sponge units of 40 +/- 5 Durometer Shore A, designed for 20% to 35% compression; dense units of 70 +/- 5 Durometer Shore A for hollow profiles and 60 +/- 5 for solid profiles. Vulcanize gasket corners, both sponge and dense. Provide units

designed to produce glass edge pressure of 4 pounds minimum and 10 pounds maximum per linear inch.

B. Blocks and Spacers: Setting blocks of solid neoprene or silicone rubber having 85 +/- 5 Durometer Shore A, block length equal to 0.1" per square foot of glass area but minimum 4" length with length increased as required to eliminate point loading, width not less than width of glazing pocket less 1/8", profiled and secured not to slip during installation and not to obstruct proper drainage of glazing cavity. Provide shims of same material, hardness, width, and length as setting blocks. Provide neoprene or silicone rubber side blocks of 55 +/- 5 Durometer Shore A.

C. Glazing Sealants: For use at glazing perimeters, acceptable sealants are GE Silglaze 2400, GE Silpruf, GE 1200 Silicone, and Dow Corning 795 or 995. For other joints select appropriate sealant for joint size, movement, and substrate; acceptable sealants include GE 1200 Silicone or Silpruf, or Dow Corning 795 and 995, or, where approved, 790. Polybutylene, oleoresinous, asphalt, and oil base sealants are not allowed for any use. Provide sealants of approved colors.

PART 3 - EXECUTION

3.01 GLAZING: Employ skilled and experienced glaziers. Set glass airtight and true with glazing channels or gaskets according to the "Glazing Manual" of Flat Glass Marketing Association, glass manufacturer's instructions, and as required herein to obtain weatherproof and waterproof installations. Conform glass edge clearances, and face and edge laps (bite), to Code and requirements herein. Set glass in rabbets with glazing blocks and spacers so glass does not contact frame and to preclude looseness and rattling. Use glass with straight smooth-finished edges free of cracks, chips, swiping, seaming, stress foci, or any other defects on surfaces or edges for all glass installations.

A. Setting Blocks: Unless otherwise recommended by glass manufacturer or in the FGMA "Glazing Manual" for type of glass installation, provide setting blocks of the correct size located at the bottom quarter points of each glass pane, and side blocks in both jambs in upper half of panes retained by metal caps.

B. Glazing Gaskets and Channels: Compress at least 15% by stops and at least 5% lengthwise to prevent corner pullout, but do not exceed allowable compressive forces on glass.

C. Glazing Sealant: Ensure sealant installations form a continuous airtight and watertight seal for entire perimeter of each glass pane. For glass secured by metal frames or stops on two or more edges, hold glazing gaskets or channels back at least 1/8" from the sight lines and fill the voids with glazing sealant finished flush with stops, sealant installed on interior side of glass.

3.02 COMPLETION: Conform to Section 01 74 00. Do not use any harsh or abrasive cleaning agents, caustics, or acids for cleaning. Wash and polish vision glass both sides and leave glass free of soiling, streaks and labels. Wash and polish mirrors.

END OF SECTION

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

C. Gypsum sheathing.

D. Gypsum wallboard.

E. Joint treatment and accessories.

F. Gypsum board ceilings

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing.

B. Section 07 21 00 - Thermal Insulation: Acoustic insulation.

C. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.

D. Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire rated walls.

E. Section 07 90 05 - Joint Sealers: Acoustic sealant.

F. Section 09 22 16 - Non-Structural Metal Framing.

G. Section 09 30 00 - Tiling (Tile): Tile backing board.

1.03 REFERENCE STANDARDS

A. ASTM C 475/C 475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).

B. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members; 2009.

C. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2009.

D. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board; 2008.

E. ASTM C 954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2007.

F. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.

G. ASTM C 1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2010a.

H. ASTM C 1177/C 1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2008.

I. ASTM C 1278/C 1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2007a.

J. ASTM C 1280 - Standard Specification for Application of Gypsum Sheathing; 2009.

K. ASTM C 1396/C 1396M - Standard Specification for Gypsum Board; 2009.

L. ASTM C 1629/C 1629 - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2006.

M. ASTM C 1658/C 1658M - Standard Specification for Glass Mat Gypsum Panels; 2006.

N. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2000 (Reapproved 2005).

O. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 2005.

P. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.

Q. ASTM E 413 - Classification for Rating Sound Insulation; 2010.

R. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2007.

S. GA-600 - Fire Resistance Design Manual; Gypsum Association; 2006.

T. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Product Data: Provide data on gypsum board, glass mat faced gypsum board, accessories, and joint finishing system.

C. Test Reports: For all stud framing products that do not comply with ASTM C 645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

D. Samples: Submit two samples of gypsum board finished with proposed texture application, 12 by 12 inches (300 by 300 mm) in size, illustrating finish color and texture.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board application and finishing.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C 840 and GA-216.

B. Interior Partitions: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 45-55 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

C. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
   1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft (0.24 kPa) with maximum mid-span deflection of L/240.
   2. Acoustic Attenuation: STC of 55 calculated in accordance with ASTM E 413, based on

tests conducted in accordance with ASTM E 90.

D. Shaft Walls at Elevator Shafts: Provide completed assemblies with the following characteristics:
   1. Air Pressure Within Shaft: Intermittent loads of 5 lbf/sq ft (0.24 kPa) with maximum mid-span deflection of L/240.
   2. Acoustic Attenuation: STC of 55 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

E. Fire Rated Assemblies: Provide completed assemblies with the following characteristics:
   1. Fire Rated Partitions: UL listed assembly No. U419; 1 hour rating.
   2. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL Fire Resistance Directory.

2.02 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Georgia-Pacific Gypsum LLC: www.gp.com/gypsum.
   3. National Gypsum Company: www.nationalgypsum.com.
   4. USG Corporation: www.usg.com.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Wallboard: Paper-faced gypsum wallboard as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Glass-mat-faced gypsum panels as defined in ASTM C 1658/C 1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.
      a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
   4. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   5. Thickness:
      a. Vertical Surfaces: 5/8 inch (16 mm).
      b. Ceilings: 5/8 inch (16 mm).
      c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
   6. Glass-Mat-Faced Products:
      a. Georgia-Pacific Gypsum LLC; DensArmor Plus Abuse Guard.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C 1396/C 1396M; sizes to minimum joints in place; ends square cut.
   1. Application: Vertical surfaces behind thinset tile, except in wet areas.
   2. Type: Regular and Type X, in locations indicated.
   3. Type X Thickness: 5/8 inch (16 mm).
   4. Regular Board Thickness: 1/2 inch (13 mm).
   5. Edges: Tapered.
   6. Products:
      a. American Gypsum; M-Bloc.
      b. CertainTeed Corporation; ProRoc Brand Moisture Resistant Gypsum Board ("Greenboard").
      c. Georgia-Pacific Gypsum LLC; ToughRock Moisture-Guard Gypsum Board ("Greenboard").

d. National Gypsum Company; Gold Bond Brand XP Gypsum Board.
e. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
f. Substitutions: See Section 01 60 00 - Product Requirements.

D. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
2. Glass-Mat-Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C 1177/C 1177M.
3. Core Type: Regular.
4. Regular Board Thickness: 1/2 inch (13 mm).
5. Edges: Square, for vertical application.
6. Glass-Mat-Faced Products:
a. CertainTeed Corporation; GlasRoc Brand.
b. Georgia-Pacific Gypsum LLC; DensGlass Gold Sheathing.
c. National Gypsum Company; Gold Bond Brand e2XP Extended Exposure Sheathing.
d. Substitutions: See Section 01 60 00 - Product Requirements.

E. Shaftwall and Coreboard: Type X; 1 inch (25 mm) thick by 24 inches (610 mm) wide, beveled long edges, ends square cut.
1. Paper Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C 1396/C 1396M; water-resistant faces.
2. Products:
a. American Gypsum; Shaft Liner.
b. CertainTeed Corporation; ProRoc Brand Shaftliner Type X.
c. National Gypsum Company; Gold Bond Brand 1" Fire-Shield Shaftliner.
d. National Gypsum Company; Gold Bond Brand 1" Fire-Shield Shaftliner XP (mold-resistant).
e. Pacific Coast Building Products, Inc; PABCORE Gypsum Shafliner Board type X.
f. Temple-Inland Inc; SilentGuard Gypsum Shaftliner.
g. USG Corporation; Sheetrock Gypsum Liner Panels.
h. USG Corporation; Sheetrock Gypsum Liner Panels--Enhanced (mold-resistant).
i. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 ACCESSORIES

A. Acoustic Insulation: As specified in Section 07 21 00.

B. Acoustic Sealant: As specified in Section 07 90 05.

C. Finishing Accessories: ASTM C 1047, galvanized steel or rolled zinc, unless otherwise indicated.
1. Types: As detailed or required for finished appearance.
2. Special Shapes: In addition to conventional cornerbead and control joints, provide U-bead at exposed panel edges.

D. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions.

E. Screws for Attachment to Steel Members Less Than 0.03 inch (0.7 mm) In Thickness, to Wood Members, and to Gypsum Board: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.

F. Screws for Attachment to Steel Members From 0.033 to 0.112 inch (0.8 to 2.8 mm) in Thickness: ASTM C 954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Install in accordance with GA-600 requirements.
   1. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.

3.03 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C 754.

B. Studs: Space studs as indicated.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to to ceiling framing in accordance with details.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.05 BOARD INSTALLATION

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Exterior Sheathing: Comply with ASTM C 1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.07 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C 840, as follows:

   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 3: Walls to receive textured wall finish.
   3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
   4. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the

completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).
   2. Taping, filling and sanding is not required at base layer of double layer applications.

END OF SECTION

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal partition, ceiling, and soffit framing.

1.02 RELATED REQUIREMENTS

A. Section 07 21 00 - Thermal Insulation: Acoustic Insulation.

B. Section 09 21 16 - Gypsum Board Assemblies: Metal studs for gypsum board partition framing.

1.03 REFERENCE STANDARDS

A. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members; 2009.

B. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2009.

C. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.

D. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Shop Drawings:
   1. Indicate prefabricated work, component details, stud layout, framed openings, anchorage to structure, acoustic details, type and location of fasteners, accessories, and items of other related work.
   2. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement of framing connections.

C. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
   1. ClarkDietrich Metal Framing.
   2. Or approved equal.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FRAMING MATERIALS

A. Fire Rated Assemblies: Comply with applicable code and as indicated on drawings.

B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf. Minimum 18 gauge studs.
   1. Studs: C shaped with flat or formed webs.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C shaped.
   4. Furring: Hat-shaped sections, minimum depth of 7/8 inch.

C. Partition Head to Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

D. Tracks and Runners: Same material and thickness as studs, bent leg retainer notched to receive studs with provision for crimp locking to stud.

E. Furring and Bracing Members: Of same material as studs; thickness to suit purpose; complying with applicable requirements of ASTM C 754.

F. Fasteners: ASTM C 1002 self-piercing tapping screws.

G. Sheet Metal Backing: 0.036 inch thick, galvanized.

H. Anchorage Devices: Power actuated.

I. Acoustic Insulation: As specified in Section 07 21 00.

J. Acoustic Sealant: As specified in Section 07 90 05.

K. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

2.03 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

3.02 INSTALLATION OF STUD FRAMING

A. Comply with requirements of ASTM C 754.

B. Extend partition framing to structure where indicated and to ceiling in other locations.

C. Partitions Terminating at Ceiling: Attach ceiling runner securely to structure as detailed.

D. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs as indicated.

E. Align and secure top and bottom runners at 24 inches on center.

F. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

G. Align stud web openings horizontally.

H. Secure studs to tracks using crimping method. Do not weld.

I. Fabricate corners using a minimum of three studs.

J. Double stud at wall openings, door and window jambs, not more than 2 inches from each side of openings.

K. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

3.03 CEILING AND SOFFIT FRAMING

A. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.

B. Install furring independent of walls, columns, and above-ceiling work.

C. Securely anchor hangers to structural members or embed in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.

D. Space main carrying channels at maximum 72 inch on center, and not more than 6 inches from wall surfaces. Lap splice securely.

E. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.

F. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.

3.04 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch in 10 feet.

B. Maximum Variation From Plumb: 1/8 inch in 10 feet.

END OF SECTION

SECTION 09 30 00 – TILE

PART 1 - GENERAL

1.01 SUMMARY

PROVISION OF DIVISION 01 APPLIES TO THIS SECTION.

A. Section Includes:

1. Porcelain tile.
2. Waterproof membrane for tile.
3. Materials and installation standards for floor and wall tile.

B. Related Sections:

1. Section 03 30 00: Cast-In-Place Concrete.
2. Section 07 90 05: Joint Sealants.
3. Section 08 31 13: Access Doors and Panels.
4. Section 09 21 16: Gypsum Board Assemblies
5. Division 22: Plumbing

1.02 SUBMITTALS

A. Product Data: Manufacturer's data, standard specifications, Material Safety Data Sheets, and other technical information for each product specified.

B. Material Samples: Manufacturer's standard palette, indicating full range of tile colors, textures, and grout colors.

C. Mock-Ups: For each type, color, and texture, minimum 1' x 1' or three full tile courses, on plexiglas to demonstrate proper bond mortar and coverage; grout color, hardness and depth.

D. Installation Instructions: Manufacturer's preparation and installation instructions.

E. Product Certificates: Signed by manufacturer certifying that the products furnished comply with requirements of this Specification.

F. Reference Methods: Copies of TCA and ANSI Methods.

1.03 REFERENCE STANDARDS

A. Comply with applicable parts of the following codes or standards as a minimum requirement:

1. ANSI A108. American National Standard Specifications for the Installation of Ceramic Tile.
2. ANSI A118. American National Standard Specifications for Ceramic Tile Installation Materials.
3. ANSI A137.1, Standard Specifications for Ceramic Tile.
4. ASTM A 185/A185M-07 – Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
5. ASTM C 150/C 150M-11 Standard Specification for Portland Cement.

6. ASTM C-144-04 Standard Specification for Aggregate for Masonry Mortar
7. ASTM C 206-03(2009) Standard Specification for Finishing Hydrated Lime.
8. ASTM C 207-06 Standard Specification for Hydrated Lime for Masonry Purposes.
9. ASTM C 645-09a Standard Specification for Nonstructural Steel Framing Members.
10. ASTM C 1028-07e1 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and other like surfaces by the Horizontal Dynamometer Pull-Meter Method.
11. ASTM D 4551-96(2008)e1 Standard for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane.
12. ASTM D226/D226M-09 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
13. Tile Council of America (TCA) – Handbook for Ceramic Tile installation.

B. Grade Certificate and Labeling: With each delivery of tile, furnish manufacturer's "Master Grade Certificate" to the Project Inspector.

C. Laboratory Testing: Tile shall be tested for compliance with ASTM C 1028 by a testing laboratory approved by DSA.

D. Source of Materials: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.

E. Comply with all requirements of 2010 California Building Code and ADA.

F. Qualifications of Tile Manufacturer: Company specializing in ceramic tile, mosaics, pavers, trim units, and thresholds. Obtain tile from a single source with resources to provide products of consistent quality in appearance and physical properties.

G. Qualification of Installation System Manufacturer: Company specializing in installation systems/ mortars, grouts/ adhesives. Obtain products from single source manufacturer to insure consistent quality and compatibility.

H. Qualifications of Installer: Company specializing in installation of ceramic tile, mosaics, pavers, trim units and thresholds with experience with installations of similar scope, materials, and design.

I. Pre-Construction Meetings:

1. Prior to start of the Work of this section and after approval of submittals, schedule an on-site meeting with the Contractor, OAR, Architect, Project Inspector, and representatives of the material manufacturer and tile installer to review construction conditions and Drawings for conformance with the requirements of this Specification for each substrate.
2. Prior to laying tile and after surfaces to receive tile are installed (mortar beds, backing boards, joint separators) and after testing of waterproof membrane, schedule an on-site meeting with the Contractor, OAR, Architect, Project Inspector and representatives of the material manufacturer and tile installer to review tile, tile installation materials, and finishing equipment for conformance with the requirements of this Specification.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver tile in sealed containers, with manufacturer's labels intact.

B. Deliver other products in manufacturer's unopened containers.

C. Keep all materials clean and dry.

1.05 MAINTENANCE

A. Extra Materials: Provide a minimum of 5 percent of each type and color of tile and accessory shapes, from the same run or lot as the installed tile, in manufacturers' cartons and labeled.

1.06 WARRANTY

A. Manufacturer shall provide a 5 year material warranty from the date of final acceptance of the facility.

B. Installer shall provide a 5 year labor warranty from the date of final acceptance.

C. For waterproofing, manufacturer shall provide a 10 year material warranty for waterproofing installation, tile setting, and grouting materials.

PART 2 - PRODUCTS

2.01 GENERAL

A. Tile: To establish quality, the Specification is based on ANSI A.137.1 Standard Grade. Equivalent tile products from the following manufacturers may be provided:

1. Emser Tile; www.emser.com
2. Cotto Tiles, www.cotto.co.th
3. American Olean Ceramic and Porcelain Floor Tile, Ceramic and Porcelain Wall Tile.
4. Mohawk Ceramic and Porcelain Floor Tile, Ceramic and Porcelain Wall Tile.
5. Or approved equal.

B. Installation Materials: To establish quality, the Specification is based on setting and waterproofing materials and methods by Laticrete International, Inc. Bethany, CT. Telephone: (800) 243-4788. Website: www.laticrete.com. Equivalent products and methods of the following manufacturers may be provided:

1. Custom Building Products, Seal Beach, CA. Telephone: (562) 598-8808; (800) 272-8786. Telefax: (800) 200-7765. Website: www.custombuildingproducts.com.
2. Mapei, Deerfield Beach, FL. Telephone: (800) 42-MAPEI. Local Distributor (Anaheim, CA): (714) 385-0155. Telefax: (714) 978-0614. Website: www.mapei.com.

C. Tile sizes: Tile sizes specified are modular dimensions unless otherwise indicated.

2.02 TILE

A. Through-body Porcelin Floor Tile:

1. Size: As shown on the drawings.
2. Colors and patterns as specified.
3. Slip Resistance: Resistant to slipping appropriate to the installed conditions of use, as required by the California Building Code and ADA.

a. As a minimum, the coefficient of friction as measured by ASTM C 1028 shall be Wet 0.72; Dry 0.60.

B. Trim:

1. Integral bullnose at external corners.
2. Provide bullnose where tile projects from jamb.
3. Mosaic tile coved base with wall tile above: Manufacturer's product.
4. Mosaic tile coved base without wall tile above: Manufacturer's product (6-inch high sanitary coved base).
5. Cap at wainscot: Manufacturer's product.

2.03 INSTALLATION MATERIALS

A. Mortar Sand: ASTM C 144.

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

C. Hydrated Lime: ASTM C 207, Type S; or ASTM C 206.

D. Latex/Polymer Modified Portland Cement Bond Mortar over Waterproof Membrane: Laticrete 317 Floor & Wall Thinset gauged with Laticrete 3701 Admixture. ANSI 108.4 and ANSI 118.1.

E. Waterproof Membrane: Thin, cold-applied, single component liquid with embedded reinforcing fabric equal in performance characteristics to Laticrete 9235 Waterproof Membrane, ANSI 118.10 .

F. Latex Portland Cement Grout: Laticrete Sanded Grout (1500 Series) or Unsanded Grout (1600 Series, for joints smaller than 1/8").

G. Cleavage Membrane and Wall Backing Paper: ASTM D 226, Type I (No. 15) 15-pound asphalt-saturated felt.

H. Separation Material (for all caulked joints including perimeters): Quality Foam, QF 200 white, 3/8" wide x 5" high.

I. Backer Rod for sealants (for ceramic mosaic fields): Polyethylene foam, closed-cell, flexible and compressible, 3/16" diameter.

J. Cleaner and Sealer:

1. Cleaner and sealer shall be from one manufacturer, acceptable to tile and grout manufacturers. To establish quality, the Specification is based on DuPont StoneTech® Professional Stone and Tile Care Products, as appropriate for the application. Equivalent products from Aqua Mix, Miracle Sealants Co. or Watco Tile and Brick shall be considered suitable equal products.
2. Cleaner (cement-based or epoxy-based grout): For standard cleaning DuPont StoneTech Professional Klenz-All Cleaner. For heavy-duty and stubborn stain cleaning, in addition to Klenz-All Cleaner treatment, DuPont StoneTech Professional Oil Stain Remover. For removal of efflorescence, grout haze, salts, mineral deposits and calcium-based stains DuPont StoneTech Professional Restore Acidic Cleaner.

3. Sealer (cement-based grout): DuPont StoneTech Professional Heavy-Duty Grout Sealer or Advanced Grout Sealer.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Examine substrates, areas, and conditions where tile will be installed for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile. Verify that all vents, drains, piping, and other projections through substrate have been installed. Proceed with Work only after all conditions are in compliance.

B. Verify that substrates for setting tile are firm; dry; clean and within flatness tolerances required by relevant ANSI A108 tile installation standards. Prepare surfaces as follows:

1. Concrete Floors: Examine existing concrete floors before beginning tile and grout installation. Remove sand, dust, and loose particles with air blast. If coatings remain, including curing compounds and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials, remove them by using a terrazzo or concrete grinder, a drum sander, a polishing machine equipped with a heavy-duty wire brush, or a shot-blast system.

C. Substrates to receive wall tile and base shall be:

1. Cementitious backing panels, as specified in Section 09 21 16: Gypsum Board.
2. Tile Backer Board panels, as specified in Section 09 21 16: Gypsum Board.

D. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical items of Work, and similar items located in or behind tile have been completed before installing tile.

E. Verify that joints and cracks in tile substrates are coordinated with tile caulked- joint locations; if not coordinated, adjust as required by the Architect.

F. Do not install tile until construction in spaces is completed and ambient temperature and humidity conditions are being maintained to comply with referenced standards and manufacturer's written instructions.

G. Protect adjacent surfaces during progress of the Work of this section.

3.02 TILE INSTALLATION, GENERAL

A. Install tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are the same size. Lay out Work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

B. For tile mounted in sheets, install joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished Work.

C. Extend Work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Locate expansion, control, contraction or isolation joints and other sealant-filled joints, directly above joints in concrete substrates, at horizontal and vertical changes in plane, or where indicated during installation of mortar beds. Use foam to provide 3/8-inch width. Do not saw-cut joints after installing tiles.

F. Prepare and clean joints to be caulked, and apply sealants to comply with requirements of Division Section 07 90 05 Joint Sealers.

G. Conform to manufacturers printed instructions, and applicable requirements of ANSI and TCA Standards.

3.03 TILE INSTALLATION, FLOOR (TCA Standard F122-07)

A. Install reinforcing and latex Portland-cement mortar coat over existing concrete slab in accordance with ANSI 108.5.

B. Mix setting mortar in accordance with ANSI A.108.5 A-4.3.1.

C. Once begun, mortar installation must continue until room is completely filled. Discard any batch not floated and finished within ½ hour of mixing. Firmly compact before screeding. Screed to true plane and pitch as indicated. Slope mortar bed sufficiently that water flows to drain and no puddling will occur. Slope mortar down to floor drains for proper installation of waterproof membrane. After screeding, firmly rub down with steel or wood float.

D. Cure mortar bed with a light fog spray of water and cover with 6-mil Visqueen for 72 hours.

E. Waterproof Membrane:

1. Install waterproof membrane where required per TCA Standard F122-07. Extend membrane up wall mortar or backing board as follows:
   a. 6 inches minimum, or 3 inches above top of curb wall.
   b. 12 inches minimum at shower locations (hot-mopped asphalt)
2. Insure that all layers of membrane are fully inserted into clamping ring of floor drain. After membrane installation and before tile setting, install pea gravel around sub drain to prevent blockage of weep holes and place mortar to proper level for setting tile.
3. Before setting tile and after seven (7) days curing, water test the membrane by damming drains and doors, filling floor with water to 4-inch minimum depth, and leaving for 24 hours. Correct any leaks and re-test before proceeding. After testing, protect membrane from traffic until tile Work begins.

F. Install tile over properly cured setting bed or waterproof membrane utilizing "thin-set" method with latex Portland cement bond mortar, in accordance with manufacturer's printed instructions and ANSI A108.5. Confirm substrate is completely clean and free of dust. Cut foam at floor perimeters flush with top of mortar bed. Insure that bond coats do not intrude into joints to be caulked.

G. Minimum coverage of bond mortar shall be 80%. Place tile into fresh mortar and move and press or beat in tile to insure full contact. Before setting proceeds, set and remove three tiles or sheets of tiles to confirm specified coverage of bond mortar. If coverage is insufficient, utilize a larger toothed trowel or back butter tiles until proper coverage is provided.

H. Install tile on floors with the following joint widths:

1. Porcelain Tile: 1/16 to 1/8 inch.

3.04 TILE INSTALLATION, WALLS (TCA Standard W244C-07)

A. Install tile over cementitious backing panels utilizing "thin-set" method with latex/polymer modified Portland cement bond mortar, in accordance with manufacturer's printed instructions and ANSI A108.5. Confirm substrate is completely clean and free of dust. Insure that bond coats do not intrude into joints to be caulked.

B. Minimum coverage of bond mortar shall be 80%.

C. Lay out the Work so tiles will be centered on each wall or section of wall in order to minimize tile cuts. Lay out tile wainscots to next full tile beyond dimensions indicated. Spot setting bed with mortared tile, set plumb and true, to accurately indicate plane of finished tile surfaces.

D. Install tile on walls with following joint widths:

1. Glazed Wall Tile: 1/16 inch.

E. Horizontal joints shall be level, vertical joints plumb with surfaces true and plumb, edges of tiles flushed.

F. Rub exposed cuts smooth with a fine stone; no cut edge shall be set against a fixture or adjoining surface without a 1/16 inch joint to be caulked.

G. Install access doors where required, furnished under another section, in correct location, plumb or level, flush with adjacent construction, and securely fastened to framing.

3.05 GROUTING

A. Prior to starting, ensure that all wall and floor tile surfaces are clean and any excessive bond mortar is scraped and vacuumed from joints (approximately 2/3 depth of tile should be open for grouting). Follow manufacturer's instructions for mixing grout. Once grout Work commences, proceed until complete wall or floor area is finished utilizing one batch of grout.

B. Latex Portland cement grouting: Dampen tile surface and joints with water using sponge, but leaving no puddles in joints. Force grout into joints using sufficient pressure on rubber float so as

to fill joints completely, and scrape excess grout off tile surface with rubber float. Smooth or tool grout to uniform joint finish. Do not over water.

C. Curing latex Portland cement grout: Remove final grout haze with clean soft cloth, and cover with 40-weight Kraft paper to cure. Leave paper in place for protection. Cover wall surfaces with 40-weight Kraft paper for 72 hours.

3.06 CLEANING AND SEALING

A. If grout scum is not visible on tile surface after curing, clean tile surface with clear water. Remove and replace cracked, broken or defective Work with proper material.

B. If, when curing membrane is removed, grout scum is visible on tile surface, follow this cleaning method:

1. Immediately recover floor with paper or felt and allow to continue curing for a minimum of 14 days; uncover floor and maintain entire tile surface saturated with clean cool water for not less than 2 hours.
2. Utilize a neutral cleaner acceptable to manufacturers of tile and grout, and follow manufacturer's instruction. Do not provide generic acid cleaners.
3. Wet tile floors and apply cleaning solution to floor surface, then scrub with a brush. Rinse area several times with clean water to flush solution off floor surface.

C. Apply penetrating sealer in accordance with manufacturer's instructions utilizing a dense sponge applicator, paint pad, sprayer or brush. Avoid overlapping, puddling, and rundown. Completely wipe surface dry within 3 to 5 minutes using cotton or paper towels; do not allow sealer to dry on tile. After 2 hours, test surface by applying water droplets to surface. If water is absorbed, apply a second coat. Avoid surface traffic for 24 hours.

3.07 CAULKING

A. Insure joints to be caulked are free and clear of all setting and grouting materials and construction debris. Do not permit any foot traffic on installed caulking for a minimum of 48 hours or protect with hardboard strips.

B. Install in accordance with Section 07 90 05: Joint Sealants.

3.08 PROTECTION

A. Admit no traffic where tile is installed until mortar and grout has set for a minimum of 72 hours.

B. Protect the Work of this section until Substantial Completion.

3.09 CLEAN UP

A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

END OF SECTION

SECTION 09 51 00 - ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 07 21 00 - Thermal Insulation: Acoustical insulation.

B. Section 07 90 05 - Joint Sealers: Acoustical sealant.

C. Section 08 31 00 - Access Doors and Panels: Access panels.

D. Section 21 13 13 – Wet-Pipe Sprinkler Systems: Sprinkler heads in ceiling system.

E. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.

F. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.

1.03 REFERENCE STANDARDS

A. ASTM C 635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2007.

B. ASTM C 636/C 636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2008.

C. ASTM E 580/E 580M - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint; 2010a.

D. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products; 1998 (Reapproved 2005).

E. LEED NC version 3.0 - Low-Emitting Materials Product List; Green Seal Standard 36; www.greenseal.org

F. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

A. See Section 01 33 00 -Submittal Procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Samples: Submit two full size samples illustrating material and finish of acoustical units.

D. Maintenance Materials: Furnish the following for County of Riverside's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.06 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.

1.07 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

A. Manufacturers:
   1. Armstrong World Industries, Inc; www.armstrong.com. Basis of design.
   2. CertainTeed Corporation; www.certainteed.com.
   3. USG; www.usg.com.
   4. Substitutions: See Section 01 63 00 - Substitution Requirements.

B. Acoustical Units - General: ASTM E 1264, Class A.

C. Acoustical Tile: Mineral Fiber, ASTM E 1264 Type IV, with to the following characteristics:
   1. VOC Content: Certified as Low Emission by one of the following :
      a. Low-Emitting Materials per Green Seal Standard 36;
         www.greenseal.org/certification/standard
      b. ASHRAE Standard 62.1-2004
   2. Size: ¾" thick (size per plan)
   3. Light Reflectance: 0.90, determined as specified in ASTM E 1477.
   4. NRC Range: 0.70, determined as specified in ASTM C 423.
   5. Ceiling Attenuation Class (CAC):.35 to .39, determined as specified in ASTM E 1111.
   6. Edge: Beveled tegular.
   7. Surface Color: Refer to finish schedule Sheet A5.1.
   8. Surface Texture: Fine.
   9. Antimicrobial Protection: Inherent

2.02 SUSPENSION SYSTEM(S)

A. Manufacturers:
   1. Same as for acoustical units.
   2. Substitutions: See Section 01 63 00 - Substitution Requirements.

B. Suspension Systems - General: ASTM C 635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

C. Flush Steel Suspension System: Formed galvanized steel, commercial quality cold rolled; heavy-duty.
   1. Profile: 15/16" Preludexl.
   2. Construction: Double web.
   3. Finish: White painted.
   4. Compression Strut: ASTM A513, telescoping design as detailed on drawings, galvanized

3/4 inch diameter 14 gauge rigid steel tubing crimped and attached to structure per details.

2.03 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.
   1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
   2. Extended Aluminum Trim: Armstrong (Axiom Classic) or approved equal.

C. Acoustical Insulation: Specified in Section 07 21 00.

D. Gypsum Board: Fire rated type; 5/8 inch thick, ends and edges square, paper faced.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C 636/C 636M, ASTM E 580/E 580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Install after major above-ceiling work is complete. 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. 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.

F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

G. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

H. Do not eccentrically load system or induce rotation of runners.

I. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.
   2. Overlap and rivet corners.

J. Install light fixture boxes constructed of gypsum board above light fixtures in accordance with fire rated assembly requirements and light fixture ventilation requirements.

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. 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. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

G. Where round obstructions occur, provide preformed closures to match perimeter molding.

H. Install hold-down clips on panels within 20 ft of an exterior door.

3.04 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 09 65 00 - RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient base.

B. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

B. Section 07 90 05: Joint Sealants

1.03 REFERENCE STANDARDS

A. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2010.

B. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.

C. ASTM F 1861 - Standard Specification for Resilient Wall Base; 2008.

G. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; 2002.

H. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2006.

I. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

J. SCS (CPD) - SCS Certified Products; Scientific Certification Systems; current listings at www.scscertified.com.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Shop Drawings: Indicate seaming plan.

D. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

E. Concrete Testing Standard: Submit a copy of ASTM F 710.

F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Wall Base: 10 linear feet of each type and color.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect roll materials from damage by storing on end.

1.06 FIELD CONDITIONS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

PART 2 PRODUCTS

2.01 RUBBER BASE

A. Rubber Base: ASTM F 1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove, and as follows:
   1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
   2. Height: 4 inch.
   3. Thickness: 0.125 inch thick.
   4. Finish: Satin.
   5. Color: Refer to Sheet A5.1.
   6. Accessories: Premolded external corners and end stops.
   7. Manufacturers:
      a. Burke: www.burkeflooring.com
      b. Johnsonite, Inc: www.johnsonite.com.
      c. Roppe Corp: www.roppe.com.
      d. Or equal.
      e. Substitutions: See Section 01 63 00 - Substitution Requirements.

2.02 ACCESSORIES

A. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.
   1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of the South Coast Air Quality Management District Rule No.1168 and the Bay Area Air Quality Management District Regulation 8, Rule 51.

B. Moldings, Transition and Edge Strips.

PART 3 EXECUTION

3.01 PREPARATION

A. Prepare surfaces as recommended by flooring and adhesive manufacturers.

B. Remove ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with substrate to achieve smooth, flat, hard surface.

3.02 INSTALLATION

A. Starting installation constitutes acceptance of conditions.

B. Install in accordance with manufacturer's instructions.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Fit joints tightly.

3.03 RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.04 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's instructions.

3.05 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 68 13 - CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet, fully adhered.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

1.03 REFERENCE STANDARDS

A. ASTM D 2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2006.

B. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2008b.

C. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.

D. CRI 104 - Standard for Installation of Commercial Textile Floorcovering Materials; Carpet and Rug Institute; 2002.

E. CRI (GLA) - Green Label Testing Program - Approved Adhesive Products; Carpet and Rug Institute; Current Edition.

F. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.

G. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2006.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures.

B. Shop Drawings: Indicate layout of joints.

C. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation. Provide certification of fire resistance requirements per CBC 2010.

D. Samples: Submit two carpet samples for each type illustrating color and pattern design for each carpet color selected.

E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Carpet Stock: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet.

B. Installer Qualifications: Company specializing in installing carpet.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Broadloom Carpet:
   1. Critical Radiant Flux: Meets NFPA Class I when tested in accordance with ASTM E648.
   2. Surface Flammability Ignition: Pass ASTM D2859.
   3. VOC Content: Provide CRI Green Label Plus certified product; independent test report showing compliance required.
   4. Max. Electrostatic Charge: 3 kv at 20 percent relative humidity.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet.

B. Verify that concrete sub-floor surfaces are dry enough and ready for flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet tile manufacturer and adhesive materials manufacturer.

3.02 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install carpet in accordance with manufacturer's instructions and CRI 104.

C. Cut carpet clean. Fit carpet tight to intersection with vertical surfaces without gaps.

D. Lay carpet in square pattern, with pile direction parallel to next unit, set parallel to building lines.

E. Fully adhere carpet to substrate.

F. Trim carpet neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

3.03 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 84 13 – FIXED SOUND-ABSORPTIVE PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sound-absorbing wall units. (WP-1)
2. Fabric facings.
3. Supplementary components and accessories necessary for a complete installation, whether or not such items are indicated on the Drawings or included in the specifications.

B. Related Requirements:

1. Section 09 21 16 Gypsum Board Assemblies.

1.2 REFERENCES

A. Definitions:

1. Manufacturer: Means the sound-absorbing wall unit manufacturer, unless otherwise indicated.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:

1. Deliver materials to the project site only after the building has been enclosed with a permanent exterior enclosure, and
   a. "wet work" in storages areas, including concrete, plastering, gypsum board finishing, tiling, painting, and similar work, has been completed and cured or dried to a condition of equilibrium;
   b. storage areas have been broom cleaned; and
   c. the HVAC system has been activated and is both operating and maintaining temperature and relative humidity at occupancy levels.
2. Install sound-absorbing panels and accessories after all finishing operations, including painting, are completed.

1.4 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit the manufacturer's product data, specifications, typical installation details, and other data necessary to demonstrate conformance to the specified requirements.
2. Shop Drawings: Submit medium-scale dimensioned drawings showing soundabsorbing wall unit layout, materials, joints, profiles, edge conditions, attachments to other work, and finishes.
   a. Include elevation drawings of each wall indicated as receiving sound absorptive panels. All such drawings must show horizontal and vertical locations and sizes of all components, accessories, and trim, including openings and items installed in each surface.
   b. Indicate method of anchoring sound-absorbing wall units to supporting construction.

1) Show fasteners brackets, clips, and similar attachments to other work.

2) Label each attachment type by manufacturer's product name;

3) Indicate base material and finish, fastener material and finish, and material and finish of items being fastened or attached.

3. Samples:

a. Submit at least 12-inch square samples showing (1) typical panel construction with facing; and (2) edge trim finished as specified.

b. Submit full-size samples of each attachment device.

B. Informational Submittals:

1. Installation Instructions:

a. Before starting work, submit manufacturer-published instructions for the proper storage, handling, installation, and protection of sound absorptive panels.

b. If the manufacturer's instructions are either unavailable or do not reflect Project conditions, then consult the manufacturer's field representative and obtain manufacturer-prepared installation requirements, recommendations, or instructions in writing and promptly distribute copies to the Architect before proceeding with the work.

C. Closeout Submittals:

1. Operation and Maintenance Data: Submit to the Owner a copy of the manufacturer's recommendations for maintenance, including

a. recommendations for care, repair, restoration, cleaning, protection, and maintenance;

b. recommendations for periodic inspections and identification of common causes of damage;

c. recommendations for cleaning and refinishing panels, including warnings against using materials and methods that may be detrimental to panel quality, durability, appearance, and performance; and

d. instructions for both permanent repair and for temporary repair and patching until permanent repair can be made.

D. Maintenance Material Submittals: Deliver extra stock materials to the Owner before Final Completion.

1. Fabric Facings: Furnish full-width fabric facings from the same manufacturer dye lot, or from consecutive lots,matching those installed, in an amount not less than 5 percent, or fraction thereof in roll form, of each size type color pattern composition grade finish and variety installed, but not less than but not less than 10 square yards.

2. Acoustical Wall Panel Mounting Devices: Furnish full-size units equal to 5 percent of amount installed, but no fewer than 5 attachment devices.

3. Properly package and identify extra stock materials for future maintenance, repair, or replacement.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain sound-absorbing wall units and accessories through one source from a single manufacturer.

B. Regulatory Requirements:

1. Surface-Burning Characteristics: Provide panels having the following surfaceburning characteristics, when tested in compliance with ASTM E 1264 for Class A materials, as determined by testing identical items in compliance with ASTM E 84:

   a. Maximum FSI Value: 25 or less.

   b. Maximum SDI Value: Less than 450.

C. Performance Requirements:

1. Sound-absorptive panels must conform to the following minimum sound absorption coefficients when tested in compliance with ASTM C 423, Type "A" mounting.

D. Installer Qualifications:

1. Must be a company and individuals with experience in the installation of sound absorptive panels on projects similar in material, design, complexity, and extent to this Project that have resulted in applications with a documented record of successful in-service performance.

2. Must be a company authorized, certified, licensed, or otherwise qualified by the manufacturer as having the necessary experience, personnel, and training to install the manufacturer's products.

   a. The manufacturer must certify the installer before installation.

   b. Only personnel who have been trained and certified by the manufacturer in the proper installation techniques may perform any of the work of this Section.

E. Field Samples (post-submittal, *in situ* visual mockups): Include field samples as part of the work of this Section.

1. Before starting work, including bulk purchase and delivery of products, prepare a field sample in an unobtrusive location and manner approved by the Architect to demonstrate the expected final visual effect of the planned application.

2. At a minimum, comply with the following:

   a. Size: At least 2 panels wide by full length.

   b. Illumination: Illuminate field samples with at least the same type and level of illumination maintained in the room or space after the building is occupied.

3. The Architect reviews field samples to determine if the work falls within an acceptable range for

   a. visual appearance;

   b. mottling, sheen, color, and texture variation;

   c. evenness of finish;

   d. integration of the work of different trades;

   e. installation tolerances;

   f. overall quality;

   g. fabrication and installation (workmanship); and

   h. conformance to the specified requirements.

4. The Architect either rejects or approves field samples as the acceptable standard by which subsequent work is evaluated for conformance to the requirements of the Contract Documents.
    a. If a field sample is rejected, make corrections requested by the Architect or remove and replace it when the Architect refuses to accept corrective work.
        1) Repeat field samples until the Architect approves them.

            Panel Type

            Sound Absorption per ASTM C 423, Type Mounting

            Octave Band Center Frequency, Hz

            125 250 500 1000 2000 NRC

            WP-1 0.3 0.8 1.0 1.0 1.0 1.0

            C-5 0.2 0.3 0.6 0.9 0.6 0.6

        2) Approval of field samples does not constitute approval of deviations from the Contract Documents, unless those deviations are approved by Owner in writing.
    b. Upon written authorization from the Architect, field samples may remain part of the Work after being properly identified for future reference.

1.6 HANDLING

A. Packaging Requirements: Each delivery must include with it a copy of manufacturer published instructions for the proper storage, handling, installation, and protection of each product delivered.

B. Delivery and Acceptance Requirements:
    1. Delivery:
        a. Deliver items to the Project site in conformance with the manufacturer's requirements, recommendations, or instructions for transport and delivery, and in original unopened containers.
        b. Provide adequate dunnage and bracing during transport and delivery. Support items on non-staining, shock-absorbing material.
        c. During transport and delivery, protect items from sources of deterioration or damage.
    2. Acceptance at the Site:
        a. Inspect for damage all items delivered to the Project site.
        b. Reject the delivery of items that show damage or have damaged containers.
        c. With a minimum of handling, unload and store only undamaged items and items that have undamaged containers.

C. Storage and Handling Requirements:
    1. Storage:
        a. Store items as shipped, upright in their original shipping containers, and in conformance with the manufacturer's requirements, recommendations, or instructions for storage. Provide adequate dunnage and bracing during storage.

b. Store items off the floor or ground on pallets, and protect against weather, precipitation, and other forms of moisture with breathable covers. Unvented polyethylene tarpaulins may not be used.

1) Store items so as to prevent bending, warping, twisting, or other damage.

2) Provide spacers to separate stored items and allow air to circulate around all surfaces.

3) Protect stored items to prevent contact with the ground, to prevent staining, and to prevent cracking, distortion, warping, and other physical damage.

4) Do not leave items uncovered where they may be exposed to rain, mist, high relative humidity, condensation, frost, or other sources of moisture, or to ultraviolet radiation in excess of the manufacturer's recommended exposure limits.

5) Store materials and place equipment in a manner to avoid permanent deflection of floor or roof decks.

2. Handling: Handle panels in a manner that prevents bending, warping, twisting or other physical damage, and avoids chipping edges or damaging units.

D. Damaged Item Replacement Requirements: Promptly remove, dispose of, and replace, or arrange and pay costs for the removal, disposal, and replacement of items that become deteriorated, contaminated, or otherwise damaged.

1. Remove and dispose of damaged items at a disposal location away from the Project site.

2. Replace removed items with undamaged new items.

E. Packaging Waste Management: Remove and dispose of construction waste at a disposal location away from the Project site.

1.7 PROJECT CONDITIONS

A. Ambient Conditions:

1. Temperature and Relative Humidity:

a. Install panels only if the temperature and relative humidity have been maintained within a range required, recommended, approved, or accepted by the manufacturer for at least 96 hours before installation.

b. Acclimate panels to the specified temperature and relative humidity conditions for at least 72 hours before installation.

c. After panels have been installed, maintain a constant temperature of at least 60 deg. F until Final Completion.

2. Illumination: Illuminate work areas during application with at least the same level of illumination maintained in the room or space after the building is occupied, and as otherwise required, recommended, approved, or accepted by the manufacturer to properly perform the Work.

B. Measurements:

1. Field-verify measurements before ordering sound-absorptive panels and indicate those field measurements on shop drawings.

2. Establish layouts that conform to the ceiling layouts shown on the reflected ceiling plans. Balance border widths at opposite edges of each ceiling. Avoid using less-thanhalf-width panels at borders.

3. Provide enough additional material during fabrication to allow for proper trimming and fitting at the Project site.

1.8 WARRANTY

A. Manufacturer'sWarranty: All sound absorbing units must be covered by a written warranty that protects the Owner for at least 10 years after Substantial Completion against

1. defective products, materials, components, and accessories;
2. patent or latent defects; and
3. incipient or catastrophic failure.

B. Remedy: If an items fails within the specified warranty period, then the manufacturer shall repair or replace such items.

PART 2 - PRODUCTS

2.1 SOUND-ABSORBING WALL UNITS (WP-1)

A. Description: Fabric upholstered molded laminated acoustical glass fiber panels with resin hardened edge.

B. Product: Design is based on "Hard Impact HardSide" acoustical wall panels manufactured by Kinetics Noise Control.

C. Items must conform to the following:

1. Size: 4 feet by 10 feet, as needed.
2. Thickness: 1 inch.
3. Panel Edges: Square.
4. Corner Detail: Square.
5. Mounting: Panel clip to wall bar AS INDICATED ON THE DRAWINGS.
6. Acoustical Performance: No less than NRC 1.05.

D. Core Construction: Acoustical inorganic glass fibers conforming to ASTM E 84 test requirements, compressed into boards, bonded by a thermosetting agent, 6 to 7 pounds per cubic foot density, and laminated to a 1/8-inch thick 16 to 20 pounds per cubic foot density molded glass fiber facing.

E. Panel Finish: Fabric as manufactured by Maharam.

1. Pattern: "Messenger" No. 458640.
2. Color: 008 "Bayou".
3. Width: 54 inches.
4. Product: AS SELECTED BY THE ARCHITECT.

F. Other Accessories: Provide accessories and other similar secondary items as supplied, required, recommended, approved, or accepted by the manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine site conditions and field-verify measurements affecting the work of this Section.

1. Examine substrates supporting panels, and other conditions under which such items are installed.

2. Verify that work performed as part of the work of other Sections conforms to the manufacturer's installation tolerance requirements; provides true, flat, and level surfaces; and satisfies all other conditions relating to the quality of installation, durability, appearance, and performance.

B. Evaluation and Assessment:

1. Reject work that does not conform to the manufacturer's installation requirements. The Contractor shall either perform or arrange and pay all costs for remedial work necessary to correct deficient conditions and to conform to the manufacturer's installation requirements.

2. Proceeding with installation stipulates the Installer's acceptance of existing conditions. After starting work, the Installer shall perform remedial work necessary to correct deficient conditions and to conform to the manufacturer's installation requirements.

3.2 INSTALLATION

A. General:

1. Use materials and methods required, recommended, approved, or accepted by the manufacturer, along with manufacturer-recommended accessories and techniques.

2. Set items plumb, level, and square, without panel warp or rack, with flush well-fitted joints, and in alignment with adjacent construction

B. Special Techniques:

1. Set level and plumb.

2. Install hardware as recommended by manufacturer. Conceal evidence of drilling in finished work. Securely attach items in place

3. Tolerances: Installed sound-absorbing units must be within the following tolerances.

a. From True Position: 1/4-inch .

b. From Plumb, Alignment and Level: 1/8-inch .

C. Correction:

1. Correct deficiencies that do not conform to the Drawings or specified requirements, as determined by the manufacturer's field representative and the Architect.

2. Arrange and pay costs for either removing and re-installing or replacing items that are damaged or that cannot be satisfactorily corrected, as determined by the manufacturer's field representative and the Architect.

D. Repair:

1. Repair or refinish items that

a. are damaged, loose, chipped, broken, or stained;

b. have damaged, loose, chipped, broken, stained, or corroded parts, components, accessories, and similar items; or

c. do not match the appearance of adjacent surfaces, materials, or finishes, as determined by the Architect.

2. Arrange and pay costs for replacing items that cannot be satisfactorily repaired or refinished in a manner that both matches adjacent undamaged areas and shows no evidence of repair or refinishing, as determined by the Architect.

3.3 CLEANING

A. Cleaning Installed Work:

1. Remove protective materials after installation.
2. Clean surfaces using cleaning agents, equipment, tools, and procedures furnished, required, recommended, approved, or accepted by the manufacturer.
3. Replace items that cannot be satisfactorily cleaned, as determined by the Architect.

B. Waste Management: After completing the work of this Section, leave work areas free from debris, materials, equipment, and related items.

3.4 PROTECTION

A. Protect in place the installed items from sources of moisture, deterioration, staining, or other damage until Substantial Completion.

B. Do not store anything adjacent to or against installed panels unless they are adequately protected from damage and staining, determined by the Architect.

END OF SECTION

SECTION 09 90 00 - PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes the following:
   1. Surface preparation.
   2. Prime coat application.
   3. Finish coat application.
   4. Upon completion of Work under this Contract, all surfaces within the Contract limits and within vision, shall have a painted finish on the interior and exterior except excluded items defined herein. Include all roof mounted mechanical and electrical equipment factory primed or factory finished and in full view.

1.02 WORK NOT INCLUDED

A. Surfaces Not To Be Painted:
   5. Prefinished wall, ceiling and floor coverings.
   6. Items with factory-applied final finish except roof-mounted equipment as defined above.
   7. Concealed ducts, pipes and conduit.
   8. Glass, plastic laminate, ceramic tile, anodized aluminum.
   9. Steel items embedded in concrete.
   10. Surfaces specifically scheduled or noted on the Drawings not be painted.
   11. Fire-Rated Labels on doors or frames.

1.03 REFERENCES

A. AQMD – Air Quality Management District, Local Regulations.

B. ASTM D4442 – Direct Moisture Content Measurement of Wood and Wood-Base Materials.

C. ASTM D4444 – Use and Calibration of Hand-Held Moisture Meters.

D. CIWMB – California Integrated Waste Management Board

E. EPA – Environmental Protection Agency

F. GS – Green Seal™ Standards and Certification. GS – 11: Green Seal™ Environmental Standard for Paints and Coatings, 2nd Edition. May 12, 2008.

G. IAQ – California Indoor Air Quality Program.

H. MPI – Master Painters Institute.

I. OSHA – Occupational Safety and Health Administration

1.04 SUBMITTALS

A. Provide product data on all finishing products.

B. Three samples 8-1/2 by 11 inches in size illustrating range of colors and textures available for each surface-finishing product scheduled for selection.

C. Prepare wood samples on type and quality of wood specified.

D. Manufacturer's application instructions.

1.05 QUALITY ASSURANCE

A. Product Manufacturer: Company specializing in manufacturing quality paints and finish products with ten years experience.

B. Applicator: Company specializing in commercial painting and finishing with five years experience.

C. Regulatory Requirements
12. Conform to AQMD and local regulations for maximum VOC limits.
13. Comply with applicable codes and regulations of governmental agencies having jurisdiction including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this Specification, comply with the more stringent provisions.

D. Field Samples
14. Provide field sample panel, illustrating coating color, texture and finish for each color scheduled.
15. Locate as approved by Architect.
16. Approved sample may remain as part of Work.
17. Do not proceed with coating application until sample panel has been approved.

E. All opaque top coat interior paints shall conform to the maximum VOC content limits set by Green Seal™ Standard GS-11.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site in sealed and labeled containers.

B. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation and instructions for mixing and reducing.

C. Store paint materials at minimum ambient temperature of 45 degrees F and maximum of 90 degrees F, in well ventilated area unless permitted otherwise by manufacturer's instructions.

D. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during and 48 hours after application of finishes, unless permitted otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain, or when relative humidity is above 50 percent, unless permitted otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish and transparent Finishes: 65 degrees F for interior or exterior, unless permitted otherwise by manufacturer's instructions.

E. Provide lighting level sufficient to conduct painting operations.

1.08 EXTRA STOCK

A. Provide one (1) five-gallon unopened container of each color, type and gloss of paint used in the work.

B. Label each container with color, texture and room locations in addition to the manufacturer's label.

1.09 GUARANTEE

A. Guarantee the painting Work against peeling, fading, cracking, blistering or crazing for a period of three years from the Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products of following manufacturers:

1. Frazee, Lo-Sheen, Low VOC Formula (Basis of Design)
1. Dunn Edwards.
2. ICI Dulux.
3. Sherwin Williams Company Harmony Low Odor.

B. Or equal as approved in accordance with Division 01, General Requirements for Substitutions.

2.02 MATERIALS

A. Coatings: Ready mixed, except field-catalyzed coatings. Process pigments to soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coating.

B. Colors and Glosses: Architect will select color and hue to be used in various types of paint specified and will be sole judge of acceptability of various glosses obtained from materials proposed to be used in Work. During actual painting, Architect may make minor modifications in tone and shade to adjust for actual surface and lighting conditions encountered.

C. Undercoats and Thinners: Provide undercoat paint produced by same manufacturer as finish coat. Use only thinners recommended by paint manufacturer and use only to recommended limits. Use undercoat, finish coat and thinner material as parts of a unified system of paint finish.

D. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

E. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified of commercial quality.

2.03 APPLICATION EQUIPMENT

A. For application of the approved paint, use only such equipment as is recommended by the manufacturer.

B. Compatibility: Prior to actual use of application equipment, use all means necessary to verify that the proposed equipment is actually compatible with the material to be applied and that the integrity of the finish will not be jeopardized by use of the proposed application equipment.

2.04 FINISHES

A. Refer to schedule at end of Section for surface finish. Notwithstanding product numbers listed in schedule, Contractor shall conform to most recent product numbers as published by the manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of Work. Report any condition that may potentially affect proper application.

C. Measure moisture content of new surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry, Concrete and Concrete Unit Masonry: 12 Percent.
3. Interior Located Wood: 15 percent, measured in accordance with ASTM D4442 and ASTM D4444.
4. Exterior Located Wood: 19 percent, measured in accordance with ASTM D4442 and ASTM D4444.

D. Beginning of installation means acceptance of existing surfaces.

3.02 MATERIALS PREPARATION

A. Mix and prepare painting material in accordance with manufacturer's recommendations.

B. Store materials not in actual use in tightly covered containers.

C. Maintain containers used in storage, mixing and application of paint in a clean condition, free from foreign materials and residue.

D. Stir all materials before application to produce a mixture of uniform density and as required during the application of materials. Do not stir into the material any film that may form on the surface. Remove the film and strain the material before using.

3.03 SURFACE PREPARATION

A. Remove electrical plates, hardware, light fixture trim and fittings prior to preparing surfaces for finishing.

B. Correct minor defects and clean surfaces which affect Work of this Section.

C. Shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Insulated Coverings: Remove dirt, grease and oil from canvas and cotton.

F. Gypsum Board Surfaces: Fill minor defects, joints and nail head depressions with spackling compounds. Prime in accordance with primer manufacturer's recommendations. Apply primer over skim coat for Level 5 finish.

G. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer as specified in Schedule for existing painted surfaces, remove existing paint thoroughly to bare metal and paint per Schedules at the end of this Section.

H. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering or corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

I. Plaster Surfaces: Fill hairline cracks, small holes and imperfections with patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

J. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Spot prime bare steel surfaces to match existing primer.

K. Wood Scheduled to Receive Paint Finish: Remove dust, grit and foreign matter. Seal knots, pitch streaks and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

L. Wood Doors and Cabinet Work scheduled for field-applied transparent or solid stain finish:
   5. Sand surfaces thoroughly with a 5/0, 180 grit sandpaper.
   6. Apply coatings as specified in the schedule to all surfaces, sides and edges. Avoid streaking or uneven application Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail or screw holes, or other surfaces imperfections.
   7. Stains as selected by Architect from manufacturer's full range of colors.
   8. Provide satin finish for final coats.

M. Wood Doors Scheduled for Painting: Seal top and bottom edges with primer. Leave labels intact and readable.

N. Exterior Wood-Clear coats: apply exterior grade varnish.

3.04 PROTECTION

A. Protect elements surrounding the Work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by Work of this Section.

C. Furnish drop cloths, shields and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.05 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish. Number of coats specified is a minimum. Additional coats shall be applied at no extra cost, if coatings show evidence of uneven application, uneven pigmentation, brush strokes or otherwise unsatisfactory distribution of material. For bidding purposes, all 24 hours minimum duration between all required coats.

D. Under coats shall be lighter and brighter in tint than finish coat.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

J. Seal Tops, bottoms and cutouts for hardware and accessories of wood doors and plastic-laminate covered doors.

K. Split paint door frames to match color of walls on each side of opening.

L. Interior walls shall receive accent paint colors.

3.06 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Refer to Section Divisions 22, 23 and 26 for color coding and identification banding requirements of equipment, ductwork, piping and conduit.

B. Paint shop primed equipment.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, metal louvers, brackets, collars and supports, except where items are prefinished.

E. Replace identification markings on mechanical or electrical equipment when painted accidentally.

F. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers and grilles to match face panels.

G. Paint exposed conduit and electrical equipment occurring in finished areas.

H. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

I. Color code equipment, piping, conduit and exposed ductwork in accordance with requirements indicated. Color band and identify with flow arrows names and numbering, using stencils or other approved systems.

J. Replace electrical plates, hardware, light fixture trim and fittings removed prior to finishing.

3.07 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials and debris.

C. Collect cotton waste, cloths, and material that may constitute a fire hazard, place in closed metal containers and remove daily from site.

D. Disposal: Observe all applicable requirements per California Integrated Waste Management Board (CIWMB) and other California governing regulations as pertains to the disposal and recycling of paintings and coatings.

3.08 SCHEDULE

Note: The referenced product standards are listed as the Dunn-Edwards product first and the equal ICI Dulux product second.

Ferrous Metal (Exterior):

First Coat	CORROBAR, White Alkyd Corrosion Inhibitive Primer (43-5)
	DEVFLEX Direct to Metal Primer (4020 PF)
Second Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)
	DULUX Professional 100% Acrylic Finish (2406 Semi-Gloss)
Third Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)
	DULUX Professional 100% Acrylic Finish (2406 Semi-Gloss)

Non-Ferrous Metal (Exterior):

First Coat	ULTRA-GRIP, Premium Multi-Purpose Latex Primer (W 715)
	DEVOE Coatings Truglaze WB Waterborne Epoxy Primer (4030)
Second Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
OR	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)
	DULUX Professional 100% Acrylic Finish (2406 Semi-Gloss)
Third Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
OR	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)
	DULUX Professional 100% Acrylic Finish (2406 Semi-Gloss)

Plaster (Interior) Walls:

First Coat	ECOSHIELD, Low-Odor/Zero-VOC Interior Latex Primer (W 600)
	PREP & PRIME Odorless Interior Water-Based Sealer (9116)
Second Coat – Low Sheen	ECOSHIELD, Low-Odor/Zero-VOC Interior Late Low Sheen Paint (W 602)
	DULUX LifeMaster Interior Enamel (9300 Eggshell)
Third Coat – Low Sheen	ECOSHIELD, Low-Odor/Zero-VOC Interior Late Low Sheen Paint (W 602)
	DULUX LifeMaster Interior Enamel (9300 Eggshell)

Gypsum Board (Interior) Walls:

First Coat	ECOSHIELD, Low-Odor/Zero-VOC Interior Latex Primer (W 600)
	DULUX LifeMaster Interior Enamel (9300 Eggshell)
Second Coat – Low Sheen	ECOSHIELD, Low-Odor/Zero-VOC Interior Late Low Sheen Paint (W 602)
	DULUX LifeMaster Interior Enamel (9300 Eggshell)
Third Coat – Low Sheen	ECOSHIELD, Low-Odor/Zero-VOC Interior Late Low Sheen Paint (W 602)
	DULUX LifeMaster Interior Enamel (9300 Eggshell)

Gypsum Board (Interior) Ceilings:

First Coat	ULTRA-GRIP, Premium Multi-Purpose Latex Primer (W 715)
	PREP & PRIME Odorless Interior Water-Based Sealer (9116)
Second Coat	ECOSHIELD, Low-Odor/Zero-VOC Interior Later Flat Paint(W 601)
OR	WALLTONE, Int. Latex Flat Wall Finish (W 420)
	DULUX LifeMaster Interior Enamel (9100 Flat)

Third Coat ECOSHIELD, Low-Odor/Zero-VOC Interior Later Flat Paint(W 601)
OR WALLTONE, Int. Latex Flat Wall Finish (W 420)
DULUX LifeMaster Interior Enamel (9100 Flat)

Ferrous Metal Interior:

First Coat CORROBAR, White Alkyd Corrosion Inhibitive Primer (43-5)
DEVFLEX Direct to Metal Primer (4020 PF)
Second Coat – Semi-Gloss ECOSHIELD, Low-Odor/Zero-VOC Interior Later Semi-Gloss Paint (W 603)
DULUX LifeMaster Interior Enamel (9200 Semi-Gloss)
Third Coat – Semi-GlossECOSHIELD, Low-Odor/Zero-VOC Interior Later Semi-Gloss Paint (W 603)
DULUX LifeMaster Interior Enamel (9200 Semi-Gloss)

Non-Ferrous Metal Interior:

First Coat ULTRA-GRIP, Premium Multi-Purpose Latex Primer (W 715)
DEVOE Coatings Truglaze WB Waterborne Epoxy Primer (4030)
Second Coat – Semi-Gloss ECOSHIELD, Low-Odor/Zero-VOC Interior Later Semi-Gloss Paint (W 603)
DULUX LifeMaster Interior Enamel (9200 Semi-Gloss)
Third Coat – Semi-GlossECOSHIELD, Low-Odor/Zero-VOC Interior Later Semi-Gloss Paint (W 603)
DULUX LifeMaster Interior Enamel (9200 Semi-Gloss)

Ferrous Metal Exterior:

First Coat INTERSEAL 670 HS, High Solids Surface Tolerant Epoxy
DEVFLEX Direct to Metal Primer (4020 PF)
Second Coat INTERTHANE 990 HS, High Solids Polyurethane, High Gloss
DULUX LifeMaster Interior Enamel (9200 Semi-Gloss)
Third Coat INTERTHANE 990 HS, High Solids Polyurethane, High Gloss
DULUX LifeMaster Interior Enamel (9200 Semi-Gloss)

END OF SECTION

SECTION 10 11 16 - VISUAL DISPLAY BOARDS AND PANELS

PART 1 – GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section.

B. Section Includes:

1. Markerboards, trim and rails where shown and of size indicated on Drawings.

C. Related Sections:
1. Section 09 22 16: Non-structural Metal Framing

2. Section 09 90 00: Painting.

1.02 SUBMITTALS

A. Shop Drawings: Shop Drawings to indicate gages, profiles, sections of materials, details of construction, hardware, methods of attachment and/or anchoring, as applicable for specified materials.

B. Samples: Submit the following:

1. 3 inch x 5 inch markerboard Samples, provide manufacturer's full range of colors.

C. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

D. Test Reports: Submit certified laboratory test reports as applicable to indicate compliance with specified requirements.

1.03 QUALITY ASSURANCE

A. Manufacturer shall have been regularly engaged in the business of manufacturing markerboards for at least 5 years.

B. Comply with requirements and recommendations of applicable portions of Porcelain Enamel Institute - PEI 2.

1.04 PRODUCT HANDLING

A. Deliver materials to the Project site with manufacturer's labels intact and legible.

B. Provide all means necessary to protect markerboards before, during and after installation.

1.05 JOB CONDITIONS

A. Sequencing, Scheduling:

1. Coordinate with related Work of other sections including backing in metal stud partitions and gypsum board.

2. Do not install markerboards until paint is installed to surfaces concealed behind them.

1.06 SPECIAL PROJECT WARRANTY

A. Manufacturer shall provide a 50 year material warranty from the date of final acceptance

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS (MARKERBOARDS)

A. Alliance Wall Corporation

B. Greensteel, Inc., a division of Polyvision Corporation.

C. Nelson – Adams Company.

D. Tri-Best

2.02 SYSTEM PERFORMANCE

A. System shall be comprised of factory assembled markerboards, in configurations and sizes indicated on the Drawings or as specified herein.

B. Laminations of panel components shall be by face sheet manufacturer.

2.03 MATERIALS

A. Markerboards

2. Markerboard: 24 ga. porcelain enamel steel laminated to 7/8 inch thick honeycomb core with moisture barrier backing sheet of 0.015 aluminum and NACO C-12 Trim at perimeter and nylon guides at guide channel edge.

a. Markerboard facing color: #6100H White, unless otherwise indicated on Drawings.

b. Pulls: Ives No. 230, or equal. Provide 2 recessed pulls per panel at jambs.

3. Map Rail, surface mounted 2"width: NACO MR-3, with insert and end stops, or equal.

a. Combination Maphook/Clip: NACO H-2, or equal. Provide 2 for each 8 feet of map rail or fraction thereof.

b. Roller Map Bracket: NACO RB-2, or equal. Provide 2 for each 8 feet of map rail or fraction thereof.

4. Pentray: NACO modified CRC-2B Chalktray, or equal.

5. Provide tackboard units with same components where shown on the drawings.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install markerboard, trim, map rail and marker tray in accordance with manufacturer's directions and reviewed Shop Drawings. Fasteners for assembly of trim and frame units shall be truss head aluminum or stainless steel self-tapping screws with double cadmium-plated finish.

B. Install panels after finish painting of wall surfaces has been completed and paint is cured. Install panels level, plumb and neatly assembled. Before Substantial Completion, trim shall be completely cleaned of dirt, finger-marks, or other foreign material.

C. Install panel guides, spacers, and panels at media wall cabinets as indicated.

3.02 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 10 1400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Plaques.
2. Dimensional characters.
3. Panel signs.

B. Related Sections include the following:

1. Division 22 Section "Identification for Plumbing Piping and Equipment for labels, tags, and nameplates for plumbing systems and equipment.
2. Division 23 Section "Identification for HVAC Piping and Equipment" for labels, tags, and nameplates for HVAC systems and equipment.
3. Division 26 Section "Identification for Electrical Systems" for labels, tags, and nameplates for electrical equipment.
4. Division 26 Section "Interior Lighting" for illuminated Exit signs.

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 ACTION SUBMITTALS

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

B. Shop Drawings: Show fabrication and installation details for signs.

1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available:

D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:

1. Plaque Casting: 6 inches (150 mm) square including border.
2. Dimensional Characters: Full-size Samples of each type of dimensional character (letter, number, and graphic element).
3. Aluminum: For each form, finish, and color, on 6-inch- (150-mm-) long sections of extrusions and squares of sheet at least 4 by 4 inches (100 by 100 mm).
4. Acrylic Sheet: 8 by 10 inches (200 by 250 mm) for each color required.
5. Panel Signs: Not less than 12 inches (305 mm) square.

E. Sign Schedule.

1.5 INFORMATIONAL SUBMITTALS

A. Warranty: Special warranty specified in this Section.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. 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.

C. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

D. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines, ICC/ANSI A117.1 and the 2007 California Building Code.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.9 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Deterioration of metal and polymer finishes beyond normal weathering.
   b. Deterioration of embedded graphic image colors and sign lamination.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Castings: ASTM B 26/B 26M, of alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated.

B. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.

C. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 6063-T5.

D. Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).

E. Polycarbonate Sheet: Of thickness indicated, manufactured by extrusion process, coated on both surfaces with abrasion-resistant coating:

1. Impact Resistance: 16 ft-lbf/in. (854 J/m) per ASTM D 256, Method A.
2. Tensile Strength: 9000 lbf/sq. in. (62 MPa) per ASTM D 638.
3. Flexural Modulus of Elasticity: 340,000 lbf/sq. in. (2345 MPa) per ASTM D 790.
4. Heat Deflection: 265 deg F (129 deg C) at 264 lbf/sq. in. (1.82 MPa) per ASTM D 648.
5. Abrasion Resistance: 1.5 percent maximum haze increase for 100 revolutions of a Taber abraser with a load of 500 g per ASTM D 1044.

F. Applied Vinyl: Die-cut characters from vinyl film of nominal thickness of 3 mils (0.076 mm) with pressure-sensitive adhesive backing, suitable for exterior applications.

2.2 DIMENSIONAL CHARACTERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ACE Sign Systems, Inc.
2. Advance Corporation; Braille-Tac Division.

3. ASI-Modulex, Inc.
4. Gemini Incorporated.
5. Metal Arts; Div. of L&H Mfg. Co.
6. Mohawk Sign Systems.
7. Nelson-Harkins Industries.
8. Southwell Company (The).

B. Cast Characters: Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free of pits, scale, sand holes, and other defects. Cast lugs into back of characters and tap to receive threaded mounting studs. Alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated. Comply with the following requirements.

1. Character Material: Aluminum.
2. Thickness: 3/8-inch.
3. Height: See Detail No. 34/CP4.2
4. Color: As selected by Architect from manufacturer's full range.
5. Mounting: Concealed studs for substrates encountered.
6. Locations:
   a. Front building entrance wall; reference Building Elevations and Drawing No. CP4.2. See Detail No. 34/CP4.2 for letters required and heights of letters to be provided.
   b. Individual courtroom entrances; reference interior elevations and Drawing No. A11.7. See Detail Nos. 51 and 52/CP4.2 for letters required and heights of letters to be provided.

2.3 PANEL SIGNS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. ACE Sign Systems, Inc.
2. Advance Corporation; Braille-Tac Division.
3. Allen Industries Architectural Signage
4. Allenite Signs; Allen Marking Products, Inc.
5. APCO Graphics, Inc.
6. ASI-Modulex, Inc.
7. Best Sign Systems Inc.
8. Fossil Industries, Inc.
9. Innerface Sign Systems, Inc.
10. InPro Corporation
11. Mohawk Sign Systems.
12. Nelson-Harkins Industries.
13. Supersine Company (The)

B. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner, complying with the following requirements:
1. Acrylic Sheet: 0.080 inch (2.03 mm) thick.