SPECIFICATIONS

FOR

UCLA 100 Medical Plaza

Suite 550 Tenant Improvements

UNIVERSITY OF CALIFORNIA
LOS ANGELES CAMPUS
LOS ANGELES, CALIFORNIA

August 2011

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SECTION 01011
GENERAL PROVISIONS

1. GENERAL

1.1 BENEFICIAL OCCUPANCY

A. University intends to take Beneficial Occupancy prior to completion of the entire Project, including the following:
   1. TBD

1.2 APPARATUS AND EQUIPMENT LOCATIONS

A. Locations of apparatus and equipment indicated on the Drawings are approximate only, and are subject to change to suit operational service as approved by University's Representative.

B. Furnish and install apparatus and equipment in a manner and in locations which keep openings and passageways clear. Make changes in locations of equipment and materials which may be necessary to accomplish these purposes as approved by University's Representative.

1.3 ANCHORS AND FASTENERS

A. Submit manufacturer's literature and calculations for anchoring and fastening devices to University's Representative for approval.

B. For concrete, except as listed below, use two-piece expansion anchors or drilled-in fasteners as shown. Concrete nails are not permitted.

C. The use of low velocity powder-activated tools is permitted only for the conditions described below. The use of medium and high velocity powder-activated fasteners as defined by ANSI A10.3 is prohibited.
   1. Permitted Uses of Low Velocity Powder-Actuated Fasteners:
      a. Anchoring metal track for interior non-load bearing walls. Note: Door frames shall be fastened with two-piece expansion anchors.
      b. Fastening of furring strips to concrete walls.
      c. Temporary fastening and concrete forming.
      d. Installation of incidental straps and wires used to suspend the following:
         1) Metal duct work of 25 pounds per linear foot or less;
         2) Piping of 1" diameter or less;
         3) Electrical conduit of 2" diameter or less.
      e. Fastening of plaster accessories, flashing and similar items with negligible loading.
   2. Requirements for Low Velocity Powder Actuated Fasteners.
      a. Minimum shank: .143 inch diameter; minimum penetration: 1.25 inches for 3000 psi concrete; minimum rated tensile strength: 310 lbs; minimum rated shear strength: 420 lbs. Contractor shall submit calculations to substantiate selection.
      b. Weight suspended from each connection shall not exceed 200 lbs.
      c. Where designated by University's Representative, anchors, fasteners and ties installed utilizing low velocity powder-actuated tools will be tested by an independent testing laboratory to resist two times the design load. Any such anchor, fastener or tie which fails such a test shall be replaced by Contractor at no cost to University.
   3. Procedures for use of low velocity powder actuated tools:
      a. The use of low velocity powder actuated tools shall comply with Federal OSHA safety requirements and California Code of Regulations Title 24, including the requirement that the operator of the tool be trained and certified. Submit certification.
      b. Submittal of manufacturer's literature and calculations for anchoring and fastening devices shall include load calculations and minimum spacing for fasteners for each specific use. Design for a factor of safety of two times allowable load. Calculations shall be signed by Contractor's structural engineer. Structural engineer shall be registered in California.
      c. Conform to SMACNA low velocity shotpin installation requirements.

1.4 SUPERINTENDENT

A. In addition to requirements specified in Article 3 of the General Conditions, submit Superintendent's qualifications showing a minimum of 5 years experience in coordinating projects of similar scope and size as this Project within the United States.

1.5 SURROUNDING SITE CONDITION SURVEY

A. Prior to commencing the Work, Contractor and University's Representative shall tour the Project site together to examine and record damage to existing adjacent buildings and improvements. This record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed by all parties making the tour. Any cracks, sags, or damage to the adjacent buildings and improvements not noted in the original survey, but subsequently discovered, shall be reported to University's Representative.

1.6 REPAIR OF EXISTING WORK

A. Whenever any cutting, removal, or alterations of existing work is required to form connections with new work or otherwise meet the requirements of the Contract Documents, perform such work so as not to damage the work that will remain in place. Perform patching and repairs occasioned thereby using materials, construction details, and finishes matching those of the existing work as closely as possible and to the approval of University's Representative.

1.7 LAYING OUT OF THE WORK

A. Contractor shall employ a California registered Civil Engineer or Land Surveyor to lay out the Work and set grades, lines, levels, and positions throughout the Project site. Before beginning the Work, locate general reference points, establish monuments, and take action as is necessary to prevent their destruction; then lay out all lines, elevations, and measurements for buildings, grading, paving, utilities, and other parts of the Work. Verify figures and dimensions shown on the Drawings and accept responsibility for any error resulting from failure to so verify, including the cost of any additional re-surveying. Establish permanent monuments on curbs, manholes, or pavements, or with concrete embedded steel pipe with lead plug and brass nail, as approved.

1.8 NOT USED

END OF SECTION

SECTION 01012
INFORMATION & PROCEDURE INSTRUCTIONS (RFI)

1. GENERAL

1.1 DESCRIPTION

A. This Section contains the procedures to be followed by Contractor upon discovery of any apparent conflicts, omissions, or errors in the Contract Documents or upon having any question concerning interpretation.

B. Procedures:

1. Notification by Contractor:
   a. Submit all requests for clarification or additional information in writing to University's Representative using the Request for Information (RFI) form provided by University's Representative or a similar form approved by University's Representative.
   b. Number RFIs sequentially. Follow RFI number with sequential alphabetical suffix as necessary for each resubmission. For example, the first RFI would be "001." The second RFI would be "002." The first resubmittal of RFI "002" would be "002a."
   c. Limit each RFI to one subject.
   d. Submit an RFI if one of the following conditions occur:
      1) Contractor discovers an unforeseen condition or circumstance that is not described in the Contract Documents.
      2) Contractor discovers an apparent conflict or discrepancy between portions of the Contract Documents that appears to be inconsistent or is not reasonably inferred from the intent of the Contract Documents.
      3) Contractor discovers what appears to be an omission from the Contract Documents that cannot be reasonably inferred from the intent of the Contract Documents.
   e. Contractor shall not:
      1) Submit an RFI as a request for substitution.
      2) Submit an RFI as a submittal.
      3) Submit an RFI under the pretense of a Contract Documents discrepancy or omission without thorough review of the Documents.
      4) Submit an RFI in a manner that suggests that specific portions of the Contract Documents are assumed to be excluded or by taking an isolated portion of the Contract Documents in part rather than whole.
      5) Submit an RFI in an untimely manner without proper coordination and scheduling of Work of related trades.

      If Contractor submits an RFI contrary to the above, Contractor shall pay the cost of all review, which cost shall be deducted from the Contract Sum.
   f. Contractor shall submit request for information or clarification immediately upon discovery. Contractor shall submit RFIs within a time frame so as not to delay the Contract Schedule while allowing the full response time described below.
2. Response Time:
   a. University's Representative, whose decision will be final and conclusive, shall resolve such questions and issue instructions to Contractor within a reasonable time frame. In most cases, RFIs will receive a response within 14 days. If in the opinion of University's Representative more than 14 days is required to prepare a response to an RFI, Contractor will be notified in writing.
   b. Should Contractor proceed with the Work affected before receipt of a response from University's Representative, within the response time described above, any portion of the Work which is not done in accordance with University's Representative's interpretations, clarifications, instructions, or decisions is subject to removal or replacement and Contractor shall be responsible for all resultant losses.
   c. Failure to Agree: In the event of failure to agree as to the scope of the Contract requirements, Contractor shall follow procedures set forth in Article 4 of the General Conditions.

END OF SECTION

SECTION 01014
CONTRACTOR'S USE OF THE PROJECT SITE

1. GENERAL

1.1 STORAGE

A. Contractor's use of the Project site for the Work and storage is restricted to the areas designated on the Drawings or as approved by University's Representative. Refer also to Section 01600, MATERIAL & EQUIPMENT.

1.2 USE OF PUBLIC THOROUGHFARES AND UNIVERSITY ROADS

A. Contractor shall make its own investigation of the condition of available public thoroughfares and University roads, and of the clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the Project site.

B. Where materials are transported in the prosecution of the Work, do not load vehicles beyond the capacity recommended by manufacturer of the vehicles or prescribed by any applicable state or local law or regulation.

C. Use only established roads on the campus; provided, however, that such temporary haul roads as may be required in the work shall be constructed and maintained by Contractor, subject to the approval of University's Representative.

D. Provide protection against damage whenever it is necessary to cross existing sidewalks, curbs, and gutters in entering upon the University roads. Repair and make good at the expense of Contractor all damages thereto, including damage to existing utilities and paving, arising from the operations under the Contract.

E. Truck staging is not allowed on campus or on any residential street surrounding the campus.

1.3 WATCHMAN'S SERVICES

A. During all hours that Work is not being prosecuted, furnish such watchman's services as Contractor may consider necessary to safeguard materials and equipment in storage on the Project site, including Work in place or in process of fabrication, against theft, acts of malicious mischief, vandalism, and other losses or damages.

B. University will not be liable for any loss or damage.

1.4 RUBBER-TIRED EQUIPMENT

A. Where carts, hand trucks, wheelbarrows, and similar wheeled conveyances are used on or in any portions of any structure, equip with pneumatic tires.

1.5 SITE DECORUM

A. Contractor shall control the conduct of its employees so as to prevent unwanted interaction initiated by Contractor's employees with UCLA students, UCLA staff, or other individuals (except those associated with the Project), adjacent to the Project site. Unwanted interaction by Contractor employees would include whistling at or initiating conversations with passersby. In the event that any Contractor employee initiates such unwanted interaction, or utilizes profanity, Contractor shall, either upon request of University's Representative or on its own initiative, replace said employee with another of equivalent technical skill, at no additional cost to University. No radios, other than two-way communication type, will be allowed on the Project site. No smoking is allowed in any University Building.

1.6 PARKING

A. No vehicle shall be allowed to park on the UCLA campus without displaying the appropriate permit(s), as follows:

1. For Parking in Designated Parking Space (i.e. Parking Structure, Open Lot) and For Construction Parking at the Project Site in Non-Fenced Areas on Hardscape: A valid parking permit is required. Permits may be purchased by the day, week, month or quarter on an as-available basis. Permits may be purchased on a daily basis from any Parking Service Kiosk. For longer term parking, permits must be purchased directly from Parking Service located at 555 Westwood Plaza (Parking Structure Number 8). Permits are valid in the area of assignment only. Violators are subject to citation.
2. Mobility:
   a. Contractors and Subcontractors who are currently engaged in work on more than one project on the Campus and need mobility between project sites, or who need in-and-out privileges during the day from parking structures/lots, shall be required to make those arrangements at the time permits are obtained. A valid permit and contractor placard must be displayed. No mobility will be allowed in Dickson Court (Portola Plaza) or at meters, handicap stalls or stalls otherwise reserved, or in designated fire lanes. Violators will be cited.
   b. Card keys will be issued ONLY to Contractors and Subcontractors who have two or more construction projects in process on the UCLA Campus.

B. PARKING ARRANGEMENTS FOR THIS PROJECT: Contractor shall arrange and pay for all parking for itself, its subcontractors, and its employees.

1.7 TEMPORARY STAIRS, SCAFFOLD AND RUNWAYS

A. Provide all scaffolds, stairs, hoist plant, runways, platforms, and similar temporary construction as may be necessary for the performance of the Contract. Such facilities shall be of the type and arrangement as required for their specific use, substantially constructed throughout and strongly supported, well secured and complying with all applicable rules and regulations of the Industrial Accident Commission of the State of California and all applicable laws and ordinances. Refer to Section 01060, REGULATORY REQUIREMENTS.

B. Arrange for construction equipment access to areas which may be partly blocked by existing obstructions.

1.8 TEMPORARY HOISTS

A. Provide temporary hoist as required by job conditions for the installation of materials and equipment. Install and operate in accordance with all safety regulations of authorities having jurisdiction. Refer to Section 01060, REGULATORY REQUIREMENTS.

1.9 TEMPORARY SHORING AND BRACING

A. Provide temporary shoring and bracing as required for execution of the Work. Refer to Section 01500, CONSTRUCTION FACILITIES & TEMPORARY CONTROLS. All shoring and bracing shall comply with safety regulations of authorities having jurisdiction (refer to Section 01060, REGULATORY REQUIREMENTS).

1.10 TEMPORARY BARRICADES

A. Provide temporary barricades as necessary. Maintain barricades in a clean and neat condition until no longer required and removal is approved or requested.

B. When Work involves modification to an existing egress corridor, Contractor shall provide temporary barricades as necessary, constructed in a manner that maintains the fire resistive integrity of the affected corridor(s). Construction and placement of the barricades shall be approved by University's Representative.

1.11 REMOVAL AND RECONDITIONING

A. Temporary facilities, barricades, utilities and other construction of temporary nature shall be removed from the Project site as soon as the progress of the work will permit in the opinion of University's Representative; and the portions of the Project site and building occupied by same shall be reconditioned and restored to original condition. For temporary utilities, refer to Section 01510, TEMPORARY UTILITIES.

B. Legally dispose of all debris resulting from removal and reconditioning operations.

1.12 CONTROL OF CONSTRUCTION WATER

A. Provide impermeable floor coverings and suitable dams to prevent damage by water used for the Work. Immediately clean up and remove all surplus water and water spilled in non-working areas. Do not allow water to overflow gutters or flood streets.

1.13 WORK HOURS

A. Unless otherwise approved in advance by University's Representative, the Work of this Project shall be accomplished only during the following hours:

Mondays through Fridays	7:00 a.m. to 6:00 p.m.
Saturdays	8:00 a.m. to 6:00 p.m.

No work shall be performed on Sundays or University holidays.

1.14 CONSTRUCTION SIGNAGE

A. All signage shall be as approved by University's Representative.

B. University-Furnished Warning Signs: Whenever required by University's Representative, post University-furnished warning signs in locations as directed.

C. Advertising Signage: The use of Contractor/subcontractor advertising signage is prohibited.

D. Project Sign: Contractor shall furnish support structures consisting of 6" x 6" painted wooden posts to support 2 University-furnished project signs. University will deliver the signs to the Project site and Contractor shall install them by bolting support structure to the wooden signs and placing them in locations approved by University's Representative.

1.15 HISTORICAL, ARCHEOLOGICAL AND PALEONTOLOGICAL RESOURCES

A. In order to preserve and protect potentially historic, archeological or paleontological resources that could be encountered on a construction site, University's Representative will give the information handout, “UCLA Needs Your Help to Protect the Past” to Contractor at the Pre-Construction Meeting referenced in Section 01200, PROJECT MEETINGS. Contractor shall ensure that all appropriate Subcontractors receive said handout, that they comply with all applicable requirements during excavation and construction, and that they understand that the unauthorized collection of historic, archeological or paleontological resources is prohibited by law. Contractor's responsibility includes (1) distributing the information handout to all construction personnel working on a site prior to commencing any earthmoving activities; (2) immediately halting all work in all areas where any potentially historic, archeological or paleontological remains (as identified in the handout) are uncovered; and (3) immediately notifying University's Representative if such materials are found. Contractor shall not resume work in the affected areas until authorized by University's Representative.

1.16 BARRICADE FENCING

A. Barricade chain link fencing shall be installed straight and plumb, using galvanized steel pipe and 9 gauge galvanized 2 inch diamond mesh wire fabric fastened to the posts and rails.

B. Posts shall be 2.375 inch O.D.; securely set in the ground and spaced a maximum of 10'-0" O.C. and 8'-0" height with a continuous top pipe rail. Posts shall not be set in or on existing concrete paving or walls to remain, but shall be located in soil, planter or brick paved areas.

C. Maintain fencing in a straight, clean and neat condition throughout construction as approved by University's Representative.

1.17 TEMPORARY STRUCTURES

A. Erect and maintain, for duration of operations and in locations as approved, suitable temporary office facilities as required for Contractor's, University's and University's Representative's administration of the work. Provide necessary sheds and facilities for the storage of tools, materials, and equipment employed in the performance of the work. Temporary buildings shall be weathertight with raised solid floors, solid sheathed and composition roofs, and adequately glazed and screened windows for light and ventilation. Provide for University and University's Representative a clean 12' x 40' (minimum) trailer in good condition inside and outside electricity, heating and lighting, complete with air conditioning and a 120-208 volt/100 amp electric service and hook up for University's Representative and University with a cylinder locked door and at least 4 keys. The trailer shall have (2) 12' long partitions with doors located as approved by University's Representative. Configuration shall be as approved by University's Representative. Temporary buildings shall be painted using colors as approved. Contractor shall furnish daily janitorial service in the trailer. Provide stairs and handicapped ramp per code. Refer to Section 01060, REGULATORY REQUIREMENTS.

1.18 TRAFFIC CONTROL

A. Provide traffic control barriers and flagperson(s) throughout the construction period.

1. Provide flagperson(s) at pedestrian crossings of construction equipment right of ways one hundred percent of the time such equipment is operating. When equipment is not operating, such equipment right of ways shall be closed to equipment by means of a chain link gate.
2. Provide temporary traffic control barriers to ensure safety of all persons and property.
3. Provide numbers of flagperson(s) necessary for vehicular and pedestrian traffic control. Flagperson(s) shall be on duty at all times when the Work is in progress. See additional notes on Drawings.

END OF SECTION

SECTION 01018
PROJECT PHASING

1. GENERAL

1.1 DESCRIPTION

A. The Work of this Contract is divided into phases as indicated herein and in Article 4 of the Agreement.

B. All of the work required for each phase, as shown on the drawings and as specified, shall be fully completed within the time stipulated for the phase, and all Work of the Contract shall be fully completed within the Contract Time, whether or not included in the phase description. The deadlines for completion of each phase shall be subject to adjustment under the Contract procedures for adjustment of the Contract Time, including those procedures specified in Articles 4 and 8 of the General Conditions.

C. University reserves the right to vary the sequence of phasing upon written notice to Contractor prior to the date on which Contractor is to proceed with the work of any phase affected by the change.

1.2 PHASES

Phase 1:

1. The Work of Phase 1: Includes the existing oncology space that will be demolished and converted into 5 exam rooms. These rooms must be opened prior to starting phase 2 construction. During phase 1, the clinic will have 6 exam rooms in operation.

2. To be completed within 45 days from the date designated in the Notice to Proceed for this phase.

Phase 2:

1. The Work of Phase 2 shall include the balance of the suite. This includes the existing exam rooms, hallway, and reception/waiting area will be demolished and renovated. During this phase, there will be the 5 new exam rooms in operation, and the patients will need to check-in and wait in the new waiting/reception area for 555.

2. To be completed within 48 days from the date designated in the Notice to Proceed for this phase.

END OF SECTION

SECTION 01020
ALLOWANCES

1. GENERAL

1.1 DESCRIPTION

A. Included in the Contract Sum are all Allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as University's Representative may direct.

B. The following shall apply, unless otherwise provided in the Contract Documents:

1. Allowances shall cover the cost to Contractor of materials and equipment delivered at the Project site and all required taxes, less applicable trade discounts.
2. Contractor's costs required for storage on and off the Project site, security, loading and unloading, handling at the Project site, labor, installation costs, overhead, profit, and other expenses contemplated for stated Allowance amounts shall be included in the Contract Sum and not in the Allowances.
3. Whenever costs are more than or less than Allowances, the Contract Sum shall be adjusted by Change Order based on (i) the difference between actual costs and the Allowances under Subparagraph 1.1 B.1, and (ii) changes in Contractor's costs under Subparagraph 1.1 B.2.

1.2 DESCRIPTION OF ALLOWANCES

A. Allowance 1: TBD

B. Allowance 2: TBD

END OF SECTION

SECTION 01030
ALTERNATES

1. GENERAL

1.1 DESCRIPTION

A. This Section identifies each Alternate and describes basic changes to the Work only when that Alternate is made a part of the Work by specific provision in the Agreement.

B. The Lump Sum Base Bid and Alternates shall include the cost of all supporting elements required, so that the combination of the Lump Sum Base Bid and any Alternates shall be complete. The scope of Work for all Alternates shall be in accordance with the applicable Drawings and Specifications.

C. Except as otherwise specifically provided by University, the Work described in Alternates shall be completed with no increase in Contract Time.

D. This Section includes only the non-technical descriptions of the Alternates. Refer to the specific Sections of Divisions 2 through 16 of the Specifications and to Drawings for technical descriptions of the Alternates.

E. Coordinate related Work and modify surrounding Work as required to accurately and completely integrate the Alternates into the Work.

1.2 DESCRIPTION OF ALTERNATES

Alternate # 1: TBD

END OF SECTION

SECTION 01041
PROJECT COORDINATION

1. GENERAL

1.1 DESCRIPTION

A. Coordinate the Work and do not delegate responsibility for coordination to any Subcontractor.
B. Anticipate the interrelationship of all Subcontractors and their relationship with the Work.
C. Resolve differences or disputes between Subcontractors concerning coordination, interference, or extent of Work between sections of the Work.
D. Coordinate the Work of Subcontractors so that portions of the Work are performed in a manner that minimizes interference with the progress of the Work.
E. Do not obstruct spaces and installations that are required to be clear by Applicable Code Requirements. Refer to Section 01060, REGULATORY REQUIREMENTS.
F. Do not cover any piping, wiring, ducts, or other installations until they have been inspected and approved, and required certificates of inspection issued.
G. Remove and replace all Work which does not comply with the Contract Documents. Repair or replace any other Work or property damaged by these operations with no adjustment of Contract Sum.
H. Coordinate all portions of the Work requiring careful coordination in order to fit in space available. Before commencing such portions of the Work, prepare supplementary Drawings for review by University's Representative.

END OF SECTION

SECTION 01043
JOB SITE ADMINISTRATION

1. GENERAL

1.1 CONTRACTOR'S CORRESPONDENCE

A. Contractor's correspondence directed to University's Representative.
   1. Original and 2 copies to University's Representative.
   2. 1 copy to University's Project Manager.

1.2 UNIVERSITY'S REPRESENTATIVE'S CORRESPONDENCE

A. University's Representative's correspondence directed to Contractor.
   1. Original and 2 copies to Contractor.
   2. 1 copy to University's Project Manager.

1.3 PROGRESS PAYMENTS

A. In accordance to General Conditions, Article 9, summarize quantities and percentages of completion, agreed upon by Contractor and University's Representative, on the Cost Breakdown contained in the Application for Payment. Submit 3 copies to University's Representative.

1.4 CHANGES IN THE WORK

A. Refer to General Conditions, Article 7.
B. Request for Estimate (RFE) and Special Drawings:
   1. Changes in the Work will be initiated by University's Representative in the written form of a RFE and numbered in sequence using the "500" series.
   2. Special Drawings that are issued with RFE's will be numbered in sequence using the RFE number.
   3. Contractor shall price and return RFE's within 7 days after receipt.
C. Field Orders: Field Orders, if necessary to preclude unnecessary delays/costs, will be initiated by University's Representative and numbered sequentially using the "300" series.
D. Change Orders will be numbered in sequence 1, 2, 3, etc.
E. Clarification Drawings: Clarification Drawings will be numbered in sequence using "1000" series.
F. Cost Proposals for changes as follows: Original and 2 copies to University's Representative, and 3 copies to University's Project Manager. (Attach RFE and/or Field Order to each Cost Proposal.)
   1. Submit in accordance with the General Conditions.
G. Cost Proposals shall show detailed breakdown of material, labor, etc., plus applicable percentages for Contractor Fee as specified in Article 7 of the General Conditions. (Sample format for submittal will be distributed at the Pre-Construction Meeting specified in Section 01200, PROJECT MEETINGS.)
H. University's Representative will prepare and process Change Orders. Final distribution will be made by University's Project Manager after Change Orders are fully executed.

1.5 CERTIFIED PAYROLL RECORDS

A. In addition to the requirements of the General Conditions, Contractor shall submit with each Application for Payment an accurate payroll record showing the name, address, social security number or classification, straight-time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyworker, apprentice, laborer, or other employee employed by it in connection with the Work for the period covered by the Application for Payment. The payroll record shall be certified. Failure to submit the certified payrolls with the Application for Payment will result in a delay in processing the progress payment until the certified payrolls are received.

1.6 CONTRACTOR'S DAILY REPORTS

A. Contractor and each subcontractor on site shall completely fill out a Contractor's Daily Report, on forms provided by University's Representative (refer to Exhibits, bound herein), for each day worked. It is the responsibility of Contractor to submit all Daily Reports, including those of subcontractors, by 9:00 a.m. the following work day. Failure to submit Daily Reports in a timely manner may result in delayed progress payment(s).

END OF SECTION

SECTION 01060
REGULATORY REQUIREMENTS

1. GENERAL

1.1 DESCRIPTION

A. The Work shall be performed in accordance with Applicable Code Requirements and applicable requirements of all other regulatory agencies, including the following:

1. California Code of Regulations (CCR), Title 8, Industrial Safety.
2. CCR, Title 13, Hazardous Materials Transportation.
3. CCR, Title 17, Radiation Safety.
4. CCR, Title 19, Public Safety.
5. CCR, Title 20, Public Utilities and Energy.
6. CCR, Title 21, Public Works.
7. CCR, Title 23, Underground Storage Tank Regulations.
8. CCR, Title 24
   a. Part 1, Building Standards Administrative Code.
   b. Part 2, California Building Code (2006 IBC with 2007 California Amendments).
   c. Part 3, California Electrical Code (2005 NEC with 2007California Amendments).
   d. Part 4, California Mechanical Code (2006 UMC with 2007 California Amendments).
   e. Part 5, California Plumbing Code (2006 UPC with 2007 California Amendments).
   f. Part 6, California Energy Code.
   g. Part 7, California Elevator Safety Construction Code.
   h. Part 8, California Historical Building Code.
   i. Part 9, California Fire Code (2006 IFC with 2007 California Amendments).
   j. Part 10, California Code for Building Conversion.
   k. Part 12, California Referenced Standards Code.
9. CCR, Title 25, Housing and Community Development.
10. CCR, Title 26, Toxics.
11. National Fire Protection Association (NFPA):

NFPA Standards		Edition
11	Low-, Medium- and High-Expansion Foam	2005
12	Carbon Dioxide Extinguishing Systems	2008
12A	Halon 1301 Fire Extinguishing Systems	2009
13	Installation of Sprinkler Systems	2007
13R	Sprinkler Systems for Residential Occupancies	2007
13D	Sprinkler Systems for One- and Two-Family Dwellings	2007
14	Installation of Standpipes and Hose Systems	2009
15	Water Spray Fixed Systems	2007
16	Installation of Foam-Water Sprinkler & Foam-Water Spray Systems	2007
17	Dry Chemical Extinguishing Systems	2009
17A	Wet Chemical Extinguishing Systems	2009
20	Installation of Stationary Pumps for Fire Protection	2007
22	Water Tanks for Private Fire Protection	2008
24	Installation of Private Fire Service Mains	2007
37	Stationary Combustion Engines and Gas Turbines	2006
45	Laboratories Using Chemicals	2004
54	National Fuel Gas Code	2009
58	Liquefied Petroleum Gas Code	2008
72	National Fire Alarm Code	2007
80	Fire Doors and Other Opening Protectives	2007
92A	Smoke-Control Systems	2009
99	Health Care Facilities	2005
101	Life Safety Code (for Laboratory Construction)	2009
110	Emergency and Stand-by Power Systems	2005
253	Test for Critical Radiant Flux of Floor Covering Systems	2006

B. When the California Building Code does not specifically cover any subject relating to building design and construction, recognized fire prevention engineering practices shall be employed. The following may be used as authoritative guides when determining recognized fire prevention engineering practices:

1. The National Fire Codes.
2. The Fire Protection Handbook.

C. Unless otherwise specified, specific references to codes, regulations, standards, manufacturers' instructions, or requirements of regulatory agencies, when used to specify requirements for materials or design elements, shall mean the latest edition of each in effect at the date of submission of bids, or the date of the Change Order or Field Order, as applicable.

D. Representatives of the Los Angeles City Fire Department, Division of State Architect (DSA) and California Occupational Safety and Health Act (Cal/OSHA) have the right to inspect all Work and workplace conditions.

1.2 CONFLICTS

A. If a conflict exists between referenced regulatory requirements or between referenced regulatory requirements and the Contract Documents, Contractor shall notify University's Representative and request that the conflict be resolved. The fact that the Contract Documents may establish higher or more costly requirements than the minimum Code or other regulatory requirements referenced above shall not constitute a "conflict."

END OF SECTION

SECTION 01090
ABBREVIATIONS, SYMBOLS & DEFINITIONS

1. GENERAL

1.1 ABBREVIATIONS

A. The following abbreviations of organizations may be used in the Contract Documents.

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AAN	American Association of Nurserymen, Inc.
AASHTO	American Association of State Highway and Transportation Officials
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
ACIL	American Council of Independent Laboratories
ACPA	American Concrete Pipe Association
ADA	Americans with Disabilities Act
ADC	Air Diffusion Council
AFBMA	Anti-Friction Bearing Manufacturers Association
AFI	Air Filter Institute
AGA	American Gas Association
AGC	Associated General Contractors of America
AHERA	Asbestos Hazard Emergency Response Act
AI	The Asphalt Institute
AIA	American Institute of Architects
AIMA	Acoustical Insulating Material Association
AISC	American Institute of Steel Construction, Inc.
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standards Committee
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
AOAC	Association of Official Analytical Chemists
APA	American Plywood Association
API	American Petroleum Institute
AQMD	Air Quality Management District
ARI	Air-Conditioning and Refrigeration Institute
ASA	American Standards Association
ASAHC	American Society of Architectural Hardware Consultants
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ASME	American Society of Mechanical Engineers Association, Inc.
ASTM	American Society for Testing and Materials
AWCI	Association of Wall and Ceiling Industries
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preservers Institute
AWS	American Welding Society, Inc.
AWWA	American Water Works Association, Inc.
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America
BOCA	Building Officials and Code Administrators
CAC	California Administrative Code
Cal/OSHA	California Occupational Safety and Health Act
CARB	California Air Resources Board
CBM	Certified Ballast Manufacturers Association
CCR	California Code of Regulations
CDA	Copper Development Association, Inc.
CE	Corps of Engineers (U. S. Dept. of the Army)
CEC	California Energy Commission
CESO	California Elevator Safety Order
CGA	Compressed Gas Association
CLFMI	Chain Link Fabric Manufacturers Institute
CLPCA	California Lathing and Plastering Contractors Association, Inc.
CPSC	Consumer Product Safety Commission
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards of NBS (U.S. Dept. of Commerce)
CTI	Cooling Tower Institute
CTLA	Council of Tree and Landscape Appraisers

DHI	Door & Hardware Institute
DISS	Diameter Index Safety System
EPA	Environmental Protection Agency
ETL	Electrical Testing Laboratories
FFDA	Federal Food and Drug Administration
FIA	Factory Insurance Association
FM	Factory Mutual Engineering Corp.
FS	Federal Specification
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America (formerly FGMA)
GFI	Ground Fault Interrupter
HEPA	High Efficiency Particulate Air
HI	Hydronics Institute
HMI	Hoists Manufacturers Institute
HMMA	Hollow Metal Manufacturers Association
HPMA	Hardwood Plywood Manufacturers Association
IBEW	International Brothers of Electrical Workers
IBR	Institute of Boiler and Radiator Manufacturers
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineering Association
IEEE	Institute of Electrical and Electronic Engineers
IEC	International Electric Code
IES	Illuminating Engineers Society
IGCC	Insulation Glass Certification Council
ISA	Instrument Society of America
LIA	Lead Industries Association
MFMA	Maple Flooring Manufacturers Association
MIA	Marble Institute of America
MIL	U.S. Government, Military Specification
MLSFA	Metal Lath/Steel Framing Association
MOC	Ministry of Communications General
MSHA	Mine Safety and Health Administration
MSS	Manufacturers Standardization Society of Valve and Fittings
NAA	National Arborist Association
NAAB	National Association of Air Balance
NAAMM	The National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBFU	National Board of Fire Underwriters
NBGQA	National Building Granite Quarries Association, Inc.
NBHA	National Builders' Hardware Association
NBS	National Bureau of Standards (U. S. Dept. of Commerce)
NCMA	National Concrete Masonry Association
NCPWB	National Certified Pipe Welding Bureau
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code by NFPA
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NESHAP	National Emissions Standard for Hazardous Air Pollutants
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association
NHLA	National Hardwood Lumber Association
NICET	National Institute for Certification in Engineering Technologies
NIOSH	National Institute of Occupational Safety and Health
NPA	National Particleboard Association
NRC	Noise Reduction Coefficient
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	National Sanitation Foundation
NUSIG	National Uniform Seismic Installation Guidelines
NWMA	National Woodwork Manufacturers Association, Inc.
NWWDA	National Wood Window and Door Association
OPL	Omega Point Laboratories
OSHPD	Office of Statewide Health Planning and Development
PCA	Portland Cement Association
PCB	Polychlorinated Biphenyl
PCI	Prestressed Concrete Institute
PDCA	Painting and Decorating Contractors Association
PDI	Plumbing and Drainage Institute
PI	Perlite Institute

PS	Product Standard of NBS (U.S. Dept. of Commerce)
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service (Grading Rules)
SAE	Society of Automotive Engineers
SAS	Saudi Arabian Standard Organization
SBC	State Building Code
SCAQMD	South Coast Air Quality Management District
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal & Air Conditioning Contractors' National Assoc., Inc.
SPIB	Southern Pine Inspection Bureau (Grading Rules)
SSPC	Society for Protective Coatings
STC	Sound Transmission Coefficient
SWI	Sealant and Waterproofers Institute
TCA	Tile Council of America, Inc.
UBC	Uniform Building Code
UFAS	Uniform Federal Accessibility Standards
UHMW	Ultra-High Molecular Weight
UL	Underwriters Laboratories, Inc.
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USDA	United States Department of Agriculture
USSG	United States Steel Gauge
WCLIB	West Coast Lumber Inspection Bureau (Grading Rules)
WH	Warnock Hersey
WIC	Woodwork Institute of California
WWPA	Western Wood Products Association (Grading Rules)

1.2 DEFINITIONS

A. The following terms, when used on the Drawings or in the Specifications, shall have the following meanings:

1. ADEQUATE; CAREFUL; PROPER; SUFFICIENT; SUITABLE; SATISFACTORY: These terms refer to interpretation by University's Representative, and are subject to approval upon request.
2. APPLICABLE CODES: "Codes listed in Section 01060, REGULATORY REQUIREMENTS."
3. APPROVED: "As approved by University's Representative."
4. AS DIRECTED: "As directed by University's Representative."
5. AS REQUIRED: "As required by Applicable Code Requirements; by good building practice; by the conditions prevailing; by the Contract Documents; by University, or by University's Representative".
6. AS SELECTED: "As selected by University's Representative."
7. BY OTHERS: Work on the Project that is outside the scope of Work to be performed by Contractor under the Contract, but that will be performed by University, Separate Contractors, or other means.
8. EQUAL: Of same quality, appearance, and utility to that specified, as determined by University's Representative. Contractor bears the burden of proof of equality.
9. FURNISH: "Supply only, not install (unless required to be provided or installed elsewhere in the Contract Documents)."
10. INCLUDE/INCLUDING: "Include/including, without limitation."
11. INSTALL: "Install or apply only, not furnish (unless required to be provided or furnished elsewhere in the Contract Documents)".
12. MANUFACTURER'S DIRECTIONS/INSTRUCTIONS/ RECOMMENDATIONS/SPECIFICATIONS: Manufacturer's written directions, instruction, recommendations, specifications.
13. MUST; SHALL; TO; WILL: When used as a directive to Contractor, these terms indicate a mandatory action.
14. NECESSARY: "Essential to completion of Work".
15. UNIVERSITY-FURNISHED, CONTRACTOR INSTALLED: "To be furnished by University at its cost and installed by Contractor as part of the Work."
16. PROJECT SITE; JOB SITE: Geographical location of the Project.
17. PROVIDE: "Furnish and install".
18. SHOWN: "As indicated on the Drawings".
19. SPECIFIED: "As written in the Contract Documents."
20. SUBMIT: "Submit to University's Representative."

END OF SECTION

SECTION 01100
SPECIAL PROJECT PROCEDURES

1. GENERAL

1.1 HAZARDOUS MATERIALS PROCEDURES

A. Refer to General Conditions Article 3.19.

B. Lead Based Paint (LBP):

1. Lead coatings may exist on this Project site, and Work may involve the demolition, removal and disposal of materials coated in LBP. University will disclose all known information about such hazards, including location and quantity of lead in coating materials. If further information is desired, Contractor shall provide sampling and analysis.
2. Where LBP is determined or suspected to exist, Contractor shall comply with all regulations pertaining to its removal, including the Cal/OSHA Lead Construction Standard (CCR Title 8 section 1532.1) and the General Industry Safety Orders hazard communication requirements (CCR Title 8 section 5194). Contractor shall provide all required employee monitoring, personal protective equipment, and engineering controls designed to minimize lead exposures. Contractor is responsible for characterization and disposal of all lead-containing waste and debris. University will provide environmental monitoring.
3. During construction and demolition work, Contractor shall prevent lead dust contamination of surrounding areas. Contractor shall contact University's Office of Environment, Health & Safety regarding all Project elements which may result in significant migration of lead-containing materials off the Project site. Currently, the Department of Toxic Substances Control does not generally consider intact painted building materials to be hazardous wastes. Paint separated from its substrate shall be evaluated independently from the building material to determine proper management. Materials or solvents meeting the requirements of a Federal Hazardous Waste as determined by CCR Title 22 shall be disposed of at a location approved in advance by University's Office of Environment, Health & Safety.

1.2 NOT USED

END OF SECTION

SECTION 01155
UNIT PRICES

1. GENERAL

1.1 DESCRIPTION

A. Unit price quotations are to be inserted in the appropriate spaces in the Bid Form for each unit of work described herein. Also see Bid Form for related provisions.

B. Unit prices stated in the Agreement shall be used to compute adjustments of the Contract Sum for approved unit price items of Work. Such adjustments shall be made by Change Order.

C. Unit prices shall include labor, materials, tools, equipment; all other direct and indirect costs necessary to complete the item of Work and to coordinate the unit price Work with adjacent work; and overhead and profit. Contractor shall accept compensation computed in accordance with the unit prices as full compensation for furnishing such Work.

D. Compensation will be paid for those items of Work described in Paragraph 2.1 below.

E. There shall be no entitlement to an extension of the Contract Time with respect to the Work based on the fact that an actual quantity of any unit item exceeds any approximate quantity of such unit item as described in the Contract Documents.

1.2 SPECIFIED WORK

A. Applicable Sections of the Specifications describe the materials and methods required under the various unit price items of Work.

1.3 ADJACENT WORK

A. Make all necessary modifications to other work required by the use of unit prices at no additional cost to University.

2. PRODUCTS

2.1 UNIT PRICES

A. List of Unit Price Items and Descriptions:

Unit Price 1: TBD

3. EXECUTION

3.1 ADVANCED COORDINATION

A. Immediately notify University's Representative when conditions require the use of unit price items.

B. The applicability of, measurement methods for, documentation of, and the final adjustment of the Contract Sum for unit price items of Work shall be determined by University's Representative.

C. After performing the Work of unit price items as directed by University's Representative, Contractor shall take necessary measurements in the presence of University's Representative and shall submit calculations of quantities to University's Representative for approval. Contractor shall notify University's Representative 1 day in advance of taking measurements.

END OF SECTION

SECTION 01200
PROJECT MEETINGS

1. GENERAL

1.1 PRECONSTRUCTION CONFERENCE

A. Prior to commencement of Work, a pre-construction conference (Kick–Off Meeting) will be conducted by University's Representative to discuss procedures which are to be followed during performance of the Work.

B. Location: As designated by University's Representative.

C. Attending shall be:

1. University's Representative.
2. University.
3. University's consultants and University's Representative's consultants, as appropriate.
4. Contractor.
5. Contractor's Superintendent.
6. Subcontractors, as appropriate.
7. Others, as appropriate.

1.2 BILLING MEETING

A. A billing meeting shall be conducted by University's Representative each month prior to submittal of the Application for Payment.

B. Location: As designated by University's Representative.

C. Attending shall be:

1. University's Representative.
2. University.
3. University's consultants and University's Representative's consultants, as appropriate.
4. Contractor.
5. Contractor's Superintendent.
6. Subcontractors, as appropriate.
7. Others, as appropriate.

1.3 PROGRESS MEETING

A. During the course of construction, progress meetings will be held to discuss and resolve field problems. Progress meetings will be on a weekly basis unless determined otherwise by University's Representative.

B. Location: As designated by University's Representative.

C. Attending shall be:

1. University's Representative.
2. University.
3. University's consultants and University's Representative's consultants, as appropriate.
4. Contractor.
5. Contractor's Superintendent.
6. Subcontractors, as appropriate.
7. Others, as appropriate.

D. The minutes of these meetings will be prepared by University's Representative and issued as expeditiously as possible to:

1. Contractor (number of copies agreed upon).
2. University's Project Manager (number of copies agreed upon).

E. Contractor shall submit in writing questions and answers (previously obtained verbally) to be confirmed at each meeting in sufficient numbers for distribution to each person in attendance.

1.4 GUARANTEES, BONDS, AND SERVICE AND MAINTENANCE CONTRACTS REVIEW MEETING

A. Eleven months following the date of Beneficial Occupancy, Substantial Completion, if applicable, or Final Completion, whichever occurs earliest, a meeting shall be conducted by University for the purpose of reviewing the guarantees, bonds, and service and maintenance contracts for materials and equipment.

B. Attending shall be:

1. University.
2. University's Consultants, as appropriate.
3. Contractor.
4. Subcontractors, as appropriate.
5. Others, as appropriate.

1.5

END OF SECTION

SECTION 01310
CONTRACT SCHEDULES

1. GENERAL

1.1 PRELIMINARY CONTRACT SCHEDULE

A. Submission:
1. Submit the Preliminary Contract Schedule to University's Representative within 10 days after receipt of Notice of Selection as Apparent Lowest Responsible Bidder.
2. Within 7 days after receipt of the Preliminary Contract Schedule, University's Representative will notify Contractor of its acceptance of, or its review comments about, the schedule so that appropriate adjustments may be made by Contractor in the development of the Contract Schedule.

B. Form:
1. Prepare the Preliminary Contract Schedule as a CPM, time-scaled network diagram showing continuous flow from left to right.
2. Prepare the Preliminary Contract Schedule in sufficient detail to demonstrate preliminary planning for the Work and to represent a practical plan to complete the Work within the Contract Time.
3. Identify the following milestone events on the Preliminary Contract Schedule:
   a. Demolition
   b. Ordering of long lead materials
   b. Layout
   c. Rough Framing
   d. Inspections
   e. Rough MEP and F&LS / Sprinklers
   f. 1 Side Drywall
   g. Insulation
   h. 2nd layer Drywall
   i. T-bar Ceiling
   j. Tape / Sand / Skim
   k. Paint
   l. Measure for Millwork
   m. Interior Finishes – Breakdown into each category
   n. Finish MEP and F&LS / Sprinklers
   o. Testing / Balancing
   p. Final Inspections
   q. Punch / Sign Off
4. Identify all holidays and non-working days on the Preliminary Contract Schedule.

C. Activities: Identify all work activities which constitute the critical path.

1.2 CONTRACT SCHEDULE

A. Submission:
1. Submit the Contract Schedule, in the form and having general content acceptable to University's Representative within 15 days following Notice to Proceed and prior to submitting the first Application for Payment.
2. University's Representative will determine acceptability of the Contract Schedule within 7 days after its receipt.
3. No Application for Payment will be processed nor shall any progress payment become due until the Contract Schedule is accepted by University's Representative.

B. Form:
1. The Contract Schedule shall be a CPM, time-scaled network diagram showing continuous flow from left to right.
2. Identify the following milestone events on the Contract Schedule:
   a. Refer to Article 1.1.B.3 above.
3. Identify all holidays and non-working days on the Contract Schedule.
4. If the Contract Schedule is shown on more than 1 sheet, provide a summary sheet.

C. Activities:
1. Identify all Work activities in correct sequence for the completion of the Work. Work activities shall include the following:
   a. Major Contractor-furnished equipment, materials, and building elements, and scheduled activities requiring submittals or University's prior approval.
      1) Show dates for the submission, review, and approval of each submittal. Dates shall be shown for the procurement, fabrication, delivery, and installation of major equipment, materials, and building elements, and for scheduled activities designated by University.

2) A minimum of 21 days shall be allotted for University's Representative to review each submittal.

b. System test dates.

c. Scheduled overtime Work if required by Contract Documents.

d. Dates Contractor requests designated working spaces, storage areas, access, and other facilities to be provided by University.

e. Dates Contractor requests orders and decisions from University on designated items.

f. Dates Contractor requests University-furnished equipment.

g. Dates Contractor requests University-furnished utilities.

h. Connection and relocation of existing utilities.

i. Connecting to or penetrating existing structures.

j. Scheduled inspections as required by Codes, or as otherwise specified.

2. Identify all Work activities that constitute the critical path.

3. Critical Work activities are defined as Work activities which, if delayed or extended, will delay the scheduled completion of one or more of the milestones specified in this Section or the scheduled completion of the Work, or both. All other Work activities are defined as non-critical Work activities and are considered to have float.

4. Float is defined as the time that a non-critical Work activity can be delayed or extended without delaying the scheduled completion of milestones specified in this Section or the scheduled completion of the Work, or both. Neither Contractor nor University shall have an exclusive right to the use of float. The party using float shall document the effect on the updated Contract Schedule.

5. Delays of any non-critical Work shall not be the basis for an extension of Contract Time until the delays consume the float associated with that non-critical Work activity and cause the Work activity to become critical.

6. The presentation of each Work activity on the Contract Schedule shall include a brief description of the Work activity, the duration of the Work activity in days, and a responsibility code identifying the organization or trades performing the Work activity.

7. Contractor shall furnish cost estimates for each Work activity which cumulatively equal the total contract cost. Mobilization costs may be shown separately; however, other costs, i.e., profit and bond shall be pro-rated throughout all activities.

D. Updating:

1. Review the Contract Schedule with University's Representative once each week to incorporate in the Contract Schedule all changes in the progress, sequences, and scope of Work activities.

2. Prepare and submit to University's Representative an updated Contract Schedule once each month, or as mutually agreed.

a. The updated Contract Schedule shall accurately represent the as-built condition of all completed and in-progress Work activities as of the date of the updated Contract Schedule.

b. The updated Contract Schedule shall incorporate all changes mutually agreed upon by Contractor and University during preceding periodic reviews and all changes resulting from Change Orders and Field Orders.

c. Contractor shall perform the Work in accordance with the updated Contract Schedule. Contractor may change the Contract Schedule to modify the order or method of accomplishing the Work only with prior agreement by University.

3. Contractor shall submit the updated Contract Schedule, in the form acceptable to University's Representative, at least 7 days prior to submitting the Application for Payment.

4. University's Representative will determine acceptability of the updated Contract Schedule within 7 days after its receipt.

5. No Applications for Payment will be processed nor shall any progress payments become due until updated Contract Schedules are accepted by University's Representative.

6. The accepted, updated Contract Schedule shall be the Contract Schedule of record for the period it is current and shall be the basis for payment during that period.

END OF SECTION

SECTION 01340
SHOP DRAWINGS, PRODUCT DATA & SAMPLES

1. GENERAL

1.1 REQUIREMENTS INCLUDED

A. Shop Drawings, Product Data, and Samples, other than in connection with proposed substitutions, shall be submitted to University's Representative only when specifically required; and University's Representative will not review any other such submittals. Product Data and Samples for proposed substitutions shall be submitted to University's Representative in accordance with Section 01630, PRODUCT OPTIONS AND SUBSTITUTIONS. Contractor shall be responsible for obtaining such copies of Shop Drawings, Product Data, and Samples as it may require for its own use.

1.2 RELATED REQUIREMENTS

A. Definitions:

1. The terms "Shop Drawings" and "Product Data" as used herein also include fabrication, erection, layout and setting drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams, all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and the positions thereof conform to the Contract Documents.
2. As used herein, the term "manufactured" applies to standard units usually mass-produced. The term "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements. Shop Drawings shall establish the actual detail of all manufactured or fabricated items, indicate correct relation to adjoining Work, and amplify design details of mechanical and electrical equipment in accurate relation to physical spaces in the structure.

B. Manufacturers' Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed in accordance with a specified product manufacturer's instructions, Contractor shall procure and distribute the necessary copies of such instructions to University's Representative and all other concerned parties; and Contractor shall furnish, install, or perform the Work in strict accordance therewith.

C. Submittal Schedule:

1. A schedule for submission of Shop Drawings, Product Data, and Samples by Contractor (the "Submittal Schedule"), and their processing and return by University's Representative, shall be agreed upon by both parties in order that the items covered by these submittals will be available when needed by the construction process and so that each party can plan its workload in an orderly manner.
2. Contractor shall prepare the Submittal Schedule using a form to be furnished by University's Representative at the Pre-Construction Meeting (see Section 01200, PROJECT MEETINGS) and coordinate it with the Contract Schedule. No submittals will be processed before the Submittal Schedule has been submitted by hand to and accepted by University's Representative, except in such cases where the processing of submittals is required before the acceptance of the Submittal Schedule.
3. In preparing the Submittal Schedule, Contractor shall first determine from the Contract Schedule the date the particular item is needed for the Work. Working backwards, Contractor shall add the required number of days for shipment, time for fabrication, and similar items to determine the date of the first submittal.
4. The Submittal Schedule shall be adjusted to meet the needs of the construction process and Contract Schedule. Submit by hand 2 copies of the Submittal Schedule after it is completed and each time it is updated by Contractor.

1.3 SHOP DRAWINGS

A. Present information required on Shop Drawings in a clear and thorough manner. Identify details by reference to drawing and detail, schedule, or room numbers shown and specified. The room numbers referenced or shown shall be the University-assigned room numbers, which Contractor can obtain from University's Representative.

1.4 PRODUCT DATA

A. Preparation:

1. Clearly mark each copy to identify pertinent products or models.
2. Show performance characteristics and capacities.
3. Show dimensions and clearances required.
4. Show wiring or piping diagrams and controls.

B. Manufacturers' standard schematic drawings and diagrams:

1. Modify the standard schematic drawings and other diagrams to delete information which is not applicable to the Work.
2. Supplement standard information to provide information specifically applicable to the Work.

1.5 SAMPLES

A. Office Samples shall be of sufficient size and quality to clearly illustrate the following:
   1. Functional characteristics of the products, with integrally related parts and attachment devices.
   2. Full ranges of color, texture, and pattern.

B. Field Samples and Mock-Ups:
   1. Erect at the Project site, at a location as directed by University's Representative.
   2. Size: As specified.
   3. Fabricate each Sample and mock-up to be complete and fully finished.
   4. Remove mock-ups at conclusion of Work.

1.6 CONTRACTOR'S REVIEW OF SUBMITTALS

A. Review, mark up as appropriate, and stamp Shop Drawings, Product Data, and Samples prior to submission. Submittals shall clearly show that they have been reviewed by Contractor for conformance with the requirements of the Contract Documents and for coordination of the Work.

B. Determine and Verify:
   1. Field measurements.
   2. Field construction criteria.
   3. Catalog numbers and similar data.
   4. Conformance with Contract Documents.

C. Coordinate each submittal with requirements of the Work and of the Contract Documents.

D. Notify University's Representative in writing, at time of submission, of any changes in the submittals from requirements of the Contract Documents.

E. Begin no fabrication or Work which requires submittals until the return of University's Representative's final reviewed submittals.

1.7 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with the Submittal Schedule and in such sequence as to cause no delay in the Work or in the work of any Separate Contractor.

B. Number of Submittals Required:
   1. Shop Drawings: Submit 1 opaque bond copy (plus additional copies as if specified in technical specifications or requested by University's Representative). After checking, University's Representative will make prints for itself, University and their consultants, and then return the reproducible copy to Contractor. Contractor may make prints as it requires for its use and for Subcontractors' use.
   2. Product Data and Non-Reproducible Submittals: Submit the number of copies which Contractor will need, plus 3 copies which will be retained by University's Representative.
   3. Samples: Submit the number specified in the Section which requires them.

C. Submittals shall contain:
   1. Date of submission and dates of any previous submissions.
   2. Project name and number.
   3. Contract identification.
   4. The names of:
      a. Contractor.
      b. Subcontractor.
      c. Supplier.
      d. Manufacturer.
   5. Identification of the product, with the Specification Section number.
   6. Field dimensions, clearly identified as such.
   7. Relation to adjacent or critical features of the Work or materials.
   8. Reference standards, such as ASTM or Federal Specification numbers.
   9. Identification of changes from requirements of the Contract Documents.
   10. Identification of revisions on resubmittals.
   11. An 8-inch x 3-inch blank space for review stamps.
   12. Contractor's stamp, initialed or signed, certifying to the review of the submittal; verification of materials and field measurements and conditions; and compliance of the information within the submittal with requirements of the Work and of the Contract Documents.

D. Resubmission Requirements:
   1. Shop Drawings and Product Data:
      a. Revise Shop Drawings or Product Data, and resubmit as specified for the initial submittal.
      b. Identify any changes which have been made other than those requested.
      c. Note any departures from the Contract Documents or changes in previously reviewed submittals which were not commented upon by University's Representative.
   2. Samples: Submit new samples as required for initial submittal.

E. Distribution:
   1. Reproduce and distribute copies of Shop Drawings and Product Data, which carry University's Representative's review stamp, to the following locations:
      a. Contractor's Project site file.
      b. Record documents file maintained by Contractor.

c. Separate Contractors.
d. Subcontractors.
e. Supplier or manufacturer.

2. Distribute samples which carry University's Representative's review stamp as directed.

F. University's Representative's Review: University's Representative will review Contractor's submittals, such as Shop Drawings, Product Data, and Samples, for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of Contractor as required by the Contract Documents.

END OF SECTION

SECTION 01400
QUALITY CONTROL

1. GENERAL

1.1 GENERAL

A. Definitions:
   1. The term "University's Testing Laboratory" means a testing laboratory retained and paid for by University for the purpose of reviewing material and product reports and performing other services as determined by University.
   2. The term "Contractor's Testing Laboratory" means a testing laboratory retained and paid for by Contractor to perform the testing services required by the Contract Documents. Contractor's Testing Laboratory shall be an organization other than University's Testing Laboratory and shall be acceptable to University's Representative. It may be a commercial testing organization, the testing laboratory of a trade association, the certified laboratory of a supplier or manufacturer, Contractor's own forces, or other organization. Contractor's Testing Laboratory shall have performed testing of the type specified for at least 5 years.

B. Tests, inspections, and acceptances of portions of the Work required by the Contract Documents or by Applicable Code Requirements shall be made promptly to avoid delay of the Work. Except as otherwise provided, Contractor shall make arrangements for such tests, inspections, and approvals with Contractor's Testing Laboratory. Contractor shall give University's Representative timely notice of when and where tests and inspections are to be made.

C. If such procedures for testing, inspection, or acceptance reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for University's Representative's services and expenses.

D. If University's Representative is to observe tests, inspections, or make acceptances required by the Contract Documents, University's Representative will do so promptly and, where practicable, at the normal place of testing.

E. Do not incorporate into the Work materials represented by samples under test without the written approval of University's Representative.

1.2 CONTRACTOR'S RESPONSIBILITIES REGARDING UNIVERSITY'S TESTING LABORATORY

A. Secure and deliver to University's Testing Laboratory specified quantities of representative samples of materials proposed for use as specified.

B. Submit to University's Testing Laboratory the preliminary design mixes proposed to be used for concrete and other materials which require review by University's Testing Laboratory.

C. Submit copies of product test reports as specified.

D. Furnish incidental labor and facilities:
   1. To provide University's Testing Laboratory access to Work to be tested.
   2. To obtain and handle samples at the Project site or at the source of the product to be tested.
   3. To facilitate inspections and tests.
   4. For storage and curing of test samples.

E. Provide written notice to University's Representative and University's Testing Laboratory 72 hours in advance of operations to allow for assignment of personnel and scheduling of tests.

F. When tests or inspections are not performed after such notice, Contractor shall reimburse University for University's Testing Laboratory personnel and travel expenses incurred.

1.3 TESTS AND INSPECTIONS

A. Certain portions of the Work will be tested and/or inspected at various stages. Nothing in any prior acceptance or satisfactory test result shall govern, if at any subsequent time the Work, or portion thereof, is found not to conform to the requirements of the Contract Documents.

B. Not Used.

1.4 ADDITIONAL TESTING AND INSPECTION

A. If initial tests or inspections made by University's Testing Laboratory or University's Geotechnical Engineer reveal that any portion of the Work does not comply with Contract Documents, or if University's Representative determines that any portion of the Work requires additional testing or inspection, additional tests and inspections shall be made as directed.
   1. If such additional tests or inspections establish that such portion of the Work complies with the Contract Documents, all costs of such additional tests or inspections shall be paid by University.
   2. If such additional tests or inspections establish that such portion of the Work fails to comply with the Contract Documents, all costs of such additional tests and inspections, and all other costs resulting from such failure, including compensation for University's Representative and University's consultants, shall be deducted from the Contract Sum.

1.5 TEST REPORTS

A. University's Testing Laboratory and Contractor's Testing Laboratory shall submit 1 copy of all reports to University's Representative, indicating observations and results of tests and indicating compliance or non-compliance with the Contract Documents.

B. University's Representative will distribute 1 copy of the reports to University, University's Consultants, and Contractor.

1.6 GEOTECHNICAL ENGINEER

A. If applicable, University will retain and pay the expenses of a Geotechnical Engineer to perform inspection, testing, and observation functions specified by University. The Geotechnical Engineer shall communicate only with University and University's Representative. University's Representative will then give notice to Contractor, with a copy to University, of any action required of Contractor.

END OF SECTION

SECTION 01420
INSPECTION OF WORK

1. GENERAL

1.1 ACCESS TO THE WORK

A. In addition to the requirements of the General Conditions, University, University's Representative and their representatives shall at all times have access to the Work wherever it is in preparation or progress and Contractor shall provide safe and proper facilities for such access and for inspection. The inspection and written acceptance of material and workmanship, unless otherwise stated in these Specifications, shall be final except as provided in Article 12.2 of the General Conditions.

1.2 TESTING AND APPROVAL

A. In addition to the requirements of the General Conditions, if any law, ordinance or public authority or the Specifications or University's Representative's instructions require any work to be specially tested or approved (including use of ionizing radiation for radiography), Contractor shall give University's Representative timely notice of its readiness for inspection, and if the inspection is by another authority than University's Representative, of the date fixed for such inspection.

B. Re-examination of questioned work may be ordered by University's Representative.

1.3 UNIVERSITY'S INSPECTORS

A. University shall supply personnel, reporting to University's Representative, who shall observe construction in progress. Inspectors shall have the following responsibilities and limitations on authority:

1. Act under the direction of University's Representative.
2. Observe installations and work in progress as a basis for determining conformance of the work, materials and equipment with the Construction Documents. Inspector will report any discrepancies observed to University's Representative and Contractor. Only University's Representative has the authority to make approvals or rejections.
3. Only University's Representative shall interpret the requirements of the Construction Documents. If any item is ambiguous, University's Representative shall make a written interpretation. If Contractor requests changes or modifications to the Construction Documents, University's Representative shall make a written determination on the requested changes or modifications.
4. Prepare and submit an inspection report to University's Representative for each inspection performed.
5. Review the monthly progress payment request before Contractor submits it to University's Representative.
6. Assist University's Representative in reviewing the test and inspection results of testing laboratories.
7. The Inspector is not authorized to permit deviations from the requirements of the Contract Documents unless such deviation has been approved by University's Representative in writing.
8. The Inspector is not authorized to advise on or issue directions to Contractor about any aspect of construction means, methods, techniques, sequences or procedures, or relating to safety programs in connection with the Project.

B. The failure of University, University's Representative and its representatives and consultants, or University's Inspector to observe or inspect the Work, or to detect deficiencies in the Work, or to inform Contractor of any deficiencies which may be discovered, shall not relieve Contractor, its subcontractors regardless of tier, or suppliers from their responsibility for construction means, methods, techniques, sequences and procedures, construction safety, nor from their responsibilities to carry out the work in accordance with the Contract Documents and to detect and correct defective work. The term "defective work" means work that is unsatisfactory, faulty, omitted, incomplete, deficient, or does not conform to the requirements of the Contract Documents, directives of University's Representative, or the requirements of any inspection, reference standard, test, or approval specified in the Contract Documents, or has been damaged prior to final completion, unless responsibility for the protection of such work has been assumed by University through beneficial occupancy in accordance with Article 9.6 of the General Conditions or through substantial completion in accordance with Article 9.7 of the General Conditions.

1.4 INSPECTION REQUESTS

A. Contractor shall request inspection of completed portions of the Work through University's Representative at least 72 hours in advance of the inspection to be performed. Contractor shall submit said request for inspection using a form to be furnished by University's Representative at the Pre-Construction Meeting (see Section 01200, PROJECT MEETINGS).

B. For each inspection request received from Contractor for which University's Representative determines that such work is not ready for inspection, University will backcharge Contractor the amount of ($75.00) per hour as partial compensation for the University's Inspector's time spent to respond to the unnecessary request.

END OF SECTION

SECTION 01500
CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

1. GENERAL

1.1 PROTECTION OF EXISTING STRUCTURES AND UTILITIES (Refer also to General Conditions)

A. The Drawings show, if applicable, existing above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, hot water, and other utilities which are known to University.

B. Locate all known existing utility installations before proceeding with construction operations which may cause damage to such installations. The existing installations shall be kept in service where shown and damage shall be repaired with no adjustment of Contract Sum.

C. If any other structures or utilities are encountered, request University's Representative to provide direction on how to proceed with the Work.

D. If any structure or utility is damaged, take immediate action to ensure the safety of persons and property.

E. Shoring:

1. General Protection. Pursuant to Labor Code Sections 6705 and 6707, Contractor shall include in its base bid all costs incident to the provision of adequate sheeting, shoring, bracing or equivalent method for the protection of life and limb which shall conform to the applicable Federal and State Safety Orders.
2. Before beginning excavation five feet or more in depth, Contractor shall submit to University's Representative a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. The proposed plan shall comply with the standards established by the California Construction Safety Order and Title 24 of the California Code of Regulations (CCR). If the detailed plan varies from such shoring system standards, it shall be prepared by a registered civil or structural engineer whose name and registration number shall be indicated on the drawing. If a dispute arises as to whether the plan must be prepared by a registered civil or structural engineer, University's Representative's determination of the matter shall be final and conclusive on Contractor and University. The cost of any required engineering services shall be borne by Contractor and shall be deemed to have been included in the Contract Sum.
3. Neither the review nor approval of any plan showing the design of shoring, bracing, sloping, or other provisions for worker protection shall relieve Contractor from its obligation to comply with Construction Safety Orders Standards and CCR, Title 24, for the design and construction of this protective Work, and Contractor shall indemnify University and University's Representative from any and all claims, liability, costs, actions and causes of action arising out of or related to the failure of these protective systems. Contractor shall defend University and its officers, employees, and agents, and University's Representative in any litigation of proceeding brought with respect to the failure of these protective systems.
4. Comply with State of California Construction Safety Orders, Article 6 - Excavations, Trenches, Earthwork – whether or not the excavation, trench, or earthwork is five feet or more in depth.

1.2 INTERRUPTION OF UTILITIES/BUILDING SERVICES

A. Maintain continuous utility services to all existing facilities during the period of construction except for the following conditions:

1. Perform Work that involves "shut-down" of existing facilities at such times as will cause the least inconvenience to the University activities, performing at night, on Saturdays, Sundays, holidays and at the discretion of University's Representative. Furnish University's Representative written notice of exact date and time of "shut-down" at least 15 working days in advance, unless a longer period is specified or shown on the Drawings. On jobs with short performance time, Contractor shall verify with University's Representative the number of days required in advance for shut-down.
2. Include in Contractor's bid the cost of overtime necessary for the Work. No extra payment will be allowed for overtime to meet this requirement or the Contract Schedule.

END OF SECTION

SECTION 01510
TEMPORARY UTILITIES

1. GENERAL

1.1 DESCRIPTION

A. Provide and maintain temporary utilities for construction operations and related necessary temporary structures. Remove them when they are no longer needed.

B. Pay for connections for water and electricity to Project site sources.

C. University does not guarantee amounts of water and electricity available from existing University's sources, nor will University be responsible for interruptions in service.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

A. Install and use temporary utilities in accordance with requirements specified in Section 01060, REGULATORY REQUIREMENTS, and all Applicable Code Requirements.

2. MATERIALS

2.1 GENERAL

A. Materials may be new or used, but shall be adequate for the required purposes. Their use and methods of installation shall not create unsafe conditions or violate requirements of applicable codes and requirements.

2.2 TOILET FACILITIES

A. Toilet facilities for use by workers on the job or other personnel of Contractor will be provided by University in existing toilet facilities; these shall be used for toilet purposes only and not for disposal of materials or cleaning of tools.

2.3 TEMPORARY TELEPHONE

A. Telephone service will not be provided by University, except in case of emergency involving life and safety. Contractor shall use the public pay phones available on campus or, after coordinating with University's Representative, make arrangements with the telephone company for temporary telephone service.

2.4 TEMPORARY ELECTRIC SERVICE

A. University will furnish electric power for construction purposes at no cost to Contractor.

1. The characteristics of current furnished by University are limited to that existing and available. If current of other characteristics or quantity is required by Contractor, it shall supply the power as necessary at no extra cost to University.
2. All parts of the permanent electrical system used for construction purposes shall be operated in a manner so as to ensure the safety of all personnel and to prevent interference with the orderly progress of the Work.
3. Contractor shall repair and make good all damage to existing electrical facilities caused by Contractor's use, as requested and approved.

B. Furnish, install and maintain all temporary electrical equipment and connections (including, without limitation, conduit and wires, drops, circuit breaker and disconnect switches) as necessary for the Work.

C. Service connections shall be made by Contractor to the existing electrical distribution system at the following point(s) of connection:

1. Power for small tools and lighting may be taken from the existing 120 Volt 60 Hz 1-phase convenience receptacles in the building.
2. Power for larger equipment may be taken directly from the existing 208Y/120V 3-phase 4-wire lighting panelboard on the same floor of this Project.

D. The load connected to any circuit shall not exceed 25% of the circuit or feeder capacity as labeled in the panelboard.

E. There shall be no disturbance to building occupants and functions. Cables and conductors shall not prevent closing of fire labeled doors.

F. Before final acceptance, all temporary equipment and connections installed by Contractor shall be removed in a manner approved by University's Representative.

2.5 TEMPORARY WATER

A. Water service outlet shall be provided at locations where shown and as approved. Contractor shall furnish, install and maintain necessary temporary supply connections, piping, fittings, etc., as necessary for the Work. Before final acceptance, all temporary connections and piping installed by Contractor shall be removed in a manner approved by University's Representative. Water will be provided by University at Contractor's expense.

1. Contractor shall furnish and install a double check valve assembly, water meter, and pressure regulator, approved by University's Representative, at the point of connection to University's water system.

2.6 TEMPORARY FIRE PROTECTION

A. Provide and maintain fire protection equipment including extinguishers, fire hoses, and other equipment as necessary for complete fire protection during the course of the Work.

1. Install a reduced pressure type backflow device, approved by University's Representative, at point of connection to University's water system.

B. Use fire protection equipment only for fighting fires.

2.7 TEMPORARY HEAT AND VENTILATION

A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to meet specified minimum conditions for installation of materials; and to protect equipment, materials, and finishes from damage due to temperature or humidity.

B. Provide adequate forced ventilation of enclosed areas to cure installed materials, to prevent excessive humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.

3. EXECUTION

3.1 GENERAL

A. Comply with applicable requirements specified in Section 01060, REGULATORY REQUIREMENTS, DIVISION 15 - MECHANICAL and in DIVISION 16 - ELECTRICAL.

B. Maintain and operate systems to provide continuous service.

C. Modify and extend systems as required.

3.2 REMOVAL AND RECONDITIONING

A. Remove all temporary services installed as a requirement of the Contract Documents. Restore utilities to their original condition at the completion of the Work.

B. Legally and properly dispose of all debris resulting from removal and reconditioning operations.

END OF SECTION

SECTION 01560
ENVIRONMENTAL MITIGATION

1. GENERAL

1.1 DUST CONTROL, AIR POLLUTION AND ODOR CONTROL

A. Contractor shall employ measures to prevent the creation of dust, air pollution and odors.

1. Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment as defined in Air Quality Management District (AQMD) Rule 403 to eliminate dust formation.
2. All volatile liquids including fuels or solvents shall be stored in closed containers.
3. No open burning of debris, lumber or other scrap will be permitted.
4. Equipment shall be maintained in a manner to reduce gaseous emissions.
5. Use alternative fuel construction equipment (i.e., compressed natural gas, liquid petroleum gas, unleaded gasoline) and low-emission diesel construction equipment to the extent that the equipment is readily available and cost effective.
6. Stockpiles of excavated materials shall be covered with material approved by University's Representative.
7. Refer to Section 01710, CLEAN-UP & DISPOSAL, Paragraph 3.1.B, for silt clean up.
8. Comply with SCAQMD Rule 403.

1.2 NOISE CONTROL

A. The following noise control procedures shall be employed:

1. Maximum Noise: The Contractor shall use equipment and methods during the course of this work that are least disruptive to adjacent offices or residences. Noise levels for trenchers, graders, trucks and pile drivers shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.
2. Equipment. Jack hammers shall be equipped with exhaust mufflers and steel muffling sleeves. All diesel equipment shall have exhaust muffled. Air compressors shall be of a quiet type such as a "whisperized" compressor.
3. Operations: Machines shall not be left idling. Electric power shall be used in lieu of internal combustion engine power wherever possible. Equipment shall be maintained to reduce noise from vibration, faulty mufflers, or other sources.
4. Scheduling: Noisy operations shall be scheduled so as to minimize their disturbance to occupied adjacent areas and duration at any given location.

END OF SECTION

SECTION 01600
MATERIAL & EQUIPMENT

1. GENERAL

1.1 TRANSPORTATION AND HANDLING

A. Deliver manufactured products in their original unbroken containers or bundles, clearly labeled with manufacturer's name, brand, and grade seal or model number.

B. Keep materials clean, dry, and undamaged. Handle materials and equipment in a manner to avoid damage to products and their finishes.

C. Promptly remove damaged or defective products from the Project site and replace with no adjustment of Contract Sum.

1.2 STORAGE AND PROTECTION

A. Store manufactured products in accordance with manufacturers' instructions and with seals and labels intact and legible.

1. Store products subject to damage by the elements in weathertight enclosures.
2. Maintain temperature and humidity in accordance with manufacturers' recommendations (refer to Section 01510, TEMPORARY UTILITIES).

B. Exterior Storage:

1. Store materials and equipment above ground on blocking or skids to prevent soiling, staining, and damage.
2. Cover products which are subject to damage by the elements with impervious protective sheet coverings. Provide adequate ventilation to prevent condensation.
3. Store sand, rock, or aggregate material in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. Arrange storage to allow adequate inspection.

D. Periodically inspect stored products to assure that products are maintained under specified conditions and are free from damage and deterioration.

E. Use of mechanical and electrical rooms for storage of materials or furniture is prohibited.

F. Protection After Installation:

1. Prevent damage to materials and equipment.
2. Use whatever protective materials or methods are necessary to prevent damage to installed products from traffic, construction operations, and weather. Remove protection when no longer required.
3. Maintain temperature and humidity conditions in interior spaces for the Work in accordance with manufacturers' instructions for the materials and equipment being protected.

1.3 UNDERWRITERS LABORATORIES, INC. (UL) LABEL

A. Materials and equipment, for which UL standards have been established and their label service is available, shall bear the appropriate UL Label.

1.4 MANUFACTURERS' TRADE MARKS AND NAMES

A. University's Representative reserves the right to review and request the removal or redesign of manufacturers' trade marks and names on items of materials and equipment which will be exposed to view in the completed Work. Such removal or redesign shall be with no adjustment of Contract Sum.

END OF SECTION

SECTION 01630
PRODUCT OPTIONS & SUBSTITUTIONS

1. GENERAL

1.1 GENERAL PROVISIONS REGARDING SPECIFICATION OF PRODUCTS, MATERIAL OR EQUIPMENT BY BRAND OR TRADE NAME

A. Products, material or equipment specified by both brand or trade name and model number are approved for use, provided that Contractor complies with all Contract requirements. Specification of a product, material or equipment by brand or trade name and model number is not a representation or warranty that the product, material or equipment can be used without modification, to meet the requirements of the plans and specifications; Contractor shall, at its sole cost, modify such products, material, or equipment so that they comply with all requirements of the plans and specifications.

B. The first-named product, material or equipment specified by brand or trade name and model number is the basis for the Project design and the use of any item other than the first-named one may require modifications of that design. If Contractor uses any product, material or equipment other than the first-named one, Contractor shall, at its sole cost:

1. Make all revisions and modifications to the design and construction of the Work necessitated by the use the product, material or equipment.
2. Be responsible for all costs of any changes resulting from the use of the product, material or equipment including costs or changes which affect other parts of the Work, the work of Separate Contractors, or any other property or operations of University.

C. When a product, material or equipment specified by brand or trade name is followed by the words “or equal,” a substitution may be permitted if the substitution is equal to or superior to the first-named product, material or equipment in quality, utility and appearance, and if the substitution complies with all other requirements of the plans and specifications.

D. A product, material or equipment specified by brand or trade name followed by the words “or equal, no known equal,” signifies that University does not have sufficient knowledge to specify a product, material or equipment, other than the one specified by brand or trade name, that is suitable for use on the Project. The use of the words "no known equal" is not intended to discourage substitution requests in accordance with the requirements specified herein.

E. When catalog numbers and specific brands or trade names not followed by the designation "or equal" are used in conjunction with a product, material or equipment required by the specifications, substitutions will not be allowed and the named product, material or equipment must be used.

F. Specification of a product, material or equipment by brand or trade name and model number is not a representation or warranty that the product, material or equipment is available; Contractor shall confirm, prior to submitting its Bid, the availability of any product, material or equipment specified by brand or trade name and model number.

1.2 SPECIAL REQUIREMENTS FOR PRODUCTS, MATERIAL OR EQUIPMENT, OTHER THAN THE FIRST-NAMED PRODUCT, MATERIAL OR EQUIPMENT, SPECIFIED BY BOTH BRAND OR TRADE NAME AND MODEL NUMBER.

A. In addition to complying with all other submittal requirements of the Contract, submit within 70 days after the date of commencement specified in the Notice to Proceed, for review and approval by University's Representative, Contractor-prepared specifications and drawings, including design and engineering calculations, prepared by an appropriate licensed professional, depicting all revisions and modifications to the design and construction of the Work necessitated by the use of the product, material or equipment. If no revisions or modifications are necessary, submit within 70 days after the date of commencement specified in the Notice to Proceed, a written representation that no revisions or modifications to the design or construction of the Work are necessitated by the use of the product, material or equipment. Contractor shall utilize the first-named product, material or equipment if Contractor fails to make the appropriate required submittal pursuant to this paragraph within the 70-day period.

B. A product, material or equipment, other than the first-named product, material or equipment, specified by both brand or trade name and model number may be used if no revisions or modifications to the design or construction of the Work are necessitated by the use of the product, material or equipment. If such revisions or modifications are necessary, the product, material or equipment may be used only if the revisions or modifications are approved in writing by University's Representative. Contractor has the burden of demonstrating, through the procedures specified herein, that any such revisions or modifications will not be detrimental to the quality, utility or appearance of the Project or any portion of the Project. The University's Representative may refuse to approve any such proposed revisions or modifications where, in the reasonable opinion of University's Representative, Contractor has failed to demonstrate, through the procedures specified herein, that the revisions or modifications are not detrimental to the quality, utility or appearance of the Project or any portion of the Project.

1.3 SPECIAL REQUIREMENTS FOR SUBSTITUTIONS

A. In addition to complying with all other submittal requirements of the Contract, submit written data demonstrating that the proposed substitution is equal to or superior to the first-named product, material or equipment in quality, utility and appearance and otherwise complies with all requirements of the plans and specifications, including:

1. Complete technical data including drawings, performance specifications, samples, and test reports of the article proposed for substitution.
2. Statement by Contractor that the proposed substitution is in full compliance with the requirements of the Contract Documents and Applicable Code Requirements.
3. List of Subcontractors, if any, that may be affected by the substitution.
4. Contractor-prepared specifications and drawings, including design and engineering calculations, prepared by an appropriately licensed professional, depicting all revisions and modifications to the design and construction of the Work necessitated by the use of the substitution. If no revisions or modifications are necessary, submit a written representation that no revisions or modifications to the design or construction of the Work are necessitated by the use of the product, material or equipment.

B. At the request of and within the timeframes specified by University's Representative:
1. Submit samples as deemed necessary by University's Representative to evaluate the proposed substitution.
2. Submit proposed substitution to tests deemed necessary by University's Representative to evaluate the proposed substitution. Such tests shall be made by an independent Testing Laboratory and at the sole expense of Contractor, after review and approval of the test procedures by University's Representative. If re-testing is deemed necessary by University's Representative to evaluate the proposed substitution, such re-testing shall be made by an independent Testing Laboratory at the sole expense of the Contractor.
3. Provide all additional information deemed necessary by University's Representative to evaluate the proposed substitution.

C. If University's Representative, in reviewing a proposed substitution, requires revisions or corrections to be made to previously accepted shop drawings and supplemental supporting data to be resubmitted, Contractor shall do so within the time period specified by University's Representative. A proposed substitution may be rejected if Contractor fails to submit such revisions, corrections, or supplemental supporting data within the specified time period.

D. Except for products, material or equipment designated in the Bidding Documents for evaluation of substitutions prior to award, requests for substitution, including the data required by Paragraph 1.3.A herein, must be submitted to University's Representative not later than 35 days after the date of commencement specified in the Notice to Proceed. No requests for substitutions of products, material or equipment subject to the 35-day deadline shall be considered unless the request and supporting data is submitted on or before the deadline, except those deemed, in University's Representative's sole opinion, to be necessary because (i) previously specified or approved manufactured products, material or equipment are no longer manufactured, (ii) of University initiated change orders, or (iii) it is in the best interest of University to accept such substitution.

E. If a product, material or equipment is designated in the Bidding Documents for evaluation of substitutions prior to award, then a request for substitution of the product, material or equipment, including the data required by Paragraph 1.3.A herein, must be submitted by the deadline specified in the Bidding Documents. Because of time constraints, only one submittal will be allowed for each such substitution request. Requests for substitutions of products, material or equipment designated for evaluation prior to award may not be made after the deadline specified in the Bidding Documents, and such requests be shall not be considered unless the request and supporting data is submitted on or before the deadline specified in the Bidding Documents. Notwithstanding the forgoing, University may consider, after award of the Contract, requests for substitution of a product, material or equipment designated for evaluation prior to award where, in University's Representative's sole opinion, a substitution is necessary because (i) previously specified or approved manufactured products, material or equipment are no longer manufactured, (ii) of University initiated change orders, or (iii) it is in the best interest of University to accept such substitution.

F. In reviewing the supporting data submitted for substitutions, University's Representative will use, for purposes of comparison, all the characteristics of the specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Specifications. If more than 2 submissions of supporting data are required, the cost of reviewing the additional supporting data shall be at Contractor's expense.

G. Contractor has the burden of demonstrating, through the procedures specified herein, that its proposed substitution is equal to or superior to the first-named product, material or equipment in quality, utility and appearance and complies with all other requirements of the plans and specifications. If revisions or modifications to the design or construction of the work are necessitated by the use of the substitution, Contractor also has the burden of demonstrating, through the procedures specified herein, that the use of the substitution will not be detrimental to the quality, utility or appearance of the Project or any portion of the Project.

H. The University's Representative may refuse to approve any requested substitution where, in the reasonable opinion of University's Representative, Contractor has failed to demonstrate, through the procedures specified herein, that the proposed substitution is equal to, or superior to, the first-named product, material or equipment, in quality, utility and appearance and that the proposed substitution complies with all other requirements of the plans and specifications.

I. University's Representative may reject any substitution not proposed in the manner and within the time limits prescribed herein.

J. Substitutions are not allowed unless approved in writing by University's Representative. Any such approval shall not relieve Contractor from the requirements of the Contract Documents.

K. The 35-day and 70-day submittal periods do not excuse Contractor from completing the Work within the Contract Time or excuse Contractor from paying liquidated damages if Final Completion is delayed.

L. If revisions or modifications to the design or construction of the Work are necessitated by the use of a substitution, the substitution may be used only if the revisions and modifications are approved in writing by University's Representative. The University's Representative may refuse to approve any such proposed revisions or modifications where, in the reasonable opinion of University's Representative, Contractor has failed to demonstrate, through the procedures specified herein, that the revisions or modifications are not detrimental to the quality, utility and appearance of the Project or any portion of the Project.

M. If a substitution request is finally rejected by University Representative, Contractor shall furnish and install:

1. the first-named product, material, or equipment; or
2. a product, material, or equipment, other than the first-named product, material or equipment, specified by both brand or trade name and model number, provided Contractor complies with the submittal requirements (including deadlines) specified in Paragraph 1.2 herein.

END OF SECTION

SECTION 01710
CLEAN UP & DISPOSAL

1. GENERAL

1.1 DESCRIPTION

A. Clean up and disposal.

2. PRODUCTS (Not Applicable)

3. EXECUTION

3.1 CONTINUOUS CLEAN UP

A. Under no circumstances shall rubbish, debris, waste, dust, dirt, or surplus materials be allowed to accumulate in the building, or on the Project site, and all such shall be removed continually as the Work progresses and by the end of each day's Work.

1. Materials: In occupied building areas, only sufficient materials and flammable or toxic substances necessary for the Work being performed that day or shift shall be brought into the building and work areas. In no case shall flammable or toxic substances be stored in the building, and these substances shall be immediately removed from the building when not needed and not later than the end of the day's Work.
2. Splatterings or spills of materials shall be promptly cleaned up at time of occurrence.

B. Contractor shall provide street sweeping whenever silt from construction site is carried over to adjacent public thoroughfares.

3.2 FINAL CLEAN UP

A. University's Representative's Inspection: Notify University's Representative at least 24 hours in advance of readiness for inspection. Any deficient cleaning operations, as determined by University's Representative, shall be immediately corrected as approved at Contractor's expense.

B. Interior surfaces and areas where Work is performed shall be left in vacuum clean condition with all dust, dirt, stains, handmarks, paint spots, plaster droppings, and other blemishes and defects completely removed. To the extent of Contractor's operations, use or materials, the following requirements apply to all areas where Work is performed:

1. Walls: Bare and painted surfaces shall be cleaned and free of dust, lint, streaks, or stains.
2. Hardware and metal surfaces shall be cleaned and polished using non-corrosive and non-abrasive materials.
3. Glass: New glass and soiled existing glass shall be washed and polished both sides and left free of dirt and spots. Labels shall be removed.
4. Ceilings shall be clean and free of stains, handmarks, and defacing.
5. Fixtures and Equipment: New mechanical and electrical fixtures and like items shall be cleaned and polished. Lighting fixtures shall be free of dust, dirt, stains, or waste material. Equipment and machinery shall be cleaned, serviced, and ready for use. Existing items shall be cleaned as required including ventilating supply and return equipment in walls and ceilings.
6. Surfaces not mentioned shall be cleaned according to the intent of this Section and as required for University's Representative's approval.

3.3 DISPOSAL

A. Under no circumstances shall debris, rubbish, or waste material be disposed of on University's property by burying or otherwise, and all shall be removed from University's property to a legal disposal area. Contractor shall bear all dumping charges.

B. Contractor is prohibited from cleaning out buckets, containers, and tools contaminated with paints, plaster, or any other materials in University storm drains.

3.4 CORRECTIVE WORK

A. Where existing Work has been dirtied, stained, defaced, or otherwise made defective and cleaning operations are not satisfactory, as determined by University's Representative, Contractor shall remove the Defective Work and install new Work as requested and approved, at no extra cost to University.

3.5 CLEAN UP SPECIFIED IN OTHER SECTIONS

A. Any clean up specified in other Sections of these Specifications shall be in addition to, and not in lieu of, these requirements.

END OF SECTION

SECTION 01720
CONTRACTOR'S AS-BUILT DOCUMENTS

1. GENERAL

1.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store Contractor's as-built documents and Samples in Contractor's field office separate from documents used for construction.

B. Maintain as-built documents in order and in a clean, dry, legible condition.

C. Do not use as-built documents for construction.

1.2 AS-BUILT DOCUMENTS

A. University's Representative will, at no cost, provide Contractor with a set of reproducible Drawings of the original Contract Documents, which shall be used for recording the "as-built" condition of the Work.

B. As-Built Drawings: Record the following kinds of information on the As-Built Drawings:

1. Locations of Work buried under or outside the building, such as plumbing and electrical lines and conduits. Provide horizontal and vertical dimensions from fixed points.
2. Actual numbering of each electrical circuit.
3. Locations of all HVAC, plumbing and electrical Work concealed inside the building; and other work that is changed by Contractor from that shown on the Drawings.
4. Locations of all items, not necessarily concealed, which vary from the locations shown on the Drawings.

C. The following requirements for As-Built Drawings are in addition to those specified elsewhere:

1. They shall be done carefully and neatly by a competent drafter, familiar with the Work involved, using methods acceptable to University's Representative.
2. They shall be kept up to date during the entire progress of the Work and made available to University's Representative at any time.
3. Additional drawings shall be provided as required to accurately describe changes.
4. Record all changes in size, location, and other features of installation shown on the Drawings.
5. Record all locations of underground Work, points of connection, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
6. Record sufficient information such that Work concealed in the building may be located with ease and accuracy. This may be accomplished by dimensioning or by stating the relationship to the spaces in the building near which the Work was installed. University's Representative's decision on what constitutes sufficient information shall be final.

D. Shop Drawings: Provide final Shop Drawings which have been updated to show actual conditions, for Work specified in the individual Sections.

E. Specifications and Addenda:

1. Record the following:
   a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
   b. Changes made by Addenda, Change Order, or Field Order, and clarifications and interpretations made by Letter of Instruction.

END OF SECTION

SECTION 01740
GUARANTEES, WARRANTIES, BONDS, SERVICE & MAINTENANCE CONTRACTS

1. GENERAL

1.1 GENERAL

A. Guarantees from Subcontractors shall not limit Contractor's warranties and guarantees to University. Whenever possible, Contractor shall cause warranties of Subcontractors to be made directly to University. If such warranties are made to Contractor, Contractor shall assign such warranties to University prior to final payment.

1.2 FORM OF GUARANTEE

A. Submit written guarantees in the form contained at the end of this Section.

1.3 SUBMITTAL REQUIREMENTS

A. Assemble required guarantees, bonds, and service and maintenance contracts.
B. Number of original signed copies required: 2 each.
C. Table of Contents: Neatly typed and in orderly sequence. Provide complete information for each item as follows:
   1. Product or Work item.
   2. Firm name, address, and telephone number; and name of principal.
   3. Scope.
   4. Date of beginning of guarantee, bond, or service and maintenance contract.
   5. Duration of guarantee, bond, or service and maintenance contract.
   6. Contractor's name, address, and telephone number; and name of responsible principal.
   7. Provide information for University's personnel:
      a. Correct procedure in case of failure.
      b. Circumstances which might affect the validity of guarantee or bond.

1.4 FORM OF SUBMITTALS

A. Prepare in duplicate packets.
B. Format:
   1. Size 8½-inch x 11-inch sheets punched for 3-ring binder. Fold larger sheets to fit into binders.
   2. Identify each packet on the cover with typed or printed title "GUARANTEES AND BONDS," and the following:
      a. Title of Project.
      b. Name of Contractor.
C. Binders: Commercial quality, 3-ring, with durable and cleanable plastic covers.

1.5 TIME OF SUBMITTALS

A. Within 10 days after the date of Substantial Completion, and prior to request for final payment.
B. For Work activities, where Final Completion is delayed materially beyond the date of Substantial Completion, provide updated submittal within 10 days after Final Completion, listing the date of Final Completion as the start of the Guarantee To Repair Period.

1.6 SUBMITTALS REQUIRED

A. Submit guarantees, bonds, and service and maintenance contracts specified in the individual Sections.

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GUARANTEE

Date: _____

Project Name: _____

_____ _____
Project Number Order Number

Project Location: _____

GUARANTEE FOR _____ (the "Contract"), between The Regents of the
(Specification Section); Contract No.

University of California ("University") and _____("Contractor").

_____ hereby guarantees to University
(Name of Subcontractor)

that the portion of the Work described as follows:

_____

_____

which it has provided for the above referenced Project, is of good quality; free from defects; free from any liens, claims, and security interests; and has been completed in accordance with Specification Section _____ and the other requirements of the Contract.

The undersigned further agrees that, if at any time within _____ months after the date of the guarantee the undersigned receives notice from University that the aforesaid portion of the Work is unsatisfactory, faulty, deficient, incomplete, or not in conformance with the requirements of the Contract, the undersigned will, within 10 days after receipt of such notice, correct, repair, or replace such portion of the Work, together with any other parts of the Work and any other property which is damaged or destroyed as a result of such defective portion of the Work or the correction, repair, or replacement thereof; and that it shall diligently and continuously prosecute such correction, repair, or replacement to completion.

In the event the undersigned fails to commence such correction, repair, or replacement within 10 days after such notice, or to diligently and continuously prosecute the same to completion, the undersigned, collectively and separately, do hereby authorize University to undertake such correction, repair, or replacement at the expense of the undersigned; and Contractor will pay to University promptly upon demand all costs and expenses incurred by University in connection therewith.

SUBCONTRACTOR

Signed: _____ Title: _____

Typed Name: _____

Name of Firm: _____

Contractor
License Number: _____

Address: _____

_____

Phone Number: _____

CONTRACTOR

Signed: _____ Title: _____

Typed Name: _____

Name of Firm: _____

END OF SECTION

SECTION 02060

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

1.01 DESCRIPTION OF WORK

A. General: The Work to be completed under this Contract shall be as shown, documented and set forth in the Contract Documents.

1. The scope and demolition is defined in the Specifications and indicated on the Drawings. As defined in the Specifications, majority of the space shall be demolished with specific components salvaged, protected, stored and inventoried. Drawings reflect approximate extent of existing Tenant construction. Contractor is responsible for touring all levels of the existing space to determine existing conditions.

2. This Contractor shall have the overall responsibilities for all of the Work specified here in Section 02060. All Work normally defined as “Architectural Finish” and as listed as “Base Space Demolition” shall be completed by this Demolition Contractor. All Work normally defined as “Mechanical Systems” and as listed “Mechanical Space Demolition” shall be completed by a Mechanical Contractor under contract with this Contractor. All Work normally defined as “Electrical System” and as listed “Electrical Space Demolition,” shall be completed by an Electrical Contractor under contract with this Contractor.

B. Base Space Demolition: Demolition includes, but is not necessarily limited to, the following:

1. Refer to Drawings for areas of demolition.

2. Contractor shall review during the bid phase and include within the bid to remove old and abandoned wiring, cables, straps and duct that are above the ceiling.

C. Structure: Cut floor slab for new openings. Requires X-raying of decks to ensure avoidance of rebar and electrical conduit.

D. Mechanical Space Demolition: Prior to all mechanical demolition, Contractor shall consult building engineer. (Refer to Drawings and other Specification Sections for additional requirements.)

E. Electrical Space Demolition: All non-reusable data, phone and power wiring shall be removed above the ceiling and back to termination. It is mandatory that the building engineer and data/phone representative be contacted before commencement of such removal for verification purposes. (Refer to Drawings and other requirements in this Section for special conditions.)

F. Salvage: The following items shall be carefully removed and stored neatly in area shown on the Drawing or as directed by the University Representative.

1. Refer to Drawings

G. Codes: Conform to codes and requirements of governing authority.

1. Obtain and pay for all permits for demolition; protection of the public and property; transportation and disposal of debris; and capping of utility services.

1.02 SUBMITTALS

A. Schedule: Submit proposed methods and operations of building demolition to University Representative for review prior to start of work. Include in schedule coordination for shut-off, capping and continuation of utility services.

1. Permits and notices authorizing demolition.
2. Certificates of severance of utility services.
3. Permit for transport and disposal of debris.

A. Provide a detailed sequence of demolition and removal work to ensure uninterrupted progress of University's operations.

1.03 JOB CONDITIONS

A. The demolition subcontractor and the General Contractor's representative will walk through the premises with University Representative for verification of work prior to commencement.

B. University Representative to determine which materials are to be salvaged for reuse.

C. Occupancy: Current tenants will continue to occupy the floors above, below and within the floor space.

1. The Contractor is advised that the existing Tenants are and will continue to occupy portions of the existing floor space adjacent to the Work to be completed.

D. Condition of existing materials: The University assumes no responsibility for actual condition of structures to be demolished.

1. Do not scale drawings, the Contractor is to verify all conditions (i.e. existing corridor locations and dimensions, existing door types and locations, lighting, floor and wall finish locations, etc.) in the field.

E. Protections: Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent occupied space, other facilities and persons.

F. Damages: Promptly repair damages caused to adjacent facilities by demolition operations at no cost to the University.

G. Utility Services: Maintain existing utilities indicated to remain, keep in service and protect against damage during demolition operations. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the University Representative.

H. Special Mechanical System Requirements: The base building ventilation system will remain active at all times. This Contractor shall furnish and install impervious coverings over all return air openings. This Contractor shall close down the damper and fire damper at the core. After the completion of the Work, the Contractor shall be responsible for reactivating all of the dampers.

1. Provide disposable filters for supply air at each main air handler. Filters shall be changed out weekly during all demolition work.

I. Freight Elevator Use: Refer to Division I and Exhibit A.

PART 2 - PRODUCTS

2.01 MATERIALS (Property of the Contractor)

A. All items not otherwise listed or noted as property if the University in this Specification or on the Drawings, become the property of the Contractor.

B. Immediately remove all such items or debris from the site as demolition occurs.

2.02 DUSTPROOF BARRIER

A. Erect an approved barrier where indicated before starting any demolition or construction. Seal in seams and connections to existing construction, walls, ceilings, and areas where the University's personnel and equipment will be in operation during construction. The dustproof integrity of the barrier shall be maintained throughout the work.

PART 3 - EXECUTION

3.01 DEMOLITION

A. General Demolition Requirements: All items that are to be reused, shall be stored in a protected area within the Tenant's premises. The intent is to reinstall all reusable items removed.

1. The General Contractor shall remove all wall conduits left after wall demolition, including switch boxes, plates, bridges or any other telephone/electrical wiring or equipment or as otherwise directed by University Representative or the Electrical Contractor.

2. The General Contractor shall remove all existing wall coverings, shades, and carpeting where noted on the drawings to receive new finishes, and patch wall surfaces as required to receive paint. University Representative shall inspect and approve all patched surfaces prior to applications or finish paint.

3. In all areas where demolition (removal or tile, carpeting, tackless, partitions, etc.) causes unevenness in the slab, the Contractor shall patch and/or flash patch to level the slab to receive new finished floor.

4. The General Contractor shall at all times protect the property of the University, including but not limited to windows, floor and ceiling tile, public toilets, elevators, doors, bucks, electrical air conditioning equipment, peripheral enclosures, etc.

5. Electrical and telephone outlets shown to be removed in existing partitions to remain shall have cabling removed and blank cover plates installed.

6. The General Contractor shall cap and flush off behind finish surfaces all projecting plumbing, floor electrical/telephone outlets, and all other projecting items which are being abandoned.

7. All work shall be performed in accordance with all applicable authorities.

8. Remove the existing carpet, pad, adhesive, tack strips, base, ceramic tile, wall coverings and any applied method of attachment from the floor slab or wall surface. Remove and dispose of all waste and debris in an orderly manner from the building and site and properly dispose of in full accord with all applicable codes and governing authorities. Patch and prepare the floor and walls to receive the scheduled finish materials per the manufacturers recommendations.

9. Where existing wall finishes are shown as being removed, patch and prepare remaining existing construction as required for installation of new finishes per finish schedule and partition/finish plans.

10. This Contractor shall, under his Contract, be responsible for ceiling removal, ceiling suspension removal, lighting fixture removal, associate electrical demolition and maintenance of all ceiling mounted fire alarm speakers and devices in those areas (if any) of the premises where such ceiling exists. Refer to Drawings for specific requirements.

11. The Contractor shall disconnect, remove and carefully protect all existing fluorescent and incandescent light fixtures, air diffusers, ceiling tile and panels for new locations as required. Return any unused fixtures, etc. to University.

12. Carefully cut and remove portions of construction required to be removed, in a manner not to disturb adjacent areas of construction to remain.

13. NOTE: This Contractor shall be responsible for providing adequate bracing to the structure above for all remaining ceilings and walls standing after the demolition of adjacent and/or intersecting ceilings and walls.

14. Floor penetration openings shall be sealed , filled and capped to maintain a structurally sound floor. Finish of floor opening and/or cap shall be flush with adjacent floor slab.

15. Where all drywall to remain has been damaged by the removal of abutting or intersecting drywall or other elements, the drywall surface to remain shall be patched by this Contractor, the Patch shall be accomplished with appropriate stud backing in a manner such that the adjacent surfaces to be patched to the patched area are flush, smooth and suitable for taping and floating by another Contractor. Examples of these conditions would be where partitions to be demolished intersect the core, furred columns or perimeter bulkhead.

16. Where ductwork is removed from sections of ductwork scheduled to remain, the openings shall be permanently sealed by this Contractor to prevent air leaks when the system is pressurized. The cap shall be of like material as that which is to remain and shall be sealed with hard cast or blue glue.

B. Pollution Controls: Use temporary enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Clean adjacent space(s) and improvements of dust, dirt and debris caused by demolition operations, as requested by University Representative. Return adjacent areas to condition existing prior to the start of Work.

C. Space Demolition: Demolish materials completely and remove from site. Use such methods as required to complete work within limitations of governing regulations.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Remove on a daily basis from site debris, rubbish and other materials resulting from demolition operations.

B. Under no circumstances shall refuse be allowed to block or otherwise impair circulation in stairs, corridors, sidewalks or other traffic areas at any time. Removal and disposal of all debris shall be in accordance with building management's methods, lease, state/local codes/laws, any/all environmental governing agency and any other governmental agency that has jurisdiction over this project.

C. Removal: Transport materials removed from demolished structures and dispose of off site.

D. Time of Demolition Work: General Demolition Work in the new construction area shall be accomplished during normal working hours unless otherwise designated.

1. Work and/or item that will cause noise, requires access, etc. on the floors below, shall be done during off-hours as scheduled and coordinated with the University.

2. All labor and cartage costs shall be included in Bid(s).

E. Recycling: All concrete and steel by piece or component, to be demolished and removed from the site shall be sent to a recycling center. Weight tickets for all debris shall be submitted to the District with a tabulation sheet showing tonnage of recycled vs. landfill.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

A. Repair all areas of demolition performed in excess of that required, at no cost to the University.

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

C. Upon completion of the demolition work, the General Contractor shall provide that all areas be left broom clean.

END OF SECTION

SECTION 03540

SELF-LEVELING UNDERLAYMENT CONCRETE

PART I - GENERAL

1.01 SUMMARY

A. This is the recommended specification for ARDEX K-15 Self-Leveling Underlayment Concrete for use over specified interior substrates.

B. Contractor include the cost to level at least 25% of the suite with no less than 1” of floor level compound and an additional 25% of the suite with no less than 1/2" of floor level compound. The balance of the suite shall require substantial preparation and floor level compound of no less than ¼”. Any leveling not required shall be credited to the University.

1.02 SECTION INCLUDES

A. ARDEX K-15 Self-Leveling Underlayment Concrete

B. ARDEX P-51 Primer

C. ARDEX P-82 Ultra Prime

D. ARDEX E-25 Resilient Emulsion

1.03 QUALITY ASSURANCE

A. Installation of ARDEX K-15 shall be by an applicator using mixing equipment and tools approved by the manufacturer.

B. Underlayment shall be able to be installed from 1/8" to 1 *Vz* in one pour and up to 5° with the addition of aggregate. It may also be feathered to match existing elevations.

C. Underlayment to be applied to a minimum thickness of 1/8" over highest point in the subfloor, with an average typical thickness of %".

D. Underlayment compressive strength shall be 4100 psi after 28 days per ASTM C109/mod (air cure only).

E. Underlayment shall be walkable after 2 hours and allow floor covering to be installed after 16hoursat70°F.

F. Manufacturer's certification that the product is Portland cement-based having an inorganic binder content which is a minimum 100% Portland cement when tested per ASTM C150: Standard Specification for Portland Cement.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in their unopened packages and protect from extreme temperatures and moisture. Protect liquids from freezing.

1.05 SITE CONDITIONS

A. ARDEX K-15 is a cementitious material. Observe the basic rules of concrete work. Do not install below 50°F surface temperature. Install quickly if floor is warm and follow hot weather precautions available from the ARDEX Technical Service Department. Never mix with cement or additives other than ARDEX-approved products.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The cement-based self-leveling underlayment shall be ARDEX K-15 Self-Leveling Underlayment Concrete, or equal.

B. Primer for standard absorbent concrete shall be ARDEX P-51 Primer, or equal.

C. Primer for non-porous subfloors, cutback and other adhesive residues, metal, and wooden subfloors shall be ARDEX P-82 Ultra Prime, or equal.

D. The additive to be mixed with ARDEX K-15 when used over cutback adhesive, metal, or wooden subfloors shall be ARDEX E-25 Resilient Emulsion, or equal.

E. Aggregate shall be well graded, washed gravel (1/8" to 1/4" or larger) for use when underlayment is installed over 1 1/2" thick.

F. Water shall be clean, potable, and sufficiently cool (not warmer than 70°F).

2.02 MIX DESIGNS

A. Standard mixing ratio: ARDEX K-15 is mixed in 2-bag batches at one time. Mix each bag of ARDEX K-15 (55 lb.) with 7 quarts of water. Product shall be mixed in an ARDEX T-10 Mixing Drum using an ARDEX T-1 Mixing Paddle and a 1/2" heavy-duty drill (min. 650 rpm). Mix thoroughly for approximately 2-3 minutes to obtain a lump-free mixture. Follow written instructions per the ARDEX K-15 bag label.

B. Resilient mix for applications over cutback and non-water soluble adhesive residues, wood, and metal: Use 6 qt. of water and 2 qt. of ARDEX E-25 Resilient Emulsion for each bag of ARDEX K-15.

C. Aggregate mix: For areas to be installed over 1 1/2" thick, aggregate may be added to reduce material costs. Mix ARDEX K-15 with water first, then add from 1/3 up to 1 part by volume of aggregate (1/8" to 1/4" or larger). Do not use sand.

D. For pump installations, ARDEX K-15 shall be mixed using the ARDEX Levelcraft Automatic Mixing Pump. Start the pump at 210 gallons of water per hour, and then adjust to the minimum water reading that still allows self-leveling properties. DO NOT OVERWATER! Check the consistency of the product on the floor to ensure a uniform distribution of the sand aggregate at both the top surface and bottom of the pour. If settling is occurring, reduce the water amount and recheck. Conditions during the installation, such as variations in water, powder, substrate, and ambient temperature, require that the water setting be monitored and adjusted carefully to avoid overwatering.

PART 3 - EXECUTION

3.01 PREPARATION

A All subfloors shall be sound, solid, cleaned, and primed:

1. All concrete subfloors shall be of adequate strength, clean, and free of all oil, grease, dirt, curing compounds and any substance that might act as a bondbreaker before priming. Mechanically clean if necessary using shot blasting or other. Acid etching and the use of sweeping compounds and solvents are not acceptable.

2. Wooden subfloors shall be clean and free of all foreign matter. Sand to bare wood then vacuum to remove all dust. Re-nail any loose boards exhibiting movement.

3. Metal subfloors shall be clean and free of all rust and foreign matter. Where required, a corrosive resistant coating should be applied and allowed to dry before priming.

4. Cutback and other non-water soluble adhesive residues shall be wet scraped to a thin, well-bonded layer.

5. Non-porous subfloors such as ceramic and quarry tile as well as terrazzo should be clean and free of all waxes and sealers. If necessary, have the surface professionally cleaned.

6. All cracks in the subfloor shall be repaired to minimize telegraphing through the underlayment.

7. Substrates shall be inspected and corrected for moisture or any other conditions that could affect the performance of the underlayment or the finished floor covering.

B. JOINT PREPARATION

1. Moving Joints - honor all expansion and isolation joints up through the underlayment.

2. Saw Cuts and Control Joints - fill all non-moving joints with ARDEX SD-F Feather Finish or ARDEX SD-P InstantPatch as required.

C. PRIMING

1. Primer for standard absorbent concrete subfloors: Mix ARDEX P-51 1:1 with water and apply evenly with a soft push broom. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry to a clear, thin film (min. 3 hours, max. 24 hours). Underlayment shall not be applied until the primer is dry. Primer coverage is approximately 400 to 600 sq. ft. per gallon.

2. Primer for extremely absorbent concrete subfloors: Make an initial application of ARDEX P-51 mixed with 3 parts water using a soft push broom. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry thoroughly before proceeding with the standard application of primer as described above for standard absorbent concrete.

3. Primer for non-porous subfloors, wooden or metal subfloors, or cutback and other non- water soluble adhesive residues over concrete: Prime with ARDEX P-82 Ultra Prime. Mix Part A (red) with Part B (white) and apply with a short-nap or sponge paint roller, leaving a thin coat of primer no heavier than a thin coat of paint. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry to a clear, slightly tack film (minimum 3 hours, maximum 24 hours). Underlayment shall not be installed until primer is dry. Primer coverage is approximately 200 to 400 square feet per gallon.

4. Minimum drying time for ARDEX P-82 Ultra-Prime over cutback adhesive is 18 hours.

3.02 APPLICATION OF UNDERLAYMENT

A. INSTALLATION

1. Wooden subfloors require the use of the mesh-reinforced ARDEX K-15 + E-25 Underlayment System. After priming, install 3.4 galvanized diamond metal lath by stapling to the wooden subfloor approximately every 6 inches on center.

2. Steel subfloors require that the substrate first be primed with an anti-corrosive paint. After thorough drying of the paint, prime this surface with ARDEX P-82 Ultra Prime.

3. Pour or pump the liquid ARDEX K-15 and spread in place with the ARDEX T-4 Spreader. Use the ARDEX T-5 Smoother for featheredge and touch-up. Wear baseball shoes with non-metallic cleats to avoid leaving marks in the liquid ARDEX K-15. Underlayment can be walked on in 2-3 hours at 70° F.

3.03 PREPARATION FOR FLOORING INSTALLATION

A. Underlayment can accept finish floor covering materials after 16 hours at 70°F and 50% relative humidity.

B. Due to the wide range of adhesives that are used to install floor coverings, some adhesives may dry more quickly over Ardex underlayments than over other substrates. If this condition occurs, priming the surface of the underlayment with ARDEX P-51 Primer diluted 1:3 with water will even out the drying of the adhesive. Allow the primer to dry 1-3 hours before proceeding with the adhesive installation.

3.04 FIELD QUALITY CONTROL

A. Where specified, field sampling of the Ardex underlayment is to be done by taking an entire unopened bag of the product being installed to an independent testing facility to perform compressive strength testing in accordance with ASTM C 109/modified: air-cure only. There are no in situ test procedures for the evaluation of compressive strength.

3.05 PROTECTION

A. Prior to the installation of the finish flooring, the surface of the underlayment should be protected from abuse by other trades by the use of plywood, Masonite or other suitable protection course.

END OF SECTION

SECTION 05100

STRUCTURAL STEEL

PART 1 - GENERAL

1.00 DESCRIPTION OF WORK

A. Furnish and erect structural steel as shown on the Drawings and as specified, complete.

1.01 DESCRIPTION OF WORK

A. Workmanship: Fabricate and erect all structural steel in conformance with "Code of Standard Practice for Steel Buildings and Bridges" of the AISC, except as hereinafter modified.

B. Fabrication and Erection Criteria: Conform to the requirements of the current issue of the "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings" of the AISC.

C. Structural Steel: Conform to ASTM A36 unless otherwise specified.

1.03 SUBMITTALS

A. Refer to Section 01340 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, for procedures.

B. Contractor-Furnished Test Reports:

1. Contractor's testing agency will report all results of the tests to University's Representative who will approve or disapprove Contractor's work.

2. Furnish two (2) certified copies of all mill reports covering the chemical and physical properties of the steel.

C. Documents of Compliance: Submit to University's Representative a document stating the welding process and that welding operators are qualified for work on this Project. All welders shall be certified in accordance with NCPWB, ASTM, or AWS, and as required by the codes listed in Section 01060, REGULATORY REQUIREMENTS.

D. Shop drawings and Product Data:

1. The following list includes the required shop drawings and product data that shall be submitted.

   a. Fabrication and erection drawings
   b. Calculations of Contractor or fabricator designed items.

2. Do not proceed with erection of structural steel prior to University's Representative's approval of shop drawings.

3. Program for erection.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Structural Steel: Conform to "Specification for Structural Steel," ASTM A36, unless otherwise noted.

B. High Strength Bolts: Use heavy hexagon structural bolts with heavy hexagon nuts and conform to "Specification for High Strength Bolts for Structural Steel joints," ASTM A490. Nuts for A490 bolts shall be heavy hex, Grade C plain finish conforming to "Specification for Carbon and Alloy Steel Nuts," ASTM A563, unless noted otherwise. Washers shall be plain, uncoated hardened steel circular washers conforming to "Specifications for Hardened Steel Washers," ASTM F436, unless otherwise noted.

C. Unfinished Bolts: Conform to "Standard Specification for Carbon Steel Externally Threaded Standard Fasteners, " ASTM A307.

D. Rectangular Structural Tubing: Conform to ASTM A500, Grade B.

E. Round Steel Pipe Columns: Conform to "Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless," ASTM A53, Type E or S, Grade B open-hearth or basic-oxygen steel, with sulfur not to exceed 0.05 percent.

F. Stud Shear Connectors: Conform to the latest edition of "Structural Welding Code," AWS D1.1, Section 4, Part F.

2.02 FABRICATION AND MANUFACTURE

A. Connections shall be as shown on the Drawings. Bolt or weld shop connections as shown on the Drawings. Combinations of welds and bolts are not permitted in the same face of any connection. Eccentric connections are not permitted unless shown in detail on the Drawings.

1. Bolted Connections: Unless otherwise indicated on the Drawings, bolt all field connections in accordance with the following.

   a. High Strength Bolts. Use friction type connections with all bolts and tighten by the turn-of-nut method. Use for all connections unless otherwise specifically noted.

   b. Unfinished bolts. Use lock washers under nuts, unless otherwise noted. Use double nuts or jam threads to prevent loosening where bolts are noted as "finger-tight."

   c. Inspection. Inspection of high strength bolts will be made by an University-furnished testing agency for conformance with " Specification for Structural Joints Using ASTM A325 or A490 Bolts, Research Council on Riveted and Bolted Structural Joints." Refer to Section 01400, QUALITY CONTROL, for testing.

2. Welded Connections: Where welded connections are called for on the Drawings, Completely detail on the shop drawings. Electrodes shall be in accordance with the "Structural Welding Code," AWS D.1.

   a. Inspection of Field Welds. All field welded connections and all full penetration shop or field welds of structural members shall be nondestructively tested by an independent inspection agency paid for by University. Refer to Section 01400, QUALITY CONTROL.

Use of either radiographic or ultrasonic testing methods will be permitted. Work will be inspected for conformance with AISC and AWS requirements for welds in building construction as stated in "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings," AISC or "Structural Welding Code," AWS D1.1. A record will be kept of each weld inspected. The records will show date of inspection, location and type of weld, type of defect(s) encountered, and date of repair and reinspection.

B. Holes: Do not make or enlarge holes by burning. No unfair holes will be accepted. Furnish holes in members to permit connecting items specified in other sections of the Specifications.

C. Draw: Furnish allowances for "draw" in all tension bracing.

D. Straightening: Use only clean and straight material Sharp kinks or bends shall be cause for rejection.

E. Galvanized Members: Galvanize all exterior shelf angles, lintels, and connection items which support masonry and other members called for on the Drawings in conformance with " Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated From Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip," ASTM A123.

PART 3 - EXECUTION

3.01 PREPARATION

A. Preparation of Surfaces:

1. Painting

a. Shop Coat. Steelwork concealed by interior building finish or steelwork encased in concrete or fireproofing shall not be painted. Paint all other steel work. Prepare surfaces for painting in accordance with the AISC specifications.

b. Field Painting. Spot paint field welds and bolts, and serious abrasions to the shop coat, with the material used for the shop coat. remove mud and other foreign materials before general field painting. Finish painting is specified in Section 09900, PAINTING.

c. Finished Surfaces. Protect machine finished surfaces against corrosion by a coating recommended by the manufacturer other than paint.

3.02 ERECTION

A. Submit a program for erection to University's Representative for approval before erection. Carry up all steel work true and plumb and use temporary bracing wherever necessary to take care of all loads to which the structure may be subjected during erection.

3.03 CLEANING

A. Cleaning: Unpainted surfaces that are to be fireproofed shall be cleaned of millscale and other foreign substances to assure adhesion of fireproofing materials.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

1.01 DESCRIPTION OF WORK

A. The full extent of metal fabrications work which may be required including items fabricated from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems in other sections of these specifications is not shown on the drawings.

B. Types of work in this Section include metal fabrications for:

1. Rough Hardware
2. Loose Bearing and Leveling Plates
3. Miscellaneous and Framing Supports

C. Related Work Specified Elsewhere:

1. Section 06400: Architectural Woodwork
2. Section 09900: Painting
3. Section 12306: Plastic Faced Casework

1.02 STANDARDS

A. Except as modified by governing codes and by this Specification, conform to the applicable provisions and recommendations of the following standards:

1. “Specification for the Design of Cold-Formed Steel Structural Members,” AISC.
2. “Structural Welding Code,” AWS D1.1
3. “Steel Structures Painting Manual, Volume 2, Systems and Specifications,” SSPC.

1.03 QUALITY ASSURANCE

A. Structural Performances: Provide assemblies which, when installed, comply with the minimum requirements of the Local Building Codes for structural performance, unless more stringent requirements are shown on the Drawings.

B. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible.

C. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly.

1.04 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings for fabrication and erection of miscellaneous metal fabrications. Include plans, elevations and details of sections and connections. Show

anchorage and accessory items. Provide templates for anchor and bolt installation by others. Refer to section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

1. Include samples of all conditions of welded, butt and screwed connected joints and intersections.

PART 2 - PRODUCTS

2.01 GENERAL

A. Metal Surfaces: For fabrication of miscellaneous metal work which will be exposed to view, sue only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.

2.02 FERROUS METALS

A. Steel Plates, Shapes and Bars: ASTM A36

B. Steel Plates to be Bent or Cold-Formed: ASTM A283, Grade C.

C. Steel Tubing: Hot-formed, welded or seamless, ASTM A501.

D. Steel Bars and Bar-Size Shapes: ASTM A36.

E. Cold-Finished Steel Bars: ASTM A108, grade as selected by fabricator.

F. Hot Rolled Steel Bars (including bar-size shapes): ASTM A575 (Merchant Quality) or ASTM A56 (Special Quality), quality and grade as selected by Fabricator.

G. Steel Pipe: ASTM A53, Type E, F or S at Fabricator's option, Grade A, black finish unless shown or specified as galvanized, standard weight (Schedule 40) unless otherwise shown or specified.

H. Hot-Formed Rectangular Steel Tubing: ASTM A501, butt welded, cold-finished and stress relieved.

I. Cold-Drawn Steel Tubing: ASTM A5012, sunk drawn, butt welded, cold-finished and stress relieved.

J. Steel Sheet for Cold-Forming: ASTM A569, hot-rolled sheet steel of commercial quality, pickled and oiled, free of defects which would impair the work.

K. Fasteners: Select fasteners for the type, grade and class required.

1. Bolts and Nuts: Regular hexagon head type, ASTM A325.

2. Machine Screws: Cadmium plated steel, FS FF-S-92.

3. Plain Washers: Round, carbon steel, FS FF-W-92.

4. Masonry Anchorage Devices: Expansion shields, FS FF-S325.

5. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class and style as required.

6. Lock Washers: Helical spring type carbon steel, FS FF-W-84

7. Expansion Bolts: Toothed steel or lead shield expansion devices of the type and size shown with galvanized bolts, except do not use lead shield bolts for overhead anchorage.

L. Concrete Inserts: Furnish unit-type inserts of the type and size shown, of cast iron, malleable iron or hot-dip zinc-coated steel.

M. Power Driven Anchors: Type and size shown or, if not shown, comply with manufacturer's standards. Use only devices and tools which comply with ANSI A10.3. Use power driven anchors only at times/places where acceptable to the Contractor's Safety Superintendent. Do not use as suspension member anchor.

2.03 PAINT

A. Metal Primer Paint: Fabricator's standard and conforming to SSPC, type 2-64.

1. Primer selected shall be compatible with finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Division 9.

2.04 FABRICATION

A. General:

1. Workmanship: Use materials of size and thickness shown or, if not shown, or required size and thickness to produce strength and durability in finished product. Work to dimensions shown or accepted on Shop Drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.

a. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the work.

b. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

c. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners or type shown or, if not shown, Phillips flathead (countersunk) screws or bolts.

d. Provide for anchorage of type shown coordinated with supporting structure.

e. Fabricate and space anchoring devices to provide adequate support for intended use.

f. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

B. Finishing, Ferrous Items:

1. Shop Painting: Shop paint miscellaneous ferrous metal work, except members or portions of members to be embedded in masonry, surfaces and edges to be field welded and galvanized surfaces, unless otherwise specified.

a. Follow procedures for preparation and painting published by SSPC. Provide dry paint film thickness of 2 mils minimum.

2.05 MISCELLANEOUS METAL FABRICATIONS

A. Rough Hardware and Support Angles: Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, angles, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting materials supplied by others and for anchoring or securing materials to concrete or other structures.

1. Refer to Specification sections and details for support requirements.

2. Manufacture of fabricate items of sizes, shapes, and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

B. Bearing Plates: Provide bearing and leveling plates fabricated as indicated. Furnish to other trades for installation.

C. Miscellaneous Trim: Provide shapes and sizes as required for the profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordinator of assembly and installation with other work.

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer shall examine the areas and conditions under which miscellaneous metal items are to be installed and notify the Contractor, in writing, of condition detrimental to the proper and timely completion of the Work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 PREPARATION

A. Furnish setting drawings, diagrams, templates, instructions and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors. Coordinate delivery of such items to project site.

3.03 INSTALLATION

A. Setting Loose Plates: Clean concrete and/or masonry bearing surfaces of any bond-reducing materials and roughen to improve bond to surfaces. Clean the bottom surface of bearing plates.

B. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrication to be in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts and other connectors as required.

C. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications.

1. Set work accurately in location, alignment, elevation, plumb, level, true and free of rack, measured from established lines and levels.

2. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations.

3. Grind exposed joints smooth and touch-up shop paint coat.

D. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made and methods used in correcting welding work.

END OF SECTION

SECTION 05990

MISCELLANEOUS METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes: Miscellaneous metals, including:

1. Miscellaneous plates, angles and attachment for anchorage of work of this and other sections.

B. Definition: Miscellaneous metal 10 gage and heavier is included under this Section except as otherwise specified in other Sections.

1.02 SUBMITTALS

A. Shop drawings: For all specially fabricated items indicate in complete detail all information required for fabrication, finishing and installation of this Work including:

1. Backing plates.

B. Product data - manufacturer's literature: Brochure describing items, specifications and installation instructions for manufactured items.

1.03 QUALITY ASSURANCE

A. Reference standards: Comply with the following:

1. Design, fabricate and erect miscellaneous metals in accordance with the AISC, Design, Fabrication and Erection of Structural Steel for Buildings.

2. AISI, Specifications for the Design of Cold-formed Steel Structural Members.

3. AWS D.1.1, Structural Welding Code - Steel.

4. ASTM A6, General Requirements for the Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use.

PART 2 - PRODUCTS

2.01 BASIC MATERIALS

A. Structural steel plates, shapes, bars and sheets:

1. Structural sizes, shapes and plates: ASTM A36, except for plates to be bent or cold-formed.

2. Plates to be bent or cold-formed: ASTM A283, Grade C.

3. Bars and bar-size shapes: ASTM A663, Grade 65, or ASTM A36.

4. Sheets: ASTM A653, with zinc coating in accordance with ASTM A653, G90.

5. Hot-rolled carbon steel bars and bar-size shapes: ASTM A575, Grade as selected by the fabricator.

B. Anchors - inserts:

1. Threaded type: ASTM A47 or ASTM A27; hot-dip galvanized in accordance with ASTM A153.

2. Slotted type: ASTM A283; hot-dip galvanized in accordance with ASTM A123.

C. Fasteners: Zinc-coated, galvanized for exterior use or when used in exterior walls, in accordance with ASTM A153. Select fasteners for the type, grade and class required for the installation of miscellaneous metal items.

1. Standard bolts and nuts: Regular hexagon type, ASTM A307, Grade A.

2. Lag bolts: Square head type, FS FF-B-561.

3. Machine screws: Cadmium-plated steel, FS FF-S-92.

4. Wood screws: Flat head carbon steel, FS FF-S-111.

5. Plain washers: Round, general assembly grade carbon steel, FS FF-W-92.

6. Lock washers: Helical spring type carbon steel, FS FF-W-84.

7. Other fastener types: As required for the condition of use.

D. Welding electrodes: Appropriate type for the metal to be welded. Comply with AWS D1.1.

E. Paint shop prime coat: 1009 Metal Primer by Tnemec Co., Inc., 2082 Metal Primer by Rust-Oleum Corp. or equal meeting AQMD requirements.

1. On manufactured stock items, the manufacturer's standard shop prime coat finish will be acceptable. Touch up where prime coat is damaged.

F. Galvanizing: ASTM A123, hot-dip, 2 oz. per sq. ft. coating on actual surface with minimum 1.08 oz. coating on any specimen. Bonderize as required for finish painting. Galvanize all exterior steel and as shown on Drawings.

1. Galvanizing repair compound: All State Galvanizing Powder, Drygalvo by American Solder and Flux or equal.

G. Steel pipe: ASTM A53, Type E or S, Grade B - use Grade A for pipe required to be bent.

H. Steel tubing: ASTM A500, Grade B.

I. Malleable iron castings: ASTM A47.

J. Backing plates: Minimum 6” x 16 gage galvanized track.

K. Grouting material: Master Builders Masterflow 928, Sika Chemical Sika N212, or equal.

L. Stainless steel sheet, strip, plate, and flat bars: ASTM A666, Type 304.

M. Stainless steel pipe: ASTM A312/A312M-95a.

N. Miscellaneous materials: As hereinafter specified and as necessary to complete this Work.

2.02 FABRICATION

A. General:

1. For the fabrication of items which will be exposed to view, use only materials which are smooth and free of blemishes including pitting, seam marks, roller marks, roller trade names and roughness.

   a. Remove blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coatings.

2. Welding:

   a. Weld all shop connections and all field connections unless shown or specified otherwise.

   b. Weld corners and seams, continuously and in accordance with the requirements of the AWS Code.

   c. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

   d. Employ welders qualified in accordance with the requirements of the AWS Code.

3. Form exposed work true to line and level with accurate angles and surfaces and with straight sharp edges.

4. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown or specified.

5. Form bent metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.

6. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible.

7. Remove loose rust, mill scale, cutting and punching burrs.

8. Fabricate items in as large sections as practicable to minimize field jointing.

B. Miscellaneous framing and supports:

1. Provide miscellaneous steel framing and supports which are not a part of the structural steel framework, as required to complete this Work.

2. Fabricate miscellaneous units to the sizes, shapes and profiles shown, or if not shown, of the necessary dimensions to receive adjacent grating, plates, doors or other work to

be retained by the framing.

3. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars of all welded construction using mitered corners, welded brackets and splice plates and a minimum number of joints for field connections.

4. Equip units with integrally welded anchor straps for casting into poured concrete wherever possible.

5. Except as otherwise shown, space anchors 2 ft. o.c., and provide minimum anchor units of 1-1/4" x 1/4" x 8" steel straps.

6. Galvanize exterior miscellaneous frames and supports.

C. Galvanizing: Provide the hot-dip process in accordance with ASTM A123.

D. Shop painting:

1. Shop paint all metal work specified in this Section except those members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, galvanized and stainless steel surfaces.

a. Apply a heavy coat of bituminous paint to metal surfaces which come in contact with concrete or masonry. Do not extend coating onto surfaces which will be sight-exposed.

2. Remove loose mill scale, loose rust, oil, grease, and other deleterious materials before applying shop coat.

3. Immediately after surface preparation, brush or spray primer paint. Apply in accordance with the manufacturer's instructions at a rate to provide a uniform dry film thickness of 1.0 mil for each coat. Use painting methods which will result in full coverage of joints, corners, edges and all exposed surfaces.

a. Apply one shop coat of primer paint to fabricated metal items, except apply two coats of paint to surfaces which are inaccessible after assembly or erection.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine building construction which is to receive this Work. Do not proceed with installation until conditions are suitable.

B. Field measurements: Take field measurements of building construction which affect this Work before fabrication.

3.02 INSTALLATION - GENERAL

A. Install manufactured items in accordance with manufacturer's current written instructions.

B. Set all work accurately to lines and levels, plumb and secure.

C. Install members, bolts, anchors, etc., to be covered, inserted or built in as the Work progresses.

D. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal items to in-place construction.

3.03 BUILT-IN ANCHORAGE

A. Provide bolts, eyebolts, dowels, anchors, plates, Unistruts, inserts and other miscellaneous steel fastenings that are to be installed in concrete forms.

3.04 STEEL BACKING PLATES

A. Backing plates in connection with studs and furring necessary for engaging and fastening of wall hung items shall be provided in locations shown and as necessary.

1. Backing plates shall be securely welded to studs heavier than 20 gage.

2. Backing plates shall be self-drilling screwed or bolted to 20 gage and lighter steel studs supporting members in the required position.

B. Finish: Shop prime coat.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

1.01 DESCRIPTION OF WORK

A. The extent of all carpentry work is not shown on the drawings or on schedules. It is the responsibility of the General Contractor to provide blocking, bracing, support, stabilizer, etc., as required for all products and assemblies. Include work normally performed by carpenters, not specified elsewhere.

B. Types of work include but are not necessarily limited to:

1. Wood Grounds, Nailers, Blocking.
2. Wood Furring.
3. Underlayments.
4 Installation of Metal Frames and Doors.
5 Installation of Wood Doors.
6 Installation of Wood Blocking.
7 Installation of Miscellaneous Materials.
8 Installation of Finish Hardware.

C. Related Work Specified Elsewhere:

1. Section 06400: Architectural Woodwork
2. Section 07270: Firestopping
3. Section 08110: Hollow Metal Doors and Frames
4. Section 08116: Aluminum Metal KD Frames
5. Section 08200: Wood Doors
6. Section 08710: Finish Hardware
7. Section 08800: Glass and Glazing
8. Section 09250: Gypsum Wallboard Systems
9. Section 12306: Plastic Faced Casework

1.02 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, for procedures.

B. Document of Compliance: Submit to University's Representative a letter, signed by an officer of the preservative treatment company, stipulating the retention obtained, and that the moisture content of the treated wood upon shipment from the treating plant does not exceed 19 percent.

1.03 JOB CONDITIONS

A. Protection:

1. Dustproof Partitions. Build temporary dustproof partitions where shown on the Drawings. Partition shall consist of 2 x 4 (50 x 100 mm) wood studs spaced 16" or 24"

(400 or 600 mm) on centers with 1/4" (6mm) hardboard facing. Hardboard shall have taped joints.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lumber: Use only lumber meeting the following requirements.

1. Moisture Content. All lumber with a nominal thickness of 3" (75mm) or less shall be kiln-dried, and moisture content at time of installation shall not exceed 19 percent.

2. Grade and trademark shall be marked on each piece of lumber or bundle of stock. Grade marks shall be recognized marks of the association under whose rules it is graded. Grade and trademarks are not required if each shipment is accompanied by certificate of inspection issued by the association.

3. Sizes and Patterns. Surface Lumber four sides. Use yard and structural Lumber of dressed sizes conforming to U.S. Departments of Commerce Product Standard PS 20.

4. Grades and species. Use Grades and Species as follows unless noted otherwise.

   a. All framing and dimension lumber shall be in accordance with WCLIB standard grading rules for Douglas Fir and Western Hemlock, and WWPA grading rules for Douglas Fir and Larch. Unless the structural drawings require higher minimum allowable stresses, use the following grades or better.

   b. All framing, use Grade "No. 2" or "STANDARD."

5. Decay-Resistant Wood. Use construction grade Western Red Cedar as graded under Rule No. 16 of the WCLIB and free of sap for the following lumber.

   a. All in connection with roof cants and nailers.

   b. All lumber set into or in contact with concrete slabs-on-grade.

   c. All lumber set into or in contact with exterior concrete walls, or the exterior wall of exterior masonry walls.

6. Treated Lumber may be substituted for all uses specified for decay-resistant wood. Treated materials cut after treatment shall have the cut surfaces brush-coated with preservative used in the original treatment.

   a. Treated Lumber shall be pressure-preservative treated in a closed retort in conformance with ASTM D 1760 "Standard Specification for Pressure Treatment of Timber Products" and "The Book of Standards" of the AWPA.

   b. Wood shall be treated with one of the following water-borne preservatives.

      (1) Ammonial copper arsenate, ASTM D 1325.
      (2) Copper arsenate, ASTM D 1625.
      (3) Zinc chloride ASTM D 1032, including copperized form.

7. Wood shall be air-dried or kiln-dried to a moisture content not exceeding 19 percent prior to treatment.

8. Fire retardant treated lumber shall be treated in accordance with AWPA Standards C-1. Each piece, regardless of length, shall be stamped with the UL label.

   a. Lumber shall be dried, after treatment, to a moisture content not exceeding 19 percent.

B. Plywood: Use plywood conforming to the requirements of U.S. Department of Commerce Product Standard PS 1, dated 30 December 1983, and which bears the grade-trademark of the APA, identifying the plywood as to species, glue type, grade and compliance with the applicable commercial standard.

1. Use exterior-glue type plywood where plywood is required to be pressure-preservative treated, or fire-retardant treated.

2. For interior plywood use the following grades of softwood plywood unless noted otherwise on the Drawings or specified otherwise herein.

   a. Two Sides Exposed to View: Grade A-A, Group 1, interior.

   b. One Side Exposed to View: Grade A-D, Group 1, interior.

   c. Sides Concealed by Doors: Grade B-D, Group 3, interior.

   d. Both Sides Permanently Concealed: Grade C-D, plugged, group 3, interior.

3. Exterior-Type Plywood. Use exterior type plywood of veneer grades as scheduled for all locations where plywood is exposed to the exterior, and as otherwise noted on the Drawings. Use the following grades of softwood plywood unless noted otherwise on the Drawings or specified otherwise herein.

   a. Two Sides Exposed to View: Grade A-A, Group 1, exterior.

   b. One Side Exposed to View: Grade A-B, Group 1, exterior.

   c. Overlaid Plywood. Use medium density overlaid plywood conforming to PS 1, where overlaid plywood is indicated on the Drawings. Each panel shall be edge-branded EXT-DFPA. Plywood shall have overlaid faces on both sides, unless one side is concealed, in which case the concealed side need not be overlaid.

4. Fire retardant treated plywood, where indicated on the Drawings, shall be pressure treated with fire retardant chemicals in accordance with AWPA standard C-27 to provide a fire classification of 15. Each piece shall bear a UL label showing compliance thereof. Plywood shall be dried, after treatment, to a moisture content not exceeding 15 percent, or 12 percent for plywood that is to be painted. Use exterior-grade fire retardant treatment for plywood exposed to the weather or in high humidity locations.

   a. Mounting Boards. Provide fire-retardant treated, standard grade plywood with exterior glue for mounting boards for electrical or telephone equipment. Thickness shall be 3/4”.

5. Environmental Requirements: Plywood shall contain no added urea formaldehyde.

C. Hardboard shall conform to the requirements of PS 58 and shall be tempered unless otherwise indicated on the Drawings.

a. Environmental Requirements: Hardboard shall contain no added urea formaldehyde.

D. Building Felt: Type I, 15 pounds per 100 square feet (730 grams per square meter) asphalt-saturated felt complying with "Felt for Use in Membrane Waterproofing and Built-Up Roofing," ASTM D-226.

E. Fastening Devices: Furnish as shown on the Drawings. Furnish fastenings of size to hold the material securely in place.

1. Use aluminum or hot-dip galvanized steel nails or screws for connection with redwood.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Wood Blocking.

1. Wood blocking which is exposed in recessed (reveal) joints shall be good quality lumber, which is free of dents, chips or other defects. Make joints tight in a neat workmanlike manner.

2. Provide wood blocking as required for surface mounted toilet accessories or attachment of other work. Where drapery tracks occur, provide blocking for anchorage of track.

B. Installation of Finish Carpentry

1. The field assembly and installation of finish carpentry, including wood doors, is covered in this paragraph.

a. Interior Trim. Set interior trim straight, plumb and level. make joints in a tight manner to conceal shrinkage. Secure trim with fine finishing nails, and with screws and glue where required. Set nails for putty filling.

b. Casework. Install casework in accordance with the Drawings and as specified. Do not cut doors down to fit a smaller opening. Fit doors to provide 1/8" to 3/16" (2 to 4 mm) clearance at all four edges. Prepare for and install locksets, hinges, closers and other hardware items to produce operation and durability as specified and intended.

c. Wood Doors. Install Wood Doors as shown on the drawings and as specified. Do not cut doors down to fit a smaller opening. Fit doors to provide 1/8" to 3/16" (2 to 4mm) clearance at all four edges. Prepare for and install locksets, hinges, closers and other hardware items to produce operation and durability as specified and intended.

C. Rough Hardware. Provide all nails, spikes, screws, bolts and all rough hardware required in the assembling and securing of work.

END OF SECTION

SECTION 06200

FINISH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide finish carpentry items as shown on the Drawings and as specified, complete.

1. Rough framing for millwork (casework) is shown on the Drawings.

2. Hardware for millwork (casework) is shown on the Drawings.

1.02 QUALITY ASSURANCE

A. Allowable Tolerances:

1. Moisture content for millwork (casework) shall be between 5 and 10%.

B. Reference Standards: Millwork (casework) shall be manufactured in accordance with standards established in the Manual of Millwork of the Woodwork Institute of California (WI), 2001 11th Edition, in the grade or grades herein specified or as shown on the Drawings. If the manufacturer is not a WI licensee, Contractor shall furnish to University's Representative, prior to installation, a Certificate of Reinspection by the WI indicating that the work in question meets the requirements of the WI grade specified. If the manufacturer is a WI licensee, each elevation of work shall bear the WI Certified Compliance grade label indicating the grade specified, and by the completion of the job, WI Certified Compliance Certificates shall have been issued certifying that the installation fully meets the requirements for the grade specified. The foregoing shall not be construed to limit the power and authority of University's Representative to reject any millwork which does not in University's Representative's opinion meet with any one or more of the specifications of this contract.

1.03 SUBMITTALS

A. Refer to Section 01330, SUBMITTAL PROCEDURES for procedures.

B. Shop Drawings and Product Data: The following list includes the required shop drawings that shall be submitted.

1. Millwork (casework).

2. Trim.

1.04 PRODUCT DELIVERY AND STORAGE

A. Delivery of Materials: Do not deliver millwork (casework) until third mudding of gypsum board has cured for at least fifteen (15) days.

B. Storage of Materials, Equipment and Fixtures: Protect all millwork (casework) and finish against dampness, store in dry and well ventilated areas, and do not subject to extreme changes of temperature or humidity.

PART 2 - PRODUCTS

2.01 GENERAL

A. Fabricate and install the work to the Custom Grade classification of WI. Refer to Material Legend on drawing A5.11 for finish materials and colors.

2.02 CABINETS

A. Design: Fabricate and finish as shown on the Drawings.

2.03 LAMINATED PLASTIC COUNTERTOPS

A. Design:

1. Edges shall be self-edged.

2. Backsplash shall be 4" high as indicated on the Drawings, wherever counter top meets wall or vertical portion of millwork (casework) as indicated on the Drawings.

a. Backsplash shall be coved (1/2" radius) and integral with counter top where plastic laminate color is the same.

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Deleted: square with self edge and shall be four (4) inches high.

B. Material: Surface material shall be high-pressure laminated plastic conforming to NEMA LD-3-75. Refer to Material Legend on drawing A5.11.

2.06 HARDWARE

A. Hardware: In accordance with WIC Approved Hardware Listing, and as follows:

1. Adjustable shelf standards: Hettich 022 737 in pre-drilled holes, Knape & Vogt #256 in pre-drilled holes, or equal.

a. Wall standards: Knape & Vogt #87, bracket #187, natural aluminum finish, or equal (no known equal).

2. Base adjusters (levelers): National D6009/6005 with cover buttons, or equal (no known equal).

3. Drawer extensions:

a. Up to 6" depth: Accuride 7432 – full extension; 100# capacity, or equal (no known equal).

b. Over 6" depth: Accuride 3640 - full extension; 200# capacity, or equal (no known equal).

c. For file drawers: Accuride 7432 - full extension; 100# capacity, or equal (no known equal).

4. Hanger rods: 1-5/16" o.d., .120" wall thickness, heavy duty, chrome plated steel tubing. Furnish center supports for spans four feet or greater.

5. Wire Pulls: Extruded brushed aluminum, 4".

6. Catches: Amerock #BP 9783AL, or equal (no known equal) magnetic.

7. Lift top hinges: Stanley 311-1/4, Hager CD 1311, or equal size as required for top thickness.

8. Hinges: Concealed type.

9. Locks:

a. Doors: National Lock C8123, C8124, C8125. Surface lock with short 3/4" bolt, or equal (no known equal).

b. Drawers: National Lock C8138, C8148, C8149. Surface lock with short 3/4" bolt - same lock turned 90°, or equal (no known equal).

10. Finish: US26D unless noted otherwise.

11. Drawer stops: Provide stops to prevent drawers from hitting face of cabinet body.

12. Label holders: Corbin #1913-1/4H, Garcy #853 or equal.

13. Keyboard drawers: Accuride standard keyboard system Model CBERGO-Tray200 or equal (no known equal).

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation:

1. Standing and Running Trim.

a. Standing and running trim includes cut-to-length and lineal type wood trim, including wood wall base.

b. Interior Trim. Cleanly machine and then mill-sand interior trim to remove all imperfections and tool marks. Back-rout all trim.

2. Millwork (casework).

a. Millwork includes cabinets, cases, counters, paneling, wainscot and enclosures of all kinds, including all doors, plastic laminates and plywood for use therewith.

b. Workmanship and Assembly. Conform to applicable provisions of WIC Manual of Millwork.

1) Work shall be custom grade.

c. Shop assemble all millwork (casework) except for cases too large for entrance into the area in which the casework will be installed. Make the latter in sections with provisions made for job connection in the space. Scribe contacts with adjoining work as required.

3. Closet and Storage Shelving. Provide closet and storage shelving as shown and required by the Drawings. Visible edges of plywood shall be banded with lumber edging, glued under pressure with no nails allowed. Edging shall match the face veneer.

4. Telephone and Electrical Backboards. Install Grade B-B exterior plywood panels, 3/4 inch thick by 4 feet high. After sizing, fire-retardant pressure treat each piece to flame spread of 25 or less and smoke developed of 50 or less per ASTM E84 test. Secure to walls with stripes of contact adhesive and molly-bolts at 24 inch centers around perimeter of each panel. Set top of backboards at +7’-0” above finish floor. Do not paint backboards.

END OF SECTION

SECTION 06400

ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

B. Specifically submit the hardware prior to any fabrication. Hardware for tracks, pulls, locks shall be of a medium to heavy duty quality. Draw tracks shall allow full motion. All locked draws and cabinets doors shall be true and plumb with the counter and each other or they shall be rejected.

1.01 DESCRIPTION OF WORK

A. The extent of each type of architectural woodwork is shown on the Drawings and in schedules. Architectural woodwork is defined to include (in addition to items so designated on the Drawings) miscellaneous exposed wood members commonly known as "Finish Carpentry" or "Millwork," except where specified under another section of these Specifications.

B. Fabrication, finishing, and installation of millwork specified in this section, shall be by one Contractor and shall not be sublet unless specifically approved by the University Representative.

C. The types of architectural woodwork include, but are not necessarily limited to, the following:

1. Refer to Millwork Schedule.

D. Related Work Specified Elsewhere:

1. Section 05500: Metal Fabrication
2. Section 06100: Rough Carpentry
3. Section 07270: Firestopping
4. Section 07900: Caulking and Sealants
5. Section 08210: Wood Doors
6. Section 08710: Finish Hardware
7. Section 08800: Glass and Glazing
8. Section 09250: Gypsum Wallboard Systems
9. Section 12306: Plastic Faced Casework

1.02 QUALITY ASSURANCE

A. Quality Standards: Except as otherwise shown or specified, comply with provisions of the Architectural Woodwork Institute (AWI) "Quality Standards," Revised 1990. Highest grade applicable.

B. Quality Standards: For the following types of architectural woodwork, comply with the indicated standards as applicable:

1. Lumber: AWI 100
2. Standing and Running Trim: AWI Section 300, premium grade

3. Paneling: AWI 500 Class A Rated per AWI 200 G-12
4. Wood Shutters: AWI 1200
5. Architectural Cabinets: AWI 400A Premium
6. Shelving: AWI Section 600, custom grade
7. Miscellaneous Work: AWI Section 700
8. Plastic Laminate Casework: AWI Section 400, premium grade except use premium standard for orientation of laminate grain
9. Architectural Flush Doors: AWI 1300
10. Stile and Rail Doors: AWI 1400
11. Factory Finishing: AWI Section 1500

C. Wood Door Standards:

1. Architectural Flush Doors: AWI 1300

D. "Quality Standards;" Architectural Woodwork Institute (AWI).

E. "Commercial Standards CS;" U.S. Department of Commerce.

F. "Voluntary Product Standards (PS;" U.S. Department of Commerce.

G. "Industry Standard I.S.;" National Woodwork Manufacturer's Association (NWMA).

H. "Interim Standard for Mat-Formed Wood Particleboard;" National Particleboard Association (NPA).

I. Fire-Rated Wood Doors: Provide wood doors with fire resistance ratings indicated or required to comply with governing regulations and which are identical in materials and type of construction to those used in assemblies which have been tested in compliance with ASTM E152 and are labeled and listed by a testing and inspection organization acceptable to authority having jurisdiction.

1. Provide UL label on each labeled door and panel.

J. Non-Fire-Rated Wood Doors: NWMA Industry Standard I.S. 1 "Wood Flush Doors" of the National Woodwork Manufacturer's Association and AWI Standard No. 1300.

1. Factory mark each door with the NWMA "Quality Certified" Seal of Approval for conformance with NWMA I.S. 1.

K. Requirements of Regulatory Agencies: All material used within this Section shall conform to the applicable Building Codes. Refer to AWI 100 for Flame Spread Classification of Materials. Unless otherwise noted under Part 2 - Materials of this Specification Section, all materials shall have minimum classification of Class A (0-25 Flame Spread).

L. Plastic laminate and/or veneer millwork details, sections, etc., may only show and/or indicate finished face or exposed plastic laminate and/or veneer for design and/or detailing purposes. General Contractor and Millwork Contractor is requested to provide, install, etc., all plastic laminate and/or veneer to cover all other exposed areas, cabinet interiors, edges, etc., and to provide all required balance matching. All color finish and graining to match face color, finish and graining, typical.

1.03 WORKMANSHIP

A. Quality of workmanship shall be the highest known "cabinet-maker or furniture quality." All miter joints shall be tight with no gaps or open spaces. Filling of miter joints with crack filler

prior to finishing is not acceptable. Loose joints shall be hairline, flat, in single plane, with no exposed screws, nails or other fasteners. All dimensions, reveals and joints shall be held exact.

1.04 DESIGN RESPONSIBILITY

A. The Drawings and Specifications indicate the design intent of this Work and define special required element.

B. This Contractor shall be responsible for the detail design of the complete work of this Section. He shall supplement the general design shown with a detailed Design Drawing for approval.

C. By accepting a Contract, this Contractor agrees that the general design shown is adequate to permit compliance with the performance requirements without extra cost.

D. When various details or requirements are vague, or in contradiction, the Contractor shall immediately request a clarification.

E. The Tenant owns all architectural woodwork designs, including casework, tables and chairs and drawings associated with such designs.

1.05 WARRANTY

Refer to Section 01330 SUBMITTAL PROCEDURES.

B. This Contractor agrees to warrant his work for five (5) years against becoming unserviceable or objectionable in appearance as a result of being defective or non-conforming. This Contractor further warrants the overall effective integration and correctness of individual parts, the whole of the system(s) and compatibility with adjoining substrates, materials and work by other trades.

C. Warranty: (Doors)

1. Submit expressed full written agreement in form approved by the Tenant/University Representative signed by the Contractor and Manufacturer, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which show telegraphing of construction below face, do not conform to tolerance limitations of NWMA or AWI. The warranty shall also include refinishing and reinstallation which may be required due to repair or replacement of defective doors. Warranty shall be in effect for lifetime of installation.

2. NOTE: In addition to the above warranty, Contractor is advised that wood doors that are installed with center hung pivots only shall be warranted for the same warranty described above (including the 1/4" maximum warpage) regardless of the height of the door. All costs relative to this special warranty shall be borne by this Contractor.

3. Special Conditions: Off set tolerance at meeting edge of pairs of doors shall not exceed 1/8" even if single doors comply with warp tolerance.

4. Contractor shall repair or replace defective work to the satisfaction of the University.

1.06 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, for procedures.

B. Product Data: (Doors)

1. Submit door manufacturer's specifications and installation instruction, including other data as may be required to show compliance with the specified requirements. Transmit a copy of each instruction to the Installer.

2. Include details of core and edge construction, trim for openings and louvers (if any) and similar components.

3. Include certifications as may be required to show compliance with the Specifications.

C. Shop Drawings: (Doors)

1. Submit Shop Drawings indicating the location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and/or other pertinent data.

D. Shop Drawings: Submit Shop Drawings showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components including hardware schedule(s). Submit Shop Drawings for all Architectural Wood work items required. Key Shop Drawings to drawing and section number as shown on the Architectural Drawings.

1. It shall be the responsibility of the Millwork Contractor to obtain copies of Shop Drawings of all items (by Others) to be built into the millwork and to coordinate the required openings.

2. Submit preliminary and final Shop Drawings for review. Completeness of Shop Drawings shall be sufficient to indicate compliance with the Contract Documents and to correlate with other materials. In general, they shall indicate size, material, quantity, finish, attachment methods (including cleating system), connections, weight, performance data, direction of grain or pattern depending on the specification.

3. The Millwork Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has received written approval for the deviation.

4. Submit preliminary Shop Drawings prior to or in conjunction with samples. Review preliminary Shop Drawings to determine mutually acceptable detailing of portions of this Work which are not completely defined in the Contract Documents.

5. Submit final Shop Drawings in the manner specified.

6. Include flitch and panel numbers for all veneers on each part of this work to assure proper and carefully controlled sequential installation.

E. Millwork Schedule: Millwork Contractor shall provide a millwork schedule as part of their shop drawings. It should track (1) millwork number, (2) brief description, (3) each step of production (core, veneer, machine, assembly, sanding, finishing), (4) delivery, and (5) installation.

1. Schedule shall be revised and resubmitted on a bi-monthly basis.

F. Samples: (Doors)

1. Submit 12" x 12" (0.3m x 0.3m) corner section of each door type specified indicating construction, veneer and finish for approval.

G. Samples: Finish samples of veneer and lacquer to be submitted with bid.

1. Samples required include, but are not necessarily limited to, the following:

   a. Wood veneers and solid wood
   b. Hardware
   c. Special materials
   d. Lacquered wood surfaces

2. For each species and cut or pattern of architectural woodwork submit for approval:

   a. Submit two sets (without finish) of full size, full length sample flitches for selection; a minimum of three samples of each flitch, one from each third of the flitch.

   b. Following acceptance of sample flitch(es) arrange for final selection trip(s) by the University Representative and/or University to each of the sites where the veneers are available for the purpose of selecting the total number of flitches required to complete the work. The Contractor shall accompany the University Representative and/or University on such trip(s). Contractor shall pay for all costs.

H. Finish Samples: Following selection of veneer flitches, submit samples prior to starting this work and sufficiently early to coordinate with other trades and other work as follows:

1. Three samples, 1'-0" x 1'-0", of each specified veneer and finish.

2. Three samples of each wood type, veneer face and matching solid stock.

3. Three samples of opaque finish on appropriate substrate to achieve gloss required.

4. Wood veneer samples shall be submitted on each substrate material proposed for use. Fabricated veneer samples using the face veneers selected and typical variations of grain, color, texture and finish expected in the final installation. Size of samples shall be 1'-0" x 1'-0" or larger, depending on veneer matching. End matching will not be acceptable.

I. Attachment Supplies: Submit samples of all attachment devices, cleats, clips and all similar attachment devices.

1. Solid stock samples shall be submitted of the profiles and types of woods scheduled on the Drawings. Each sample shall be representative of the specified graining, color, texture and finish expected in the final installation.

2. Size of samples shall be 2'-0" long minimum.

3. Following University Representative's review, two samples will be returned to the General Contractor.

4. One sample shall be retained by the General Contractor and one sample forwarded by him to the fabricator.

J. Review of samples will be for color, texture, grain and finish only, and subsequent review does not relieve the Millwork Contractor from complying with other Contract requirements. Each sample shall be tagged and the tag shall contain the following information:

1. Locations where the material will be used
2. Specification of substrate material (if any) and manufacturer
3. Finish Specifications

4. Wood types, grades and specie
5. Date sample was made and who prepared it

1.07 PRODUCT, DELIVERY, STORAGE AND HANDLING

A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

1. NOTE: Special care and handling of doors and panels at the job site.

2. Store flat on a level surface in a clean, dry, well ventilated area protected from sunlight.

3. Doors should not be subjected to extremes of heat and/or humidity conditions. Relative humidity should not be less than 30% or more than 60%.

4. Allow doors to become acclimated to finished building heat and humidity before hanging. (Minimum 72 hours.)

B. Deliver woodwork at the General Contractor's direction and approval of this Contractor.

1.08 JOB CONDITIONS

A. Examine site conditions affecting this Work. Report unsatisfactory conditions to the University Representative and do not proceed until those conditions have been corrected. Commencing work implies acceptance of conditions existing at the site as satisfactory to the outcome of this Work.

B. Millwork Contractor shall advise the General Contractor of temperature and humidity requirements for woodwork installation areas.

C. Do not install woodwork (including doors) until the required temperature and relative humidity have been stabilized and will be maintained in installation areas.

D. Provide all fire retardant treated blocking as required for installation of Architectural Woodwork.

PART 2 - PRODUCTS

2.01 BASIC MATERIALS AND FABRICATION METHODS

A. General: Except as otherwise indicated, comply with the following requirements for architectural woodwork not specifically indicated as prefabricated or prefinished standard products.

B. Wood Moisture Content: Refer to Paragraph 1.08, Job Conditions for Contractor responsibility for verification of the following requirements. Provide kiln-dried lumber, 6% to 11% for solid wood and veneer(s). Maintain temperature and humidity conditions (hardwood and softwood) through fabrication, installation and finishing operations so that moisture content at time of installation will be 8% to 13%.

1. Refer questions of best visual effect to University Representative for resolution as the Work progresses.

C. Veneers: (Transparent) Thickness - 0.0357" minimum

1. As noted on Drawings.

D. Veneers: (Opaque Finish)

1. Birch
2. Poplar
3. Walnut (match building standard)
4. Medium density overlay (Crezon)
5. Fiberboard

E. Veneer Matching: Where matched veneer treatment is shown, provide end match and assemble for the continuous sequential use of flitches across each separate expanse of matched work as indicated (panels, doors, casework and similar units).

F. Assembly: Each panel shall consist of even number of equal-width sheets of veneer per panel, center balanced.

G. Defects: Pitch marks, defective knots, eyes, deteriorated wood and other visual defects shall be removed by hand and patched to match the face veneer. Patches visible to the "eye" will not be allowed. All patches shall be of the quality work performed in the approved samples.

H. Veneer Construction: Provide a 5-ply construction consisting of a veneer core or particle board core with 1-ply face and back. Laminations shall be performed using a ureaformaldehyde glue line, hot press applied. Cold press applications are prohibited. Balance sheets shall be same veneer specie or similar and thickness as exposed finish face.

Veneer and Solid Stock Suppliers:

Dooge Veneers, Inc. 4455 Airwest Avenue Grand Rapids, MI 49508 (616) 698-6450	William L. Marshall, Ltd. 450 Park Avenue South New York, NY 10016 (212) 684-3600
R.S. Bacon Veneer Co. 100 S. Mannheim Road Hillside, IL 60162 (312) 547-6673	David R. Webb Co., Inc. 150 East 58th Street New York, NY 10022 (212) 753-5176

Other suppliers will be accepted subject to University Representative's review. Veneer and solid stock to come from same supplier.

I. Board Products:

1. Particle Board: Medium density (forty-five (45) lbs./cu. ft.) minimum wood chip and phenolic resin binders, compressed board, 3/4" thickness unless otherwise indicated.

2. Medium Density Overlay: (Crezon)

3. Fiberboard: Medium density forty-five (45) lbs/cu. ft.

4. Plywood: Five-ply construction closed grain hardwood plywood with exterior glue complying with requirements for specified woodwork grade.

5. Hardboard: PS 58, Class 1 (tempered), smooth one side or both sides where indicated, 1/4" thickness unless as otherwise indicated.

6. Environmental Requirements: Particle Board, MDO, Fiberboard, Plywood and Hardboard shall contain no added urea formaldehyde.

J. Solid Stock:

1. Hardwood for Transparent Finishes: Selected for color and graining. Unless otherwise shown, provide solid material of the same species as adjacent or abutting exposed, transparent finished veneer. Graining to match veneer.

2. Hardwood for Opaque Finish: Birch, Poplar, White Oak, or Walnut. Custom grade.

K. Specialty Items Finishes: Refer to Drawings for miscellaneous items and finishes to be supplied by this Contractor.

L. Design and Construction Features: Comply with the details shown for profile and construction of architectural woodwork. Where not otherwise shown, comply with applicable Quality Standards, with alternate details as Fabricator's option.

M. Pre-Cut Openings: Fabricate architectural woodwork with pre-cut openings, wherever possible, to receive hardware, appliances, Electrical Work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth the edges of cut-outs and, where located in countertops and similar exposures, seal the edges of cutouts with az water-resistant coating. Color as selected and approved by the University Representative.

1. Grommet(s): Provide for all pre-cut openings and/or where shown on the Drawings.

2. Openings: Refer to Part 1.06 for review of Shop Drawings by others.

N. Measurements: Before proceeding with fabrication of woodwork required to be fitted to other construction, obtain field measurements and certify dimensions and Shop Drawing details as required for accurate fit.

1. Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scribing and trimming of woodwork for accurate fit.

O. Material Thickness: The following thicknesses for drawers shall apply except when shown different on the Drawings:

1. Tops, Bottoms, Ends, Divisions: 3/4" thick
2. Face Plates: Equal to door thickness with 3/4" minimum
3. Web Frames: 3/4" minimum
4. Bottoms: 1'4" KorTron II. Drawers over 24" wide require center bottom support. Weight all drawers.
5. Fronts: Provide double fronts equal to door thickness, 3/4" minimum
6. Backs and Sides: 1/2", full dovetail construction
7. Shelves: Unsupported, exposed shelves 3/4" thick to 42" and 1" minimum over 42". Semi-exposed shelves 3/4" thick to 48"

P. Special Construction: Wood Panels

Q. Paneling:

1. Fire-Rated Paneling: Provide paneling as indicated below which is identical in construction to units tested per method indicated, and which are marked and classified

for fire performance characteristics indicated by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

2. Fire Performance Characteristics: Provide flush wood panels of wood veneer density and fire-retardant particleboard core construction having surface burning characteristics per ASTM E84.

   a. Provide Premium Grade Class "A" rated paneling per AWI 200 G-12. Wood paneling shall conform to AWI 500 Premium Grade with veneer matching as specified or as shown on the drawings.

   b. Refer to drawings and details for special rabbited and recessed jointing. Provide solid matching wood at all recesses.

2.02 DOORS (Cabinet)

A. Doors (Cabinet): 3/4" minimum thickness except doors over 36" wide 48" high to be 1-1/4". Use overlay type except where shown otherwise on Drawings.

2.03 DOORS (Taller than 4'-0")

A. General: Protect wood doors during transit, storage and handling to prevent damage, soiling and deterioration, Comply with the "On-Site Care" recommendations of NWMA pamphlet "Care and Finishing of Wood Doors" and with manufacturer's instructions.

   1. Deliver wood doors cartoned and/or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.

B. Solid Core Doors:

   1. (AWI 1300, Type S1C-5) Staved Lumber Core: Finger Jointed Blocks staggered and glued together, all glued core, Type I construction. Minimum 4-1/2" top and bottom rail.

   2. Particle Board Core: (Type PC-5 Ply) Single thickness slab of 3-ply particle board conforming to NP TS 5594 B or CS 236, Type I, Density C, Class I, hot pressed with synthetic resin glue. Linear expansion shall not exceed 0.02% in either direction when tested in accordance with ASTM C1037, Sections 76 through 79. Faces of core slab shall be of o.01" (25mm) thick flakes with resin content a minimum of 50% higher than core resin content. Face layer shall be a minimum of 25% higher than core density. Provide minimum hardwood 4-1/2" top and bottom rails. Minimum 3" side rails.

   3. Mineral Core: Incombustible mineral core, non-asbestos complying with AWI Type FD 1-1/2 and NWWDA Industry Standard IS 1-78 Series.

   4. Environmental Requirements: Particle Board shall contain no added urea formaldehyde.

C. Stile and Rail Doors: Comply with AWI 1400 Premium Grade.

   1. Modified as follows: Doors shall consist of three or more vertical stave panels grooved to receive tongues stiles and cross rails.

      a. Stiles shall be minimum 3-5/8", cross rails shall be minimum 5" wide, and top and bottom rails shall be minimum 5" wide.

D. All Types of Doors Shall Have:

1. Back Side: Of same species and finish as front side.

2. Edge Bands: Kiln dried hardwood matching face veneers for natural finish.

   a. Reveals at wood veneer surfaces to have internal hardwood implants. Quirks to have internal hardwood edgebands.

E. Crossbanding: Select species, 1 ply hardwood Poplar, or wood with similar hardness to match color of face veneer, 1/16" thick each side of core followed by 1 ply face and 1 ply back.

1. Extend crossbands full width of door with grain at right angels to face veneer, tapeless spliced without voids.

F. Particle Board Door Assembly: Stile and rails securely bonded to particle board core under pressure to form one solid glued-up piece, then sanded. Crossbands shall be laminated to core with Type I adhesive by hot press process, then sanded.

1. Thickness: Varies - see schedules and details.
2. Hardware: Premachine for all hardware using hardware manufacturer's templates.

2.04 ADHESIVES

A. Interior Locations: PS 51, Type II, water resistant typically, except use Type I waterproof glue in areas of high humidity.

B. Environmental Requirement: 1. Select adhesives that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168. 2. Aerosol adhesives must comply with current Green Seal Standard for Commercial Adhesives GS-36.

2.05 VENEERS

A. Face Veneer (For Specified Finish):

1. Type: 0.0357" (minimum) thickness, conforming to PS 51 PREMIUM GRADE. Fabricate to AWI premium standards. Edge banding exposed on the face of the door is not acceptable. Match faces of doors in pairs. Face veneer shall be tapeless spliced with the grain running vertically, belt and polished sanded of the following species:

   a. Species: As noted on Drawings

B. Veneer Match (For Specified Finish):

1. Single Doors: Book match, center match with an even number of pieces of veneer across door face and with a joint occurring on the centerline of the door with the same figure and grain on each side of the centerline.

2. Pairs or Sets of Doors: Provide continuous sequence of veneer between pairs of adjoining series of doors using same width of veneer pieces on adjoining door faces. Comply with additional requirements for veneer quality and matching as previously specified.

2.06 PREPARATION FOR AND FINISHING

A. Comply with AWI Quality Standards, Section 1500, for sanding, filling countersunk fasteners, back-priming and similar preparations for the finishing of architectural woodwork, as applicable to each unit of work.

B. Back side of all "stops" adjacent to glass shall be completely finished.

C. Finishes: To approved samples. Submit finished products and process with preliminary bid.

D. Transparent Finish: Conversion varnish complying with MIL-V-12954 to a cured film thickness of 1 mil. Prior to application of finish, prepare wood surfaces with oil stains or toners as required to match approved sample. Sheen as selected by University Representative.

E. Natural Veneer Finish: Natural veneer doors and paneling shall be finished with a highly moisture resistant lacquer factory applied to properly prepared surfaces. Match samples on file in University Representative's office for gloss.

AWI FINISH SYSTEM #2 CATALYZED LACQUER
PREMIUM GRADE

Open grain woods (filled finish)	Stain Vinyl washcoat Filler Vinyl Sealer Sand (220 grit stearated paper) Topcoat	Stain Nitrocellulose Washcoat Filler Nitrocellulose Sealer Sand (220 grit stearated paper) Topcoat
Open grain woods (open grain finish)	Stain Vinyl Sealer Sand (220 grit stearated paper) Topcoat	Stain Nitrocellulose Sealer Sand (220 grit stearated paper) Topcoat

2.07 CABINET HARDWARE AND ACCESSORY MATERIALS

A. General: Provide cabinet hardware and accessory materials associated with architectural woodwork, except for units which are specified as "door hardware" in Section 08700 or in other sections of these Specifications.

B. Hardware Standards: Except as otherwise indicated, comply with ANSI A156.9 "American National Standard for Cabinet Hardware."

C. Millwork Hardware:

1. Hinges: Number per leaf as per manufacturer's loadcharts, but not less than three (3) per leaf. Full or half overlay as required spring loaded for ease of door operation as required.

a. Prameta or Mepla, European style concealed hinges.

2. Pulls:

a. Routed Pulls: Refer to details (Painted to match veneers).

b. As noted on drawings.

3. Touch Latch: Glynn Johnson No. 4, or equal.

4. Magnetic Latch: Provide two catches on doors over 4' high. Hafele 264.26.702. or equal.

5. Drawer Guides: Grant or Accuride, of correct size for drawer depth. Use full extension type for file drawers and where indicated. Provide one pair guides for each drawer.

   a. Accuride #C3037 or equal.
   b. Accuride #C4437 (heavy duty) or equal.

6. Adjustable Shelf Supports: KV 255 or Capitol #1753 Pilaster Standards and KV 256 or Capitol #1757 supports, 4 per shelf, or equal.

7. Adjustable Shelf Supports: KV 87 slotted standards and KV 187 slot supports, (heavy duty) (spaced at 36" o.c.) or equal.

8. Adjustable Shelf Supports: KV 85 double slot standard and KV double slot bracket. (spaced at 30" o.c.) or equal.

9. Closet Bars: Garcy #A3337, Flange Garcy #3361 size as required. Or equal.

10. Shelf Clips: Capitol #86 pin shelf support, bright Zincro. Provide predrilled holes in cabinet sides spaced at 1" o.c. and not more than 1-1/2" from shelf edges. Finish zinc plate and/or chrome, or equal.

11. Hand Rods: capitol #641-2 with flangeless socket #262-2, 1-3/16" diameter extra lengths as required, or equal.

12. Silencers: Neoprene pads as required. (Minimum two [2] per door.) Color to match adjacent construction color.

13. Leveling Glides: Provide leveling glides, whether or not shown on drawings for all freestanding millwork. Provide 1-1/2" adjustable glide, exposed surfaces to be dull bronze.

14. Locks: Locks for all millwork cabinet doors and drawers shall be located per the elevations or per the approval of the University Representative.

    a. Locations of all locks as well as keying shall be reviewed with the University Representative prior to installation of locks.

15. Approved Manufacturers: National Lock, Corbin or equal.

16. Door Hardware: Refer to drawings and Section 08710.

D. Provide all required hardware in finishes as selected.

E. Undercounter Light: Where shown by others. Refer to plans and lighting schedule. Coordinate location of fixtures, junction boxes and cutouts with the Electrical Contractor. Provide cut-outs, grommets and boxes as required for electrical work by others.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examination: This Contractor shall examine the substrates and conditions under which the work is to be installed and notify the University Representative in writing of unsatisfactory conditions. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to this Contractor.

3.02 PREPARATION

A. Prior to installation of architectural woodwork, examine shop fabricated work for completion and complete work as required including back priming and removal of packing.

3.03 INSTALLATION

A. Install the work plumb, level, true and straight with no distortions.

B. Shim, as required, using concealed shims and/or furniture levelers. Install to a tolerance of 1/8" in 8'-0" for plumb and level, and with 1/32" maximum offset in flush adjoining surfaces, 1/8" maximum offsets in revealed adjoining surfaces.

C. Scribe and cut work to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts. Scribe base as required to hard floors, such as wood and marble.

D. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. NO joints in verticals (standing). Stagger joints in adjacent and related members. Cope at returns, miter at corners and comply with Quality Standards for joinery.

E. Casework: Install without distortion so that drawers will fit openings properly and be accurately aligned.

1. Adjust hardware to center drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of casework with transparent finish.

F. Bases: Base shall be blind nailed over shims. (Glued base is not allowed.)

G. Freestanding Items: Provide complete installation instructions for any parts requiring assembly and/or adjustments. Installation of freestanding items that require mounting, fitting, shims and scribing shall be provided by Millwork Contractor/Fabricator.

3.04 WOOD DOOR INSTALLATION

A. Job Conditions: Manufacture all wood doors two inches (2") longer than shown on Drawings and/or schedules. Bottom of door only will be trimmed to each opening for required clearance.

B. Factory Prefitting and Prematching: Prefit doors and panels in accordance with tolerance requirements of NWMA Industry Standard I.S. 1. Provide standard bevel or radius to edges of doors as required by the installation.

1. Machine doors and panels for finish hardware in accordance with hardware templates.

C. Inspection: Installer shall examine door frames and verify that frames are of the correct type and have been installed as required for proper hanging of corresponding doors. Installer shall notify the Contractor, in writing, of conditions detrimental to the proper and timely installation of

wood doors. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

1. Install fire-rated doors in corresponding fire-rated frames in accordance with the requirements of NFPA No. 80.

D. Installation: Condition doors to average prevailing humidity in installation area prior to hanging.

E. Hardware: For installation, see Section 08700.

F. Manufacturer's Instructions: Install wood doors in accordance with manufacturer's instructions and as shown.

G. Job Fit Doors: Fit doors to frame for proper fit and uniform clearance at each edge and machine for hardware. Seal cut surfaces after fitting and machining.

1. Bevel non-fire-rated doors 1/8" in 2" at latch and hinge edges.

2. Bevel fire-rated doors 1/16" in 2" at lock edge.

H. Clearances: Fire non-fire-rated doors provide clearances of 3/32" at jambs and heads; 1/8" at meeting stiles for pairs of doors; and 3/8" from bottom of door to top of floor covering.

I. Adjust and Clean:

1. Operation: Rehang or replace doors which do not swing or operate freely, as directed by the University Representative.

3.05 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Repair damaged and defective woodwork wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

B. Clean hardware, lubricate and make final adjustments for proper operation.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

D. Protection: This Contractor shall provide protection and maintain protection necessary to ensure that the work will be without damage or deterioration at the time of acceptance.

1. All furnished items shall be inspected by representatives of University, University Representative and Contractor and a "punch list" of unsatisfactory or missing items, if any, agreed upon.

2. Millwork Contractor shall be responsible for correcting all "punch list" items.

E. Instruct University of adjustments and preventive maintenance (i.e., cleaning methods, materials).

F. Millwork Contractor shall be required to conduct a site walk through and adjust all millwork six (6) months after installation.

G. Millwork Contractor shall remove his debris from site on a daily basis; shall vacuum carpet(s) at work area(s) throughout the day and will thoroughly, to the University Representative's satisfaction, vacuum the carpet at the work area(s) at the end of each work day.

END OF SECTION

SECTION 07200

VAPOR EMISSION AND ALKALINITY CONTROL FOR EXISTING CONCRETE

1. PART 1 - GENERAL

1.1. SUMMARY

1.1.1 Water vapor emission and alkalinity control treatment for existing on, below, and above grade concrete slabs scheduled to receive moisture sensitive floor coverings and adhesives.

1.2. RELATED SECTIONS

1.2.1. Section 09400 – Terrazzo Tile

1.2.2. Section 09650 – Resilient Flooring

1.3. REFERENCES

1.3.1. ASTM D1308-02 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.

1.3.2. ASTM D4541-02 – Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.

1.3.3. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials.

1.3.4. ASTM F710-05 – Practice for Preparing Concrete Floors to Receive Resilient Flooring.

1.3.5. ASTM F1869-04 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

1.4. SYSTEM DESCRIPTION

1.4.1. Utilizes a two-component modified epoxy liquid penetrant to stabilize internal humidity by restricting excessive moisture and pH (alkalinity), and to mechanically regulate permeability and suppress the volume of moisture reaching concrete surfaces, for compliance with subsequent floor covering's written limits. Application methods determined by site conditions, presence of sub-slab vapor barriers for slabs-on-grade, concrete mix design and contaminants, age of concrete substrate, results of ASTM F1869-04 calcium chloride testing, and finish floor covering manufacturer's recommendations.

1.5. SUBMITTALS

1.5.1. Product Data: Submit manufacturer's data for each component used in vapor emission control treatments.

1.5.2. Include copy of warranty to be issued for vapor emission control coating system and certificate of underwriter's coverage of manufacturer's warranty.

1.5.3. Include test reports conducted by nationally recognized independent testing agency indicating conformance with specified performance requirements.

1.5.4. Manufacturer's Certification: Certify that applicator of vapor emission control treatments is trained and certified/employed by treatment manufacturer.

1.5.5. Provide 5 project references documenting at least 10 years of manufacturer's experience in vapor emission control treatment production, and 3 project references documenting at least 3 years of applicators experience in applying vapor emission control treatments.

1.6. QUALITY ASSURANCE

1.6.1. Application shall be performed by manufacturer's employed personnel or certified applicators.

1.7. DELIVERY, STORAGE AND HANDLING

1.7.1. Deliver, store, handle and protect in accordance with manufacturer's instructions and recommendations.

1.7.2. Deliver materials in manufacturer's packaging including application instructions.

1.7.3. Keep materials from freezing.

1.8. SEQUENCING

1.8.1. Apply Treatment to areas with moisture vapor emission rates exceeding floor covering manufacturer's written limits, as determined by ASTM F1869-04 calcium chloride testing. Coordinate with installation of floor coverings. Ensure flooring installation complies with vapor emission control system manufacturer's warranty requirements.

1.9. WARRANTY

1.9.1. Manufacturer's Warranty: Warrant vapor emission control treatment against manufacturing defects and improper installation for a period of 10 years.

1.9.1.1. Cover costs of treatment materials, cementitious compounds, and labor costs of application and preparation.

1.9.1.2. Extend warranty to flooring material, adhesive, and installation labor for same period against moisture vapor emission related failure.

1.9.1.3. Provide warranty underwritten by product liability insurance carrier having a minimum "A" rating from Best or equivalent rating system in the amount of $5,000,000 per occurrence and naming University, University Representative, and Contractor as co-insured.

1.9.1.4. Guarantee moisture vapor and alkalinity emission rates to be at or below published requirements of floor covering manufacturers.

2. PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Basis of Design: Floor Seal Technology, Inc. or equal. Contact: Joshua Reed (800) 572-2344. www.floorseal.com .

2.2. MATERIALS

2.2.1. Remedial Treatment: MES 100., or equal.

2.3. ACCESSORIES

2.3.1. Cementitious Surfacing: 100 percent Portland cement based self-leveling compound to be applied to areas receiving resilient flooring. Cement shall bond with subsequent floor coverings and adhesives. Approved products:

2.3.1.1. Mapei Ultraplan 1 Plus by Mapei International, or equal.

2.3.1.2. Ardex K-15 by Ardex Engineered Cements, Inc., or equal.

3. PART 3 EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Examine substrates where work is to be performed. Provide written notification of deficiencies detrimental to proper or timely installation; do not proceed until corrected.

3.2. APPLICATION

3.2.1. Following at least 28 days after placement of concrete and prior to floor covering installation, perform calcium chloride testing per ASTM F1869-04 and alkalinity testing per ASTM F710-05.

3.2.2. For areas emitting moisture and alkalinity at rates exceeding floor covering manufacturer's published limits, apply treatment as follows:

3.2.2.1. Mask and protect adjacent wall and floor surfaces from effects of scarification and application.

3.2.2.2. Scarify slab surface in area of application by shot blasting or other method acceptable to coating treatment manufacturer.

3.2.2.3. Prepare and treat cracks, control joints and cold joints per treatment requirements.

3.2.2.4. Apply two-component epoxy penetrant and coating with roller and squeegee over entire treatment area; saturate surfaces to ensure a thorough mechanical bond.

3.2.2.5. Clean and fill divots, chips, voids and other surface irregularities with 100 percent Portland cement based patching compound or cementitious fill.

3.2.2.6. Apply cementitious surfacing over coating in areas to receive resilient and carpet floor coverings to facilitate adhesive; apply at a thickness of 1/8-inch.

END OF SECTION

SECTION 07253

CEMENTITIOUS FIREPROOFING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish and apply spray-on fireproofing as shown on the Drawings and as specified, complete. Contractor shall submit in advance of using any products, cut sheets and samples of intended products for building engineer review and UCLA fire marshal approvals. Contractor shall ensure actual samples of the used product are kept on site, for physical inspection by the fire marshal.

1.02 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Submit fireproofing manufacturer's specifications for materials and application with copies of CCR Title 24 and UL approvals. Upon completion, inspect sprayed fireproofing and submit a written certification that all installed materials and workmanship conform to Specifications and Code requirements. Refer to plans.

1.04 JOB CONDITIONS

A. Install temporary coverings and protection to prevent the sprayed material from contaminating adjoining surfaces and construction and to prevent damage or the creation of a public nuisance. Conform to requirements of codes listed in plans.

PART 2 - PRODUCTS

2.01 MATERIAL

A. Asbestos-free fireproofing, nominal dry density of 1.25 psf per inch thickness, published minimum bond strength of 300 psf per ASTM E736, minimum 3100 psf compression strength per ASTM E761, maximum 0.002 grams psf air erosion per ASTM E859, maximum 17 cc abrasion resistance and 4 cc impact penetration per City of San Francisco test method, UL listed 10 or less flame spread and 5 or less fuel contribution and 0 smoke development per ASTM E84 test. Deliver materials in original factory containers bearing manufacturer's name, identification, UL approval label, and date ensuring material is current. Store in a dry place until used.

PART 3 - EXECUTION

3.01 APPLICATION

A. Conform preparation of surfaces, mixing, and application to manufacturer's printed instructions, and UL and CCR Title 24 requirements. Apply to thicknesses as required to provide fire resistance ratings meeting requirements based on material installed, at no extra cost to University.

1. Fireproofing: Apply fireproofing to those thicknesses providing specified fire protection as shown or required. Set temporary gauge pins or the like to assure correct thickness at all locations.

2. Apply before ducts, pipes, boxes, conduits, and like items are installed and after hangers, supports, and steel framing for these items are secured to steel members.

3. Defective Work: Fireproofing work that becomes loose or is damaged during the course of construction shall be corrected as approved and at Contractor's expense.

END OF SECTION

SECTION 07270

FIRESTOPPING

PART 1 - GENERAL

Contractor shall submit in advance of using any products, cut sheets and samples of intended products for building engineer review and UCLA fire marshal approvals. Contractor shall ensure actual samples of the used product are kept on site, for physical inspection by the fire marshal.

1.00 RELATED DOCUMENTS

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

1.01 SUMMARY

A. This Section includes firestop sealant, safing insulation and firestops/firestopping as required by any/all codes and/or laws for the following locations and/or construction.

1. Openings between connecting floors.
2. In walls at raised floors or where shown and required by Code.
3. Below all wood raised floor systems.
4. All pipes, ductwork or conduit penetrating a fire-rated wall or floor assembly.
5. Head of wall firestopping at fire rated full height partitions.
6. Behind all applied wall finishes, panels, millwork, etc.

B. Fire stop mortar not allowed.

1.02 SUBMITTALS

Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

B. Product data from manufacturers for each joint firestop sealer grout or safing insulation product required, including instructions for joint preparation and joint sealer application and insulation installation instructions.

C. Certified Tests Reports: With product data, submit copies of certified test reports showing compliance with specified performance values, including r-values (aged values for plastic insulations), densities, compression strengths, fire performance characteristics, perm ratings, water absorption ratings and similar properties.

1. Certificates from manufacturers of joint firestop sealers and safing insulation attesting that their products comply with specification requirements and are suitable for the use indicated.
2. Samples of each product.

D. Certificates: Submit certificates from manufacturer and installer.

1. Product test reports for each type of joint firestop sealer evidencing compliance with requirements.

1.03 QUALITY INSURANCE

A. Manufacturers Certificate: Not less than 5 years experience manufacturing types of product specified.

B. Installer Certificate: Engage an Installer who has successfully completed within the last 3 years at least 3 sealer applications similar in type and size to that of this Project and is approved by manufacturer for this type of insulation.

1. Pre-installation conference to be attended by Installer, Contractor and Designer and representatives from affected trades.

C. Warranty: Contractor to warrant that the firestopping system will provide a permanent installation.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

C. General Protection: Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

1.05 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of firestop joint sealers under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by manufacturers.

2. When substrates are wet due to rain, frost, condensation, or other causes.

B. Joint Substrate Conditions: Do not proceed with installation of firestop joint sealers until contaminants capable of interfering with their adhesion as removed from joint substrates.

PART 2 - PRODUCTS

2.01 FIRE-RESISTANT JOINT SEALERS

A. General: Provide manufacturer's standard fire-stopping sealant, with accessory materials, having fire-resistance ratings indicated as established by testing identical assemblies per ASTM E 814 by Underwriter's Laboratories, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.

B. Foamed-In-Place Fire-Stopping Sealant: two-part, foamed-in-place, silicone sealant formulated for use in a through-penetration fire-stop system for filling openings around cables, conduit, pipes and similar penetrations through walls and floors.

C. One-Part Fire-Stopping Sealant: One part elastomeric sealant formulated for use in a through-penetration fire-stop system for sealing openings around cables, conduit, pipes and similar penetrations through walls and floors.

D. Available Products: Subject to compliance with requirements, products which may be incorporated in the Work include, but are not limited to, the following:

1. Foamed-In-Place Fire-Stopping Sealant:

a. “Dow Corning Fire Stop Foam”; Dow Corning Corp.
b. “Pensil 851”; General Electric Co.
c. Or Equal.

2. One-Part Fire-Stopping Sealant:

a. “Dow Corning Fire Stop Sealant”; Dow Corning Corp.
b. “3M Fire Barrier Caulk CP-25”; Electrical Products Div./3M
c. “RTV 7403”; General Electric Co.
d. “Fyre Putty”; Standard Oil Engineer Materials Co.
e. “Fyre Shield”; Tremco
f. “Fyre-Sil”; Tremco (High Movement)

E. Accessory Materials for Fire-Stopping Sealants: Provide forming, joint fillers, packing and other accessory materials required for installation of fire-stopping sealants as applicable to installation conditions indicated.

F. Environmental Requirement: Select sealants that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

202 FIRESTOPPING INSULATING MATERIALS

A. General: Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards, and other characteristics.

B. Semi-Refractory Fiber Board Safing Insulation: Semi-rigid boards designed for use as a firestop at openings between edge off slab and exterior wall panels at tops of rated walls and as shown, produced by combining semi-refractory mineral fiber manufactured from slag with thermosetting resin binders to comply with ASTM C 612, passing ASTM E 136 for combustion characteristics; r-value of 4.0 at 75º F (23.9º C), meeting point exceeding 2000º F. Supports to be 26 gauge galvanized steel.

C. Manufacturers of Semi-Refractory Fiber Insulation:

1. Manville Corp.
2. United States Gypsum Co.
3. Or Equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces indicated to receive joint sealers, with Installer present, for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints: Clean out joint immediately before installing joint sealers to comply with recommendations of joint sealers manufacturers and the following requirements:

1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealers, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; old joint sealers; oil; grease; waterproofing; water repellents; water; surface dirt.

2. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers. remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

3. Remove laitance and form release agents from concrete.

B. Joint Priming: Prime joints substrates where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendation. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.

3.03 INSTALLATION

A. General: Comply with manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Installation of Fire-Stopping Sealant: Install sealant, including forming, packing, and other accessory materials to fill openings around mechanical and electrical services penetrating floors and walls to provide fire-stops with fire resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

C. At full height fire-rated walls: Install fire safing insulation as shown on the drawings at wall head conditions:

1. Protect all fire safing insulation by installing 22 gauge galvanized sheet metal closure at top and bottom, which complies with the DBC for protection of fire safing insulation.

2. Tool exposed surfaces of mortar or sealants.

3. At plastic pipes penetrating floors provide a gauge galvanized steel sleeve around pipes, fire stop sealant within sleeve.

4. At opening between walls and floors install fire safing insulation per DBC requirements and in accordance with AAMA Tir-A3.

3.04 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

3.05 PROTECTION

A. Protect joint sealers and insulation from contact with contaminating substances or from damage resulting from construction operation or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deteriorated joint sealers immediately and installations with repaired areas indistinguishable from original work.

END OF SECTION

SECTION 07900

CAULKING AND SEALANTS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish and apply caulking and sealants as shown on the Drawings and as specified, complete.

1. Caulking as specified is for installation on the interior of the building unless sealant is indicated on the Drawings.

2. Sealant as specified shall be installed on the exterior of the building, and where sealant is otherwise indicated on the Drawings.

3. Sealants shall comply with USGBC LEED criteria for suitable emissions.

4. Refer to Section 01330 SUBMITTAL PROCEDURES

1.02 GUARANTEE

A. Furnish to University a written guarantee against all defects in materials and workmanship, including against discoloration, sagging, cracking, mildewing and similar defects for two (2) years from date of acceptance.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials utilized shall be from new cartridges with shelf-life valid during installation. Do not use seconds or remnants.

1. Color shall be as follows:

a. For joints separating two similar materials, match finish surface color.

b. For joints separating dissimilar materials, such as perimeter joints around louvers, door frames, window frames, etc., match wall surface color, except match mortar color in face brick walls.

B. Caulking shall be acrylic latex type caulk.

C. Sealant: Provide two (2) component rubber based compounds complying with Federal Specification TT-S-0027C.

1. Class "A" for non-traffic horizontal surfaces.
2. Class "B" for vertical surfaces.

D. Primer shall be as recommended by the caulking or sealant manufacturer.

E. Filler material shall be as recommended by the caulking or sealant manufacturer.

F. Environmental Requirement: Select sealants that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

PART 3 - EXECUTION

3.01 PREPARATION

A. Preparation of Surfaces:

1. Joint Preparation. After all cleaning operations on the exterior of the building are completed, rake out all joints between the frames and the masonry walls to remove all loose mortar materials and brush-clean to remove all dust and dirt. Where no backstop occurs to receive the caulking or sealant compound, fill joints with filler material as recommended by the caulking or sealant manufacturer.

3.02 APPLICATION

A. Application: Apply caulking or sealant, and primer in accordance with the printed instructions of the caulking or sealant manufacturer. Apply primer when and where recommended by the manufacturer.

3.03 ADJUSTMENT AND CLEANING

A. Clean and leave free from stains surfaces of all materials adjoining caulked or sealed joints. Remove excess of caulking or sealant on adjoining surfaces in accordance with the caulking or sealant manufacturer's printed recommendations.

END OF SECTION

SECTION 08116

ALUMINUM METAL KD FRAMES

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

1.01 DESCRIPTION OF WORK

A. The extent of standard metal frames is shown on the Drawings and schedules.

B. Types of frames required include:

1. Door and Window Frames
2. Partition and Door Frames
3. Miscellaneous Partition Trim

C. Related Work Specified Elsewhere:

1. Section 06100: Rough Carpentry
2. Section 06400: Architectural Woodwork
3. Section 08200: Wood Doors
4. Section 08710: Finish Hardware
5. Section 09250: Gypsum Wallboard System
6. Section 09900: Painting

1.02 QUALITY ASSURANCE

A. Provide frames complying with the Architectural Aluminum Manufacturer's Association and as herein specified.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's data for fabrication and installation instructions. Transmit one copy of instructions to the Installer. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

B. Shop Drawings: Submit Shop Drawings for the fabrication and installation of aluminum frames. Include details of each frame type, elevations, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements and details of joints and connections. Show anchorage and accessory items.

C. Samples: Submit two (2) 12" long full width extrusions in exact coloration for approval prior to fabrication.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide fire-rated frames as shown on the door schedule.

B. Frames: All frames of sizes shown, and are which to be furnished under this contract, shall be manufactured by:

Advanced Architectural Frames = Per building standard.
7542 Santa Rita Circle
Stanton, CA 90680
(714) 894-4698

Type: "Venus"

Western Integrated and Wilson aluminum KD frames are also accepted substitutions as long as ratings and profiles meet the building standard. Ensure profiles can meet existing throat conditions.

C. Fire Rating: 20 minute label.

D. Construction: Door frame sections shall be furnished with ("Separate Studs"), ("Fastrack Studs"), attachment studs; prepared for any standard weight 4½" template hinge, for 1¾" doors, and (2¾"), ASA strike plates; and supplied with continuous polypropylene pile soundseal.

E. Finish: Finish of all exposed surfaces for frame and sidelight components shall be factory painted to match University Representative's sample.

2.02 FABRICATION

A. General: Fabricate frame units to be rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles.

B. Finish Hardware Preparation: Prepare frames to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 "Specifications for Door and Frame Preparation."

1. Latch keeper shall be sized to accept hardware manufacturer's standard latch keeper.

2. Provide and install internal reinforcement clips at all frames to receive closers. General Contractor to provide additional blocking where door reinforcement stud is required to be cut to accept electric strike.

3. Reinforce door frame units to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site. Through bolting will not be permitted. Provide and install stiffener plates for head of frames where closers are scheduled.

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer shall examine the substrate and conditions under which metal KD frames are to be installed. Notify the Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed until unsatisfactory conditions have been corrected in a manner acceptable by Installer.

3.02 INSTALLATION

A. General: Perform installation work under Manufacturer's Installation Recommendations. Assemble and install frame units and accessories in accordance with final Shop Drawings and Manufacturer's data and as herein specified.

B. Placing Frames: Place frames after construction and finishing of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned and secured permanently in opening. Corners of frames shall be accurately joined, reinforced and fitted to flush hairline joints. Apply snap-on trim to conceal fasteners.

C. Blocking: Refer to Section 06100 for wood blocking to be installed for all areas that have cutouts made to frames.

3.03 ADJUST AND CLEAN

A. Remove and replace defective work. Replace frame or trim members whose finish has been damaged beyond satisfactory repair my minor touch-up. Use factory furnished touch-up paint and supply University a minimum of one quart of unopened touch-up paint.

END OF SECTION

SECTION 08142

HIGH-PRESSURE DECORATIVE LAMINATE FACED DOORS

PART 1 GENERAL

1.10 SECTION INCLUDES

A. Interior High-Pressure Decorative Laminate Faced Doors:
   1. Flush solid-core high-pressure decorative laminate doors.
   2. Flush fire-rated high-pressure decorative laminate doors.
   3. Lead-lined doors.

1.11 DESCRIPTION OF WORK

A. Provide plastic laminate faced wood doors as shown on the Drawings and as specified, complete.

B. Definitions:

The undercut dimension of 1/4-inch, unless otherwise indicated on the drawings, shall be the clear dimension from the finish floor elevation to the bottom of the door.

1.20 RELATED SECTIONS

A. Section 08110 – Hollow Metal Frames.

B. Section 08710 – Finish Hardware.

C. Section 08800 – Glass and Glazing.

D. Section 10225– Door Louvers.

1.30 REFERENCES

A. ANSI A208.1 – Particleboard.

B. ASTM E 90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

C. AWI Section 1300 – Architectural Flush Doors.

D. CBC – California Building Code.

E. NEMA LD3 – High Pressure Decorative Laminates.

F. NFPA-80 – National Fire Protection Association, Fire Doors and Windows.

G. UBC 7-2-1997/UL 10C – Positive Pressure Fire Tests of Door Assemblies.

H. WDMA I.S.1-A – Architectural Wood Flush Doors.

I. WHI / ITS – Warnock Hersey.

1.40 SUBMITTALS

A. Comply with Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Product Data: Submit manufacturer's product data, including door construction description and WDMA I.S.1-A and AWI classifications.

C. Schedules: Submit manufacturer's schedules, including door dimensions, cutouts, high-pressure decorative laminate selection, and hardware. Reference individual door numbers as indicated on the Drawings.

D. Samples:
1. Submit manufacturer's door construction samples for door model specified.
2. Submit manufacturer's sample chip with color and finish number.

E. Manufacturer's Certification: Submit manufacturer's certification that doors comply with specified requirements and are suitable for intended application.

F. Environmental Documentation: Submit manufacturer's environmental documentation.

1. Scientific Certification Systems (SCS) Particleboard Core Construction: Recovered fiber content certification.
2. Rapidly Renewable Materials – Agrifiber Core Construction: Product data.
3. Manufacturer's Information: Describe available LEED points.

G. Cleaning Instructions: Submit manufacturer's cleaning instructions for doors.

H. Warranty: Submit manufacturer's standard warranty.

1.50 QUALITY ASSURANCE

A. Tolerances for Warp, Telegraphing, Squareness, and Prefitting Dimensions: WDMA I.S.1-A and AWI Section 1300.

B. Identifying Label: Each door shall bear identifying label indicating:
1. Door manufacturer.
2. Order number.
3. Door number.
4. Fire rating, if applicable.

C. Fire-Rated Doors: Labeled by ITS/Warnock Hersey and conforming to California State Fire Marshal requirements.
1. Construction Details and Hardware Application: Approved by labeling agency.
2. Exit-access doors required to be protected by tight fitting smoke and draft–control assemblies having a fire-protection rating of not less than 20-minutes shall bear fire rating label with letter "S" indicating conformance to CBC Section 1004.3.4.3.2.1.
3. Construction Details and Hardware Application: Approved by labeling agency.
4. Conform to NFPA-80 for fire rated class indicated.

D. Positive Pressure Opening Assemblies: UBC 7-2-1997/UL 10C.

E. Environmental Responsibility: Provide doors manufactured with the following environmentally responsible core materials:
1. Particleboard Core: Scientific Certification Systems (SCS) certified.
2. Agrifiber Core: Meets LEED requirements for rapidly renewable materials.
3. Particle board and Agrifiber Cores contain no added urea formaldehyde

F. Upon completion, AWI Certified Compliance Certificate, countersigned by the manufacturer shall be submitted.

G. Regulatory Requirements.
   1. Conform to Section 1004 and Section 713, CBC.

1.60 DELIVERY, STORAGE AND HANDLING

A. Delivery:
   1. Deliver doors to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
   2. Package doors individually in polybags.

B. Storage:
   1. Store doors in accordance with manufacturer's instructions.
   2. Store doors in clean, dry area indoors, protected from damage and direct sunlight.
   3. Store doors flat on level surface.
   4. Do not store doors directly on concrete.
   5. Keep doors completely covered. Use covering which allows air circulation and does not permit light to penetrate.
   6. Store doors between 50 and 90 degrees F (10 and 32 degrees C) and 25 to 55 percent relative humidity.

C. Handling:
   1. Handle doors in accordance with manufacturer's instructions.
   2. Protect doors and finish during handling and installation to prevent damage.
   3. Handle doors with clean hands or clean gloves.
   4. Lift and carry doors. Do not drag doors across other doors or surfaces.

1.70 ENVIRONMENTAL REQUIREMENTS

A. Do not subject doors to extreme conditions or changes in temperature or relative humidity in accordance with WDMA I.S.1-A.

1.80 WARRANTY

A. Warrant solid core, interior doors for life of installation against warpage, delamination, and defects in materials and workmanship.

B. Defects noted during warranty period shall be corrected at no cost to University. Corrective work shall include labor and material for repair, replacement, refinishing, and rehanging as required.

PART 2 PRODUCTS

2.10 MANUFACTURER

A. VT Industries, Inc., 1000 Industrial Park, PO Box 490, Holstein, Iowa 51025 www.vtindustries.com. E-mail door_info@vtindustries.com., or equal.

B. General: Refer to Drawing A 5.21 DOOR SCHEDULE and Drawing A 5.11 MATERIAL LEGEND.

2.20 GENERAL

A. High-Pressure Decorative Laminates: NEMA LD3.
   1. Face laminate doors with high-pressure decorative laminates.
   2. Nominal Minimum Thickness for Faces and Vertical Edges: 0.028 inch.
   3. Laminate Selection: Standard products of Formica, Nevamar, Pionite, Wilsonart, or equal.
   4. Finish: Manufacturer's standard.
   5. Grade: General purpose, vertical grade.

B. Vision Panels:
   1. VT Industries steel low-profile vision frame.
   2. Style: No. 110.
   3. Finish: Beige prime finish.

C. Glazing: As specified in Section 08800

D. Door Louvers: Generally to be inverted split Y Type non-vision, or as specified in Section 10225.

2.30 FLUSH SOLID-CORE HIGH-PRESSURE DECORATIVE LAMINATE DOORS

A. Flush Solid-Core High-Pressure Decorative Laminate Doors:
   1. WDMA Model:
      a. PC-HPDL-5, particleboard core.
      b. SCLC-HPDL-5, structural composite lumber core.
      c. PC-HPDL-55 (Type 5509), agrifiber core.

   2. Compliance: WDMA I.S.1-A.
      a. Quality Grade: Premium grade, extra heavy duty.
   3. Door Thickness: 1-3/4 inches.
   4. Stiles:
      a. 1-3/8 inches wide, before pre-fitting.
      b. Structural composite lumber (SCL).
      c. Edged with high-pressure decorative laminate before face laminates.
   5. Rails:
      a. Structural composite lumber (SCL).
      b. Minimum Width Before Prefitting: 1-3/8 inches.
   6. Core:
      a. Type: Five-ply bonded core.
      b. Material: [Particleboard] [Agrifiber] [Structural composite lumber core (SCLC)].
      c. Particleboard Compliance: ANSI A208.1, Grade 1-LD-2.
   7. Door Assembly:
      a. Glue stiles and rails to core.
      b. Sand entire assembly flat as a unit to ensure minimal telegraphing of core composite cross-bands components through face laminates.
   8. Laminates:
      a. Apply to core in hot press using Type I, exterior, water-resistant adhesive.
      b. 5-ply construction.
   9. Blocking reinforcement:
      a. HB-1, 5 inch top rail for doors requiring surface closers.
      b. HB-3, 5 inch bottom rail for doors requiring pivots or automatic door bottoms.
      c. Blocking not required for SCLC, structural composite lumber core construction.

2.40 FLUSH FIRE-RATED HIGH-PRESSURE DECORATIVE LAMINATE DOORS

A. Flush Fire-Rated High-Pressure Decorative Laminate Doors:
   1. WDMA Model:
      a. PC-20PP-HPDL-5, particleboard core, 20-minute rated.
      b. SCLC-20PP-HPDL-5, structural composite lumber core, 20-minute rated.
      c. FD-60PP-HPDL-5, incombustible core, 60 and 90-minute rated.
      d. PC-20PP-HPDL-5 (Type 9P09), agrifiber core, 20-minute rated.
      e. FD-60PP-HPDL-5 (Type 9P09), agrifiber core, 60-minute rated.
   2. Compliance: WDMA I.S.1-A.
      a. Quality Grade: Premium.
      b. Type: FD-HPDL-5, five-ply bonded core.
   3. Door Thickness: 1-3/4 inches.
   4. Stiles:
      a. Structural composite lumber (SCL) with high-pressure decorative laminate edges.
   5. Rails:
      a. Structural composite lumber (SCL), 45-minute rated. Noncombustible material, 60- and 90-minute rated
      b. Width: Manufacturer's standard width.
   6. Core:
      a. Type: Five-ply bonded non-combustible mineral board.
      b. Weight: 30.8 pcf to 34.7 pcf.
      c. Does not contain asbestos or added urea formaldehyde.
   7. Composite Crossbands:
      a. Apply to core before application of high-pressure decorative laminate edges.
      b. Exposed Crossbanding: Not allowed along stile edges.
   8. Positive Pressure:
      a. Doors shall be constructed in accordance with Category A Guidelines as published by Intertek/Warnock Hersey.
      b. Smoke Gasketing: Apply smoke gasketing around frame perimeter to meet S-rating.
      c. Intertek/Warnock Hersey Category B Guidelines: Edge sealing systems not allowed on frames.
   9. Blocking reinforcement:
      a. HB-1, 5 inch top rail for doors requiring surface closers.
      b. HB-3, 5 inch bottom rail for doors requiring pivots or automatic door bottoms.
      c. HB-6, 5 x 1 mid-rail for doors requiring fire exit panic hardware.
      d. Blocking not required for SCLC, structural composite lumber core 20-minute construction.

2.50 LEAD-LINED DOORS

A. Lead-Lined Doors:
   1. Model: Type 1515-3, non-rated and 1P15-3, 20-minute rated.
   2. Compliance: WDMA I.S.1-A.
      a. Quality Grade: Premium.
   3. Non-Rated and 20-Minute-Rated Fire Doors with Lead Sheet on Both Sides of Core:
      a. Door Thickness: 1-3/4 inches, plus or minus 1/16 inch.
      b. Maximum Combined Lead Thickness: 1/4 inch.
   4. Core:
      a. Particleboard.
      b. Particleboard Grade: ANSI A208.1, Grade 1-LD-2, for lead-each-side construction.
   5. Faces and Vertical Stile Edges: Compatible with non-rated fire-rated doors.
   6. Composite Crossbands:
      a. Apply to core before application of high-pressure decorative laminate edges.
      b. Exposed Crossbanding: Not allowed along stile edges.
   7. Stiles:

a. 1-3/8 inches wide, before prefitting.
b. Structural composite lumber (SCL).
c. Edged with high-pressure decorative laminate before face laminates for lead-each-side construction.

8. Rails:
   a. Structural composite lumber (SCL).
   b. Width: 3-3/8 inches, before prefitting for lead-each-side construction.
9. Lock and Hinge Stiles: Bevel 1/8 inch in 2 inches.
10. Lead-Lined Steel Lite Frames on 20-Minute Doors:
    a. Maximum Lite Opening Size: 256 square inches.
    b. Maximum Width and Height: 16 inches.
11. Lead Lining:
    a. Thickness and Quality: Conform to shielding study provided by University.
    b. Maintain integrity of lead lining.

2.70 FABRICATION

A. Stile Edges: Apply laminate edges before application of face laminates.

B. Prefit Doors:
   1. Pre-fit and bevel doors 1/8 inch in 2 inch at factory to fit openings.

C. Factory pre-machine doors for mortised hardware, including pilot holes for hinge screws and lock fronts.

D. Factory-install glass lite kits and louvers in doors.

E. Fabrication clearances:
   1. Door to head and jamb: 1/8 inch.
   2. Door to stop at lock edge: 1/8 inch.
   3. Between meeting edges of pairs of doors: 1/8 inch.
   4. Door bottom to non-combustible finished floor, without threshold: 3/4 inch.
   5. Door bottom to top of threshold sill: 3/8 inch.
   6. Door bottom to top of decorative finished flooring: 1/2 inch.
   7. At fire rated doors comply with NFPA-80 for clearances.

F. Top and Bottom Rails: Factory sealed with wood sealer.

PART 3 EXECUTION

3.10 EXAMINATION

A. Examine locations to receive doors. Notify University Representative of conditions that would adversely affect installation or subsequent use. Do not begin installation until unacceptable conditions are corrected.

B. Ensure frames are solidly anchored, allowing no deflection when doors are installed.

C. Ensure frames are plumb, level, square, and within tolerance.

3.20 PREPARATION

A. Allow doors to become acclimated to building temperature and relative humidity for a minimum of 24 hours before installation.

3.30 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and in conformance with ANSI / DHI A115.1G.

B. Install fire doors in accordance with NFPA-80.

C. Install doors at locations indicated on the Door Schedule and Drawings.

D. Install doors plumb, level, square, true to line, without warp or rack.

E. The utility or structural strength of the doors shall not be impaired when fitting to the opening, in applying hardware or preparing for lites lovers or other detailing.

F. The maximum clearance between the top, hinge edge and lock edge to frame and meeting edges at pair's doors is 1/8 inch.

G. Seal exposed surfaces with a minimum of 2 coats of polyurethane within 4 days of fitting each door.

H. Install door hardware as specified in Section 08710, using specific templates and installation instructions from hardware manufacturers or their distributors.

3.40 ADJUSTING

A. Adjust doors to swing freely, without binding in frame.

B. Adjust hardware to operate properly, with smooth controlled swing and positive latching.

C. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by University Representative.

D. Remove and replace damaged doors that cannot be successfully repaired, as determined by University Representative.

3.50 CLEANING

A. Clean doors promptly after installation in accordance with manufacturer's instructions.

B. Do not use harsh cleaning materials or methods that could damage finish.

3.60 PROTECTION

A. Protect installed doors from damage during construction.

B. Place polybags over doors after adjusting and cleaning.

END OF SECTION

SECTION 08200

WOOD DOORS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide wood doors as shown on the Drawings and as specified, complete. Stain to match doors on the same floor as work in question. Provide stains samples in advance. Doors shall be stained off premises for new doors and existing doors where possible. If doors are in rated locations and shall be stained or finished in the field, work shall occur after hours and with permission from the office of the building.

B. Definitions:

1. The undercut dimension, 3/4-inch (19 mm), unless otherwise indicated on the door schedule, shall be clear dimension from the floor elevation, as shown on the floor Drawings, to the bottom of the door.

   a. Door undercut dimension at wood doors having mortise-type automatic door bottoms for door seals shall be as required for automatic door bottoms as specified in Section 08710, FINISH HARDWARE.

1.02 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Shop Drawings and Product Data: The following list includes the required shop drawings that shall be submitted.

1. Doors. Manufacturer and specifications.

2. Stain. Submit stain samples. It is critical that the door stains meet the University finish requirements for stained wood doors. Wood grain shall be visible and enhanced.

3. Prep. Submit a detail showing the height of the door handle prep prior to prep and install.

4. Do not prep door until hardware has been submitted and approved by building engineer.

C. Certificates: Submit manufacturer's certifications as required hereinafter to show compliance with the specifications.

1.03 PRODUCT DELIVERY AND STORAGE

A. Delivery of Materials:

1. Doors shall not be delivered to the Project site until the entire building has been free from dampness due to plastering, gypsum wall board finishing or other moisture-producing work for at least ten (10) days.

2. Protect doors during transit by enveloping each unit in an individual cover. Pallet-loads of doors shall be provided with covers and skids to protect materials from transit damage.

3. Doors and protective covers shall be individually marked in accordance with approved shop drawings.

B. Storage of Materials, Equipment and Fixtures: Heat shall be furnished in the door storage area during cold or humid weather. Protect doors against dampness; store in dry and well-ventilated area, and do not subject units to extreme changes of temperature or humidity. Comply with the "On-Site Care" recommendations of NWMA pamphlet, "Care and Finishing of Wood Doors," and with the manufacturer's printed recommendations.

1.04 GUARANTEE

A. Furnish to University a written guarantee against all defects in materials and workmanship including against warping, checking, delamination and core show-through. Guarantee doors as follows:

1. solid core doors, interior, five (5) years from date of acceptance;

2. solid core doors, exterior, and hollow core doors, two (2) years from date of acceptance.

Refer to Section 01740, GUARANTEES, BONDS, AND SERVICE AND MAINTENANCE CONTRACTS, for submittal form.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Wood doors shall be in accordance with the AWI brochure, "Flush Doors," and the NWMA Publication I.S.1, "Wood Flush Doors." Face veneer of doors shall be plain sliced oak. All of the doors furnished on the Project shall be by one manufacturer.

1. Doors shall be premium grade.

B. Doors shall have matching hardwood edge strips laminated to the stiles.

1. Where glazing panels or louvers are indicated, openings in non-fire rated doors shall be edged with matching hardwood. Provide trim for openings in fire-rated doors which have been tested and UL listed for the kind of door and rating required.

C. Solid Core Flush Doors: All doors, other than fire-rated doors and sound insulating doors, shall be solid core flush doors, 1-3/4 inches (450 mm) thick as follows, unless otherwise shown on the Drawings.

1. Core shall be TYPE PC (particleboard solid core) in accordance with NWMA Publication I.S.1.

2. Face veneers shall be premium grade.

3. Pairs of doors shall have matched grain face veneers.

4. Environmental Requirements: Particleboard shall contain no added urea formaldehyde.

D. Fire-rated doors shall be UL labeled fire doors as follows for the label scheduled on the Drawings, except pairs of 1/3-hour labeled doors shall have Warnock Hersey Fire Laboratories' labels:

1. For "B" Label (1-hour rating), use FD 1.
2. For "B" Label (1-1/2-hour rating), use FD 1-1/2.
3. For "C" Label (3/4-hour rating), use FD 3/4.

4. For "20-Minute" Label (1/3-hour rating), use FD 1/3.

   a. Pairs of doors shall have fire retardant treated wood edges to meet Warnock Hersey label requirements

5. Sixty (60) and ninety (90) minute fire-rated doors in corresponding fire-rated frames shall have producer's standard UL stiles for flush-type hinges and shall be installed in accordance with the requirements of NFPA Publication No. 80, "Standard for Fire Doors and Windows."

6. Wood door construction is approved for mortise at fire-rated door locations where mortise-type automatic door bottoms are scheduled.

E. Louvers. All louvers shall have three (3) coats of baked enamel of color selected by University's Representative to match door color. Sizes are scheduled on the Drawings.

   1. Provide UL-labeled louvers at all doors required by the Drawings to be fire-rated and to be equipped with louvers.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prepare doors as required for all finish hardware. Obtain hardware templates for use during machining. Verify hardware locations and core type of door prior to matching.

   1. All pairs of wood doors shall have beveled leading edge at inactive leaf and beveled lock edge at active leaf, pre-fit at the factory. Provide 1/8-inch (3.2 mm) maximum space at narrowest dimension and 11/32-inch (8.7 mm) maximum space at widest dimension of double-bevel between inactive and active door leafs. Bevel shall not exceed 1/8-inch (3.2 mm) in 2 inches (50.8 mm).

B. Acclimatize doors to the average prevailing humidity in the installation area prior to hanging wood doors.

3.02 INSTALLATION

A. Install wood doors in accordance with manufacturer's printed recommendations.

3.03 PROTECTION OF COMPLETED WORK

A. After the doors are installed in their openings, furnish protection to prevent damage due to other construction operations and movement of materials, equipment and people through the door openings.

END OF SECTION

SECTION 08305

ACCESS DOORS

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

1.01 DESCRIPTION OF WORK

A. The extent, location and size of each type of access door required is shown on the drawings and in schedules, and include the following:
   1. Wall or ceiling access doors.

B. Provide access doors indicated on the drawings. Provide access doors not indicated on the drawings but required by Codes or needed by the work. Provide access doors for all concealed work including Plumbing, Electrical and Mechanical requiring periodic servicing or inspection.

C. Final location and type of access doors shall be approved by the University Representative prior to installation.

D. All access doors shall be provided by one manufacturer for entire project. Screwdriver latches shall be the same for all access doors.

E. Related Work Specified Elsewhere:

   1. Section 06100: Rough Carpentry
   2. Section 09250: Gypsum Wallboard System
   3. Division15000: Mechanical Related
   4. Section 16000: Electrical

1.02 QUALITY ASSURANCE

A. Size Variations: Obtain University Representative's acceptance of manufacturer's standard size units which may vary slightly from sizes indicated.

   1. Provide steel access panels as a single integral unit with frame, anchors, hardware, accessory parts, fittings and fastenings. Units are to be the standard products or modifications if required.

B. Fire Resistance Ratings: Whenever a fire-resistance rating is shown for construction into which access panels are to be installed, provide an access panel assembly of type and manufacturer listed by Underwriter's Laboratories, "Classified Building Materials Index." Provide UL label on each fire-resistance rated access panel assembly.

C. Inserts and Anchorages: Furnish inserts and anchoring devices which shall be built into other work for the installation of access doors. Coordinate delivery with other work to avoid delay.

1.03 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Product Data: Submit manufacturer's technical data and installation instructions for each type of access door assembly. Transmit copy of each construction to the Installer.

1. Provide setting drawings, templates, instructions and directions for installation of anchorage devices.

PART 2 - PRODUCTS

2.01 MATERIALS AND FABRICATION

A. Furnish door assemblies manufactured as an integral unit, complete with all parts and ready for installation, factory prime coast painted for steel, mill finish for aluminum.

B. Fabricate units of continuous welded steel construction. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of the type required to secure access panels to the types of support shown.

C. Manufacturer: Provide access panels as manufactured by one of the following:

1. Milcor Div-Inryco, Inc. #3208-024 Field Painted (no known equal).

D. Access Door Units: Furnish assemblies with manufacturer's standard construction with details, anchorage for use in exposed drywall.

E. Flush Panel - Drywall: Frame shall be 16 gauge (1.6 mm) steel with an integral galvanized steel drywall bead. Panel shall be 14 gauge (1.9 mm) steel, fitted flush with integral bead. Provide concealed spring hinges permitting 175 opening.

F. Fire Rated Panels: Where shown or required construct panels and frames to comply with the requirements of Underwriter's Laboratories, Inc. for 1½ hour, "B" label, 250º F (121º C) rating. Install UL label on each panel.

1. Frame shall be 16 gauge (1.6 mm) steel with a nominal 1" (25.4 mm) frame flange and integral masonry anchors. Panel shall be 20 gauge (0.9 mm) steel, sandwich construction, with a non-combustible insulation core. Provide continuous steel piano type hinge for the length of the panel and a latching device with flush cylinder for panels over 12"x 12" (0.3 m x 0.3 m). All mild steel shall be factory prime painted.

G. Locking Devices: Furnish flush, screwdriver-operated cam locks of the number required to hold door in flush, smooth plane when closed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perform installation work under Section 06100 as specified herein.

B. Comply with manufacturer's instructions for installation of access doors.

C. Coordinate installation with work of other trades.

D. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

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E. Adjust hardware and panels after installation for proper operation.

F. Remove and replace panels or frames which are warped, bowed or otherwise damaged.

END OF SECTION

SECTION 08411

ALUMINUM STOREFRONT

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of the General and Supplementary Conditions and Division 01 apply to this section.

B. Section Includes:

1. Aluminum window and door frames as indicated.

C. Related Sections:

1. Section 07900: Caulking and Sealants.
2. Section 08710: Finish Hardware.
3. Section 08800: Glass and Glazing.

1.02 SYSTEM DESCRIPTION

A. Design Requirements: Drawings indicate locations, sizes, profiles and general details of aluminum window and door frame construction and installation.

B. Regulatory Requirements: Comply with CBC requirements.

1.03 REFERENCES

A. Aluminum Association (AA):

1. AA-M12 C22 A41

B. American Architectural Manufacturers Association (AAMA):

1. AAMA 605.2
2. AAMA 701.2
3. AAMA - Curtain Wall Manual #10

C. American Society for Testing and Materials (ASTM):

1. ASTM B209.
2. ASTM B221.
3. ASTM A36/A36M.

4. ASTM A386.

1.3 SYSTEM DESCRIPTION

A. Aluminum entrances and storefront system includes tubular aluminum sections, shop fabricated, factory finished, glass and infill, related flashings, anchorage and attachment devices.

B. System is entirely interior. No heat brakes, insulation or other exterior components are necessary. The system is glazed from the side generally facing the large curved lobby.

1.03 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings for the Work of this section, prepared and reviewed before fabrication. Include plans, elevations, opening, identification symbols, sizes, and complete details for materials, finishes, sizes, profiles, moldings, dimensioned locations of hardware items with reinforcement, methods of anchoring, assembly, installation, isolation, glazing procedure as well as reglazing procedures, materials, and caulking.

B. Product Data: Submit manufacturer's Product Data.

C. Material Samples: Submit the following:

1. Window, door and frame sections with specified finish, fasteners and accessories.

2. Cured sealant colors.

D. Calculations: Provide structural calculations, signed and sealed by a structural engineer licensed in the State of California, indicating that materials furnished for installation conform to requirements specified.

E. Mock-ups: Provide mock-ups of one typical door corner 6" x 6" and of one glazed window unit corner, 6" x 6". Mock-ups may be combined. Mock-ups shall represent specified finishes.

1.04 QUALITY ASSURANCE

A. Quality Standards: Provide aluminum Work so that glass installation conforms to ANSI Z97, as applicable. Provide test reports from AAMA accredited laboratories.

B. Test reports shall be accompanied by the curtain wall manufacturer's letter of certification stating that the tested curtain wall meets or exceeds the referenced criteria for the appropriate curtain wall type.

C. Confirm to requirements of CBC 2406.2, tables 24C and 24D, UBC Standards – Safety Glazing (see attachment at end of this section).

D. Manufacturer and Glazed Curtain Wall contractor shall demonstrate a minimum of ten years of experience in the successful completion of projects utilizing similar systems, applications and performance requirements.

E. Manufacturer and Glazed Curtain Wall contractor shall provide a list of five similar completed projects with addresses of the location, Architect and Owner to the University Representative.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Handle Products of this section in accordance with AAMA - Curtain Wall Manual #10.

B. Protect finished aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.06 WARRANTY

A. The manufacturer/installer shall warrant the product and installation to be free from defective material and workmanship for a period of two years after date of substantial completion, and shall replace or repair any defective component or system, in whole or part, as necessary to restore the product to its original intended state and integrity.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Extruded Aluminum: ASTM B221.

B. Sheet Aluminum: ASTM B209.

C. Steel Sections: ASTM A36/A36M; shaped to suit mullion sections.

D. Fasteners: Stainless steel.

E. Aluminum storefront system:

1. Basis of Design:
EFCO Corporation; Monett, MO (800) 221-4169
Series 901, 2” x 4 1/2", non-thermal ribbon window system.

2. Other acceptable manufacturers offering equivalent products:

a. Arcadia, Stamford, CT. (800)423-6565
Series AF450, 2” x 4 1/2” off-set glazed system

b. U.S. Aluminum Corporation, Waxahachie, TX (800) 627-6440
Series BG450, 2 1/4” x 4 1/2” ribbon window system

3. Extrusions shall be 6063-T6 alloy and temper, ASTM B 221 alloy G.S. IDA-T5. Fasteners, where exposed, shall be aluminum, stainless steel, or zinc-plated steel in accordance with ASTM B 663. Perimeter anchors shall be aluminum or steel. Steel anchors shall be isolated from the aluminum as required.

4. Major portions of door sections, except glazing beads, shall be nominal 0.125 inch.

5. Wall thickness of frame members shall be nominal 0.093 inch.

F. Glazing gaskets shall be EPDM elastomeric extrusions or vinyl reinforced with fiberglass cord.

G. Vertical mullions shall be butt glazed with structural silicone, where no cover is provided.

H. Hardware: Finish hardware shall be as specified in Section 08710: Finish Hardware.

2.02 FINISH

A. All exposed surfaces of aluminum storefront window and door frames: Architectural Class I Powder Coat – Bone White (Submit Sample to University Representative for Approval).

B. Concealed steel items shall be galvanized in accordance with ASTM A386 to 2.0 oz/sq. ft.

C. Apply two coats of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

2.03 FABRICATION

A. The framing system shall provide continuous head and sill channels spliced together with formed brake metal sleeves at center of vertical mullions. The framing system shall provide for flush glazing on sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension and overall depth shall be as noted above. Door framing members shall match glass framing appearance.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to University Representative, prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the University.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Framing shall be installed in correct locations as indicated in the details and shall be level, square, plumb and in alignment with other members. Joints between framing and the building structure shall be sealed as indicated on the Drawings .

C. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

D. Provide alignment attachments and shims to permanently fasten system to building structure.

E. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

F. Provide thermal isolation where components penetrate or disrupt building insulation.

G. Install hardware using templates provided. Refer to Section 08710 for installation requirements.

H. Install glass in accordance with Section 08800.

I. Install perimeter sealant, backing materials, and installation criteria in accordance with Section 07900.

3.03 ADJUSTING

A. Section 01780, CLOSEOUT SUBMITTALS.

B. Adjust operating hardware [and sash] for smooth operation.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.03 CLEAN UP

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down exposed surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

C. Remove excess sealant by method acceptable to sealant manufacturer.

D. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide finish hardware as shown on the Drawings, as specified and as scheduled, complete.

1. Provide hardware templates as required for metal doors and frames and other work to be factory-prepared for the installation of hardware.

2. Furnish additional items of hardware which are necessary to make a complete installation.

3. Only one (1) manufacturer for each category of finish hardware shall be furnished throughout the project.

4. Prior to submitting or ordering new doors, frames or hardware, and prior to prepping new doors, verify with building engineer for correct back-set, lock operation / lockset function etc. Incorrect assumptions will not be grounds for compensation. A submittal of lockset functions shall be submitted.

B. Definitions: Finish hardware is hereby defined to include all items known commercially as builders' hardware, as required for swing-types of doors, and all cylinders for special doors as itemized herein.

1.02 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Product Data: Submit complete product data.

C. Prior to delivery of hardware, submit hardware shop drawings and a hardware schedule of all hardware required. The schedule shall follow the requirements of the specifications and list type, manufacturer's name and number, finish and location. In addition, furnish a schedule fully identifying all abbreviations and symbols used.

1. Furnish with each set of shop drawings, one (1) copy of the standard mounting heights for hardware, published by the DHI.

2. Furnish a graphic keying chart of the project depicting the keying system of the building.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Packing and Marking: Package each item of hardware and each lockset separately in individual containers, complete with necessary screws, keys, instructions and installation template for mortising tools. Mark each container with item number corresponding to number shown on Contractor's hardware schedule.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Finishes: Hardware shall have the following standard finishes:

1. US26D (BHMA) US Equivalent, unless otherwise specified.

2. US26 (BHMA No. 629), when used in toilets.

3. For exposed surfaces of surface-type door closers and closer arms, paint to match hardware finish on remainder of door. Refer to Section 09900, PAINTING.

4. Metal astragals and metal door edges, including factory-painted units, paint to match door frame.

B. Description of Hardware: The following paragraphs describe individual hardware items to establish the design intent and function of required hardware.

1. Butts: Provide 1-1/2 pair butts per door, size 4-1/2" x 4-1/2" (114 mm x 114 mm), unless otherwise scheduled. Butts for exterior doors and interior reverse bevel doors with locks shall have security provisions as follows.

a. Non-removable pins (NRP), loose pin secured by set screw in barrel to intercept groove in pin.

2. Lock and latch sets shall be lever and rose design, where scheduled. Levers for both sides of door shall be provided. Provide lock and latch sets with 3-3/4-inch backset (Arrow Q and W Series), and see Paragraph 3.05 A for lever finish requirement.

a. Office Entrance Q Series Function 11, Strike 306, Latch 161, Trim SR, Finish 26D.

Latch bolt operated by lever either side except when outside lever is locked by turn-button inside. When outside lever is locked, latch bolt operated by key outside or turning inside lever. Pushing and turning inside button will cause outside lever to remain locked. Button will then need to be manually rotated to unlock outside lever.

b. Suite Entrance W Series Function 17, Strike 306, Latch 161, Trim SR, Finish 26D.

Latch bolt operated by lever either side except when key outside locks outside lever. Inside lever always free. Key outside locks/unlocks outside lever only.

3. Door Closers: Door closers shall be Norton brand. Size of door closers shall be not less than that listed by the door closer manufacturer's tables for the corresponding width of door, or as specified. Provide all mounting brackets required for a complete installation. Provide drop plates, shoe supports and blade stop spacers, as required, to facilitate complete installation of closers at door locations having narrow top rails.

a. Provide closers that meet requirements of 5 pounds (2.27 kg) opening pressure for handicapped persons at interior doors. Closer Opening pressure for exterior doors: 5 pounds (2.27kg) for handicapped persons. Closers for handicapped persons are scheduled with suffix "HC". Openings force for Fire Rated doors can be increased by campus building official, not to exceed 15 lbs.

b. Electronic release door closers shall be operated with voltage of 120 V a.c. Electronic closers shall be UL-rated and connected to the building's fire alarm system with smoke detector at both sides of door, which when activated will release the holder mechanism causing the closer to close the door. Doors shall be capable of being closed and opened manually without setting off fire alarm. Each shall have concealed electrical connections to track on head frame. Doors shall open to their maximum potential that door opening permits.

4. Door Stops: Supply stops wherever an item of door hardware or a door, when opened, might contact a wall or other part of the building construction. Wall stops shall be provided where possible, when wall or floor stop option is scheduled. Risers for carpeted floors shall also be provided, as required, where floor stops occur at carpeted floors. Door stops shall not project more than 4 inches into path.

5. Panic Devices: Provide dummy trim (DT) where scheduled.

6. Thresholds: Provide thresholds with manufacturer's standard return closed (RCE) at each end of threshold, where there are no adjacent abutting surfaces. Other thresholds shall be as specified in Paragraph 2.01.B.13, "Floor Closers," and Paragraph 2.01.B.16, "Pivot Sets."

7. Door pulls and push plates.

8. Lever and Self-Latching Flush Bolts: Provide the bottom bolt with dustproof strike, except where metal thresholds occur.

9. Coordinators: Provide with mounting brackets for stop-applied hardware and filler pieces as required to provide a complete installation. Paint coordinators, mounting brackets and filler pieces to match the color of the frame upon which they occur. If required, provide carry bars by the coordinator manufacturer. Provide additional 1/4-inch (6.4 mm)-thick mounting brackets for frame stop-applied door closers at exterior double doors, where coordinators are to be mounted on and connected through specified weatherstripping to stop on frame.

10. Automatic Flush Bolts: For metal doors and wood doors. Provide with top strikes, bottom dustproof strikes and wear strike plates; except, bottom strikes are not required where metal thresholds occur. Provide automatic flush bolts in sets (one (1) top and one (1) bottom automatic flush bolt per set).

11. Kickplates: US32D (BHMA No. 630). 10 inches (254 mm) high by 1-1/2 inches (38 mm) narrower than the width of the door. Provide oval head screws 8 inches (203.2 mm) on centers.

12. Smoke gaskets shall be provided at all fire-rated doors where scheduled. Smoke gaskets at head and jambs shall be pressure-sensitive, adhesive-type silicon rubber at meeting stiles of pairs of doors, where scheduled. The gasket retainer shall be surface-applied to leading edge of inactive door leaf near edge of door, opposite door swing side. Smoke gaskets shall be brown in color, and be UL-classified as "Gasketing Material for Fire Doors." Astragals at meeting stiles of fire-rated pairs of doors, when required or scheduled, shall be considered as smoke gasketing.

13. Floor closers shall be for physically handicapped access with sealed units and up to 30-second delayed action. Provide floor closers with side jamb pivots, top pivots, thresholds and concealed overhead door stops of the same manufacturer, as scheduled. Floor closers shall provide no more than 8.5 pounds (3.85 kg) resistance to opening of the doors by handicapped persons.

14. Door seals at door head and jambs shall be provided where scheduled and shall be pressure-sensitive, adhesive-type silicon rubber; color as selected by University's Representative.

15. Door seals at door bottoms shall be automatic door bottoms of the heavy-duty type, aluminum, with neoprene insert and fully-mortised into bottom of wood door. Door construction shall be approved by University's Representative for mortise at fire-rated door locations.

16. Pivot sets with 3/4-inch (19 mm) offset, as scheduled. Each pivot set shall include bottom pivot jamb portion, arm and top pivot. Provide side jamb pivots and thresholds of the same manufacturer, as scheduled. Bottom pivots at exterior door locations shall be installed up on the side jamb. Plastic spacer shims shall be set below the threshold under the bottom pivots to strengthen the threshold.

17. Light seals at door head and jambs, where scheduled. Seal inserts shall be vinyl or neoprene.

18. Plunger door holders shall be as scheduled. Holder shoes shall be of gray rubber, bolted into a flanged cup.

19. Floor sills at acoustical metal doors shall be as scheduled. Sill finish shall be US28, satin aluminum. Sills shall be fully grouted in and fastened securely to the floor. Refer to Section 04100, MORTAR.

C. Keying:

1. Building Engineer shall be responsible for coordinating building keying system with Contractor and project manager. Contractor to provide approved building standard keyway to building engineer.

D. Labeled Hardware:

1. Provide hardware which meets the requirements of NFPA Publication No. 80 and of UL and Warnock Hersey for all fire-rated doors and frames.

2. Where panic exit devices are required on fire-rated doors, furnish supplementary marking on door UL label indicating "Fire Door to be Equipped with Fire Exit Hardware," and furnish UL label on exit device indicating "Fire Exit Hardware."

3. Unless astragals are scheduled, hardware items scheduled hereinafter at pairs of UL-labeled doors are for doors that are "UL Listed with No Overlapping Astragal Requirements." If pairs of UL-labeled doors furnished by the door manufacturer do not have "UL Listing with No Overlapping Astragal Requirements," overlapping astragals shall be provided, including door coordinators with carry bar, at no additional cost to University. When required, connect astragal to active door leaf of the pair. Carry bar is not required when inactive door leaf of the pair is equipped with automatic or self-latching flush bolts.

E. Fasteners:

1. Provide all required fasteners of type, size, quantity and finish for installation with each hardware item. Provide Phillips flat head screws except where otherwise indicated. Finish of exposed fasteners shall match hardware finish or, if exposed upon surfaces of other work, shall match the finish of such other work as closely as possible.

2. Machine screws and expansion shields shall be used for attachment of hardware to concrete or masonry. Toggle bolts shall be used for attaching hardware to gypsum wallboard or plaster surfaces.

3. Provide fasteners which are compatible with both the unit to be fastened and the substrate, and which will not cause corrosion or deterioration of hardware, base material or fasteners.

   a. Fasteners exposed to the weather in the finished work shall be brass, bronze, aluminum or stainless steel, as applicable to match the item being fastened. Where these materials cannot be used, steel fasteners shall be zinc or cadmium-plated in accordance with ASTM B633, Type SC3 or ASTM A165, Type NS, respectively.

2.02 MANUFACTURERS

A. The following manufacturers' names appear on the hardware schedule to designate the standard of the items specified and continuity with existing hardware in the building where no known equal is listed:

Equipment	Abbreviation	Manufacturer	Alternate Manufacturer
Hinges	HAG	Hager	Mc Kinney, Stanley, or equal
Continuous Hinges	MAR	Markar	Mc Kinney, Hager, or equal
Mortise Locksets	SCH	Schlage	Match existing building standard
Cylindrical Locksets	SCH	Schlage	Match existing building standard
Digital Locksets	OSI	Omni Lock	Match existing building standard
Auxiliary Locks	ILC	Ilco	Medeco
Security Cylinders	MED	Medeco-Biaxial	Match existing building standard
Cylinder Guards	KEE	Keedex	Corbin-Russwin, or equal
Latch Guards	DJM	Don-Jo	Rockwood, or equal
Rescue Strikes	STN	Stanley	Mc Kinney, Hager, or equal
Exit Devices	VON	Von Duprin	Match existing building standard
Hospital Latches	TRM	Trimco	Don-Jo, Ives, or equal
Closers	NOR	Norton Door Ctrls	Match existing building standard
Coordinators, Auto Bolts	DCI	Door Controls	Don-Jo, Ives or equal
Stops & Plates	TRM	Trimco	Don-Jo, Rockwood, or equal
Pivots, OH Stops	RIX	Rixson	Don-Jo, ABH, or equal
Magnetic Holders	RIX	Rixson	Norton, LCN, or equal
Thresholds & Seals	PEM	Pemko	National Guard, Reese, or equal

PART 3 - EXECUTION

3.01 PREPARATION

A. Hardware for installation on metal doors, frames or other work shall be factory-prepared for hardware installation and shall be made to standard templates of the hardware manufacturer. Drilling and tapping for hardware installation shall be done in the field.

3.02 INSTALLATION

A. Install hardware items in compliance with the manufacturer's printed recommendations.

B. Do not install surface-mounted items until finishing operations have been completed on the substrate.

3.03 FIELD QUALITY CONTROL

A. Mount hardware items at heights indicated in DHI "Recommended Locations for Builders Hardware," and in accordance with the "Regulations for Accommodation of the Disabled in Public Accommodations" in the California State Building Code, Title 24, Parts 2, 3 and 5.

3.04 ADJUSTMENT AND CLEANING

A. Adjust and check each operating item of hardware to ensure correct operation and function of all units.

1. Lubricate moving parts with type of lubrication recommended by manufacturer. Utilize graphite-type if no other lubrication is recommended.

2. Replace units which cannot be adjusted or lubricated to operate freely and smoothly as intended for the application specified, as approved and at Contractor's expense.

3.05 SCHEDULES

A. Special Finishes: Rough, clear abrasive coating shall be applied at the factory to levers at lock and latch sets where "knurled level is scheduled.

B. Schedule of Hardware (for equal products, refer to Paragraph 2.02 above):

FINISH HARDWARE SCHEDULE

HW-1
Each Door To Have

3	Hinges	BB1279	652	HAG
1	Lockset	AL 50PD-SAT	619	SCH
	(Split Finish - Corridor Side Finish to Match Building Standard)			
1	Wall Stop	1270CV	630	TRM
1	Silencers	1229	-	TRM

HW-2
Each Door To Have

3	Hinges	BB1279	652	HAG
1	Lockset	AL53PD-SAT	619	SCH
1	Closer	7580	689	NOR
3	Silencers	1229	-	TRM

HW-3
Each Door To Have

3	Hinges	BB1279	652	HAG
1	Passage	AL10S-SAT	619	SCH
1	Wall Stop	1270CV	630	TRM
3	Silencers	1229	-	TRM

END OF SECTION

SECTION 08800

GLASS AND GLAZING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide glass and glazing as shown on the Drawings and as specified, complete.

1.02 QUALITY ASSURANCE

A. Reference Standards: Glass and glazing for this project shall meet or exceed the requirements of the "Safety Standard for Architectural Glazing Materials" (CSPC 16 CFR 1201) and ANSI 297.1 specifications, as applicable.

1.03 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES for procedures.

1.04 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Data indicating material specifications and characteristics.

C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

1.05 GUARANTEE

A. Furnish to University a written guarantee against all defects in materials and workmanship, for five (5) years from date of acceptance.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Pulp Studio, which is located at: 3211 La Cienega Boulevard; Los Angeles, CA 90016. (Or Equal – Submit Sample to University Representative for Approval Before Proceeding)

B. Contact: Pulp Studio, Charlotte, 3211 La Cienega Boulevard; Los Angeles, CA 90016.

Telephone 310-815-4999, Fax 310-815-4990.

D. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 MATERIALS

A. General: Except where otherwise specified, each piece of glass shall bear the manufacturer's label to identify type, thickness and quality.

1. Glass shall be as specified and in conformance with FS as indicated.

B. Glazing Types:

1. G-1: Translucent 60 Minute Fire-Rated Glass: Type I, Class 1, Pyrostop - 5/16-inch thick unless otherwise indicated. (This Glass is required to be manufactured by Technical Glass Product (TGP), or equal.

2. G-2: Clear Laminated Glass: 5/16 inch thick unless otherwise indicated. Glass shall be fully tempered and /or laminated as required to comply with all safety standards. All Glass to comply with ANSI 97.1-1984 and Category II safety glass. Pulp Studio or Equal.

3. G-3: Translucent White Glass: Model No. 5099 - 5/16 inch thick unless otherwise indicated. Glass shall be fully tempered and /or laminated as required to comply with all safety standards. All Glass to comply with ANSI 97.1-1984 and Category II safety glass. Pulp Studio or Equal.

4. G-4: Opaque White Glass: Model No. 6705 LI -, 5/16 inch thick unless otherwise indicated. Glass shall be fully tempered and /or laminated as required to comply with all safety standards. All Glass to comply with ANSI 97.1-1984 and Category II safety glass. Pulp Studio or Equal.

C. Glazing compound shall be as follows:

1. For metal frames, compound shall be in accordance with section "Glazing Materials" of the FGMA Glazing Manual. The use of nonskinning compounds, nonresilient-type preformed sealers and preformed impregnated-type gaskets will not be permitted; metal sash putty will not be permitted. When flexible vinyl gasket channels are used, the material shall conform to ASTM D 2287.

a. Compound used for glazing aluminum shall be pigmented with aluminum powder to match the aluminum unit without staining or discoloring, shall be non-hardening, and shall be of a type that does not require painting.

b. Glazing Accessories: As required to supplement the accessories furnished with the items to be glazed and to provide a complete installation, including glazing points, clips, shims, angles, heads, setting blocks and spacer strips.

PART 3 - EXECUTION

3.01 PREPARATION

A. Field Measurements: Sizes for glass shall be measured from the actual frames, doors and sash. Sizes noted on the Drawings are approximate only.

3.02 INSTALLATION

A. Workmanship shall be in accordance with the standards of the FGMA Glazing Manual.

1. Glass types shall be installed at locations indicated on Drawings.

3. Labels. Do not remove labels until the installed glass is given final cleaning and polishing.

B. Glazing. In conformance with the nomenclature and procedures of the FGMA Glazing Manual.

3.03 ADJUSTMENT AND CLEANING

A. Replacement and Cleaning: Upon completion of the work, all glass surfaces shall be cleaned, with all labels, paint spots, putty and other defacements removed. Cracked, broken and imperfect glass shall be replaced as approved and at no additional cost to University.

END OF SECTION

SECTION 09130

ACOUSTICAL SUSPENSION SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Direct-hung, exposed grid suspension system for acoustical ceiling panels.

1.02 RELATED SECTIONS

A. Section 09150 - Acoustical Ceilings.

B. Division 15 - Mechanical.

C. Division 16 - Electrical.

1.03 SUBMITTALS

A. Shop Drawings: Submit shop drawings showing manufacturer's standard details, covering specific conditions of suspension systems, in coordination with related work. Provide reflected ceiling plans indicating layout of lighting fixtures, diffusers and other related items which are to be carried by the suspension system.

B. Manufacturer's Data: Submit technical data on material properties, system configurations, accessories, and available colors and finishes.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened, protective cartons and packaging, with manufacturer's labels and nomenclatures, and fire rating as applicable, legible and intact.

B. Store materials in original protective cartons and packaging to prevent soiling and physical damage.

C. During cold weather, store cartons open at one end to stabilize content with room temperature.

D. Do not begin installation until sufficient materials are received for a complete area or room installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Ceiling suspension systems shall be structurally adequate to carry load requirements in correlations with related work, in conformance with ASTM C635. Basic materials shall meet the requirements of ASTM A366, zinc-coated in accordance with ASTM B633.

2. Each system shall consist of interlocking grid as specified, and other components, accessories and supporting hardware, including elements required by governing codes.

3. Ceiling systems shall accommodate diffusers, sprinkler heads, smoke detectors, lighting fixtures, vents and other items required by related work.

4. Ceiling systems shall anticipate columns, perimeter obstacles and normal obstructions through piping and ductwork.

5. Materials shall be the products of a single manufacturer, to insure uniformity and compatibility of system components and finishes.

B. Exposed Grid System:

1. Armstrong Prelude 5/16” heavy duty, black, or equal.

2. Design: Exposed grid system shall be designed for Panel Grille Suspended Wood Ceiling System, in coordination with size requirements of Section 09200.

C. Hangers: Galvanized steel wire conforming to ASTM A641, soft temper, prestretched, Class 1 coating, capable of supporting a 300-lb vertical load (including attachment) without failure.

2.02 ACCESSORIES

A. Wall Molding: Armstrong Shadow Molding No. 7873 exposed surface prefinished to match suspension system, or equal.

1. Inside Corner: Mitered joints at wall molding.

2. Inside Corner: Prefabricated corner cap, hemmed edge, size and finish to match corner molding.

3. Outside Corner: Prefabricated corner cap, formed to 90o angle, hemmed edge, size and finish to match wall molding.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Collaborate the work of this Section with the work of Section 09150, for the proper and functional integrations of acoustical ceilings.

B. Coordinate with mechanical and electrical work for the proper locations and integrations of equipment and fixtures with the suspension systems.

C. Prior to the installation of the ceiling suspension systems, mechanical and electrical work shall have installed equipment and materials which are independent but within the suspended systems. Integrated work shall be performed with precise collaboration.

D. Prior to commencing work, examine job conditions which adversely affect workmanship. Do not proceed with the work until unsatisfactory conditions are corrected, adjusted or otherwise controlled.

3.02 INSTALLATION

A. Install ceiling suspension systems in accordance with ASTM C636 and Ceiling and Interior System Contractors Association standards.

B. Provide adequate suspension capable of supporting all superimposed loads, with maximum deflection of 1/360 of span and maximum surface deviation of 1/8 inch in 10 feet.

C. Install systems after major above-ceiling work is complete. Ensure carrying channels are located to accommodate fittings and units of equipment which are to be placed after the installation of ceiling systems.

D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest adjacent hangers and related carrying channels as required to span the required distance.

E. Supply and coordinate locations of hangers or inserts for installation, with clear instructions for their correct placement, during the steel deck erection.

F. Hang independently of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of the longitudinal axis or face plate of adjacent members.

G. Center suspension systems on modular grid, leaving equal border pieces where partitions extend through ceilings.

H. Do not support fixtures from main or cross runners, if weight of the fixture causes the total dead load to exceed deflection capability. In such cases, fixtures shall be supported independently.

I. Do not support fixtures if main and cross runners will be eccentrically loaded. To prevent rotation of runners, provide stabilizer bars.

J. Provide edge moldings at intersection of systems and vertical surfaces, using maximum lengths as possible.

3.03 CLEANING

A. Clean soiled surfaces after installation with mild cleaning solutions as recommended by the manufacturer of suspension systems.

B. Remove and replace damaged, and improperly installed units. Complete ceiling suspension systems shall be free from all defects.

C. Remove cartons, containers, rubbish and waste materials as they accumulate, and upon completion, from the Project site.

END OF SECTION

SECTION 09150

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Acoustical lay-in panels.

1.02 RELATED SECTIONS

A. Section 09130 - Acoustical Suspension Systems.

B. Division 15 - Mechanical.

C. Division 16 - Electrical.

1.03 SUBMITTALS

A. Shop Drawings: Submit shop drawings showing specific methods of application, in coordination with related work. Provide reflected ceiling plans indicating layout of lighting fixtures and other items which are to be integrated with the ceiling.

B. Manufacturer's Data: Submit technical data on material properties, textures and finishes.

C. Samples:

1. Submit a minimum of one 6" x 6" sample of the specified ceiling panels, and manufacturer's standard size samples of other textures and colors from the same group of the selected panels.

1.04 QUALITY ASSURANCE

A. Conform to CISCA requirements.

B. Certifications:

1. Provide certifications that proposed materials are UL-listed or approved under Class A designation for fire-resistancy.

2. Submit a written statement, signed by the manufacturer, certifying that acoustical materials are as specified for the proposed ceilings as shown on prepared shop drawings.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened cartons and packaging, with manufacturer's labels and nomenclatures, and fire rating as applicable, legible and intact.

B. Store materials in original cartons and packaging to prevent soiling and physical damage.

C. Do not begin installation until sufficient materials are received for a complete area or room installation.

1.06 PROJECT CONDITIONS

A. Do not install acoustical materials until interior finishing work has been completed, and all mechanical and electrical work above the ceiling line are integrally installed and functioning with ceiling suspension system work of Section 09130.

B. Do not install materials until a uniform temperature is continuously maintained between 60 and 80 degrees F, with a relative humidity not exceeding 70%, through the operational condition of the HVAC system.

1.07 EXTRA MATERIALS

A. Extra Maintenance Materials: Furnish extra supply of materials in unopened, clearly marked cartons equal to 1.0% to 2.0% of each type of acoustical tile and panel to be installed.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Armstrong World Industries.

B. USG Corporation.

C. BPB Celotex.

2.02 MATERIALS

A. Ceiling systems shall consist of lay-in acoustical ceiling panels and suspension systems manufactured by the same company.

B. Acoustical Ceiling Panels: ACT-1

a. Panel Name: Armstrong Ultima 1912. ~~(Armstrong Fine Fissured 1734)~~

b. Panel Size: 2 foot x 2 foot.

c. Panel Thickness: 3/4 inch.

d. Edge Detail: Beveled tegular.

e. Light Reflectance: 0.89 minimum, in accordance with ASTM E 1477.

f. CAC: Minimum 35, UL Classified, complying with ASTM E 1414.

g. Class: Class A, in accordance with ASTM E 1264.

h. NRC: Minimum 0.65, UL Classified, complying with ASTM C 423.

i. Color: White.

j. Recycled Content: 74 percent minimum.

k. Mold and Mildew Resistance: All panel faces shall be treated with a biocide paint additive to inhibit mold and mildew or an anti-microbial solution.

C. Suspension System:

1. Suspension System Name: Refer to Finish Schedule as indicated on the Drawings.

2. Fire Class: Class A.

3. Duty: Heavy Duty.

4. Color: Match acoustical ceiling panels.

D. Brace Attachment Clip: Manufacturers' standards to fit system furnished for acoustical panels, as indicated.

E. Vertical Strut: USG Donn Compression Post, or equal, or as indicated; types and designs complying with requirements of authorities having jurisdiction and seismic requirements.

F. Hanger Wire: No. 12 gage (9 gage for pendant fixtures), galvanized carbon steel per ASTM A 641, soft tempered, prestretched.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Collaborate the work of this Section with related work, for the proper and functional integrations of ceiling panel with the grid system; lighting fixtures and other electrical accessories; and facilities for heating, venting and air-conditioning.

B. Prior to commencing work, ensure that related job conditions are perfectly suited for ceiling application. Do not proceed with the work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install acoustical ceilings in accordance with CISCA standards, directionally as shown on reflected ceiling plans, in coordination with related work.

B. Install acoustical ceiling units from a three carton mix to obtain uniform distribution of surface variations.

C. Neatly scribe acoustical ceiling units at abutting surfaces and at all penetrations or projections when moldings are not acceptable.

D. Install acoustic units level, in uniform plane, and free from twist, warp, and dents.

E. Cut acoustic units to fit irregular grid and perimeter edge trim.

F. Provide accessibility in the exposed grid ceiling, except where light fixtures and other equipment are installed.

3.03 CLEANING

A. Clean minimally affected surfaces after installation with cleaning solutions as recommended by the manufacturer of acoustical material.

B. Remove and replace soiled damaged, and improperly installed units. Complete acoustical ceiling shall be free from all defects.

C. Remove cartons, containers, rubbish and waste materials as they accumulate, and upon completion, from the Project site.

END OF SECTION

SECTION 09200

SUSPENDED WOOD CEILING SYSTEM

PART 1 - GENERAL

A. The Panel Grille Suspended Wood Ceiling Systems covered by this specification shall be the products of the Rulon Company, World Commerce Center, 2000 Ring Way Road, St. Augustine, FL 32092. Phone: 800-227-8566, Fax: 904-584-1499., or equal.

B. The General Conditions and the requirements of Division 1 of the specifications shall apply to all work hereunder.

C. All work shall be performed in accordance with the manufacturer's instructions, and in a manner satisfactory to the University 's representative.

1.01 SCOPE

Rulon Company (or equal) shall furnish all Panel Grilles and suspension dowel clips necessary to complete installation by the contractor, in accordance with plans and specifications. The standard heavy-duty 15/16" T-rail carriers shall be supplied by contractor.

1.02 RELATED WORK NOT INCLUDED UNDER THIS SECTION

Suspension systems and components for ceilings, other than manufacturer's Panel Grille Suspended Wood Ceiling System, are not included.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: The installer shall be a firm with a minimum of two (2) years of successful experience in installation of suspended wood ceilings of similar requirements to this project. The installer shall be acceptable to the University Representative, manufacturer, and University 's representative.

B. Fire Performance Characteristics: When specified as "Fire Resistant", Panel Grille wood strips shall conform to Class 1, or A flame spread rating, when tested according to ASTM E-84.

C. Environmental Standards: When required the wood ceiling shall originate from well managed forests as certified by accredited and recognized industry certifying organizations. The finish, both stain and top sealer, shall be factory applied. The finishes shall be water-based, vacuum-coated, UV cured to elimate most on site VOC levels. The factory applied finishes shall not exceed 100 g/L total for both stain and top sealer when applied in the factory. The on site VOC level shall not exceed 50% of the maunfactured total. All touch of stain for on site, field modifications shall not exceed a VOC level of 100 g/L. (as per SCAQMD Rule No. 1113, 7/01/07).

1.04 PROJECT CONDITIONS

Installation shall be done only when the temperature and humidity closely approximate the interior conditions that will exist when the building is occupied. The heating and cooling systems shall be operating before, during, and after installation, with the humidity of the interior spaces maintained between 25% and 55%.

It is important that plenums have proper ventilation, especially in high moisture areas. There shall be no excessive build up of heat in the ceiling areas.

Prior to the start of installation, all exterior windows and doors are to be in place, glazed, and weather-stripped. The roof is to be watertight, and all wet trades' work is to be completed, and thoroughly dry.

Mechanical, electrical, and other utility service installations above the ceiling plane shall have been completed. No materials should rest against, or wrap around, the ceiling suspension components or connecting hangers.

1.05 COORDINATION OF WORK

The layout and installation of Panel Grilles and ceiling suspension system shall be coordinated with other work penetrating the ceiling. This includes light fixtures, HVAC equipment, and fire suppression system components.

1.06 SUBMITTALS

A. Product Data: Rulon Company (or equal) (or equal) shall provide product specifications and installation instructions for all supplied ceiling materials.

B. Shop Drawings: Rulon Company (or equal) shall supply shop drawings showing Panel Grille lengths, and placement of hangers, T-rail carriers, and other details deemed pertinent to proper installation.

C. Samples: A 12"x12" inch wood ceiling sample, in the specified Panel Grille style, with finish applied, shall be submitted for approval.

1.07 PRE-INSTALLATION CONFERENCE / MOCK-UP REQUIREMENTS

A. Pre-installation Conference: Conduct conference at Project site. Comply with requirements in Division 1 Section "Quality Requirements." Review methods and procedures related to suspended wood ceiling work including, but not limited to, the following:

1. Meet with University, University Representative, University's insurer if applicable, testing and inspecting agency representative, wood ceiling manufacture, and installers whose work interfaces with or affects suspended wood ceiling work including installers of gypsum board, light fixtures, mechanical systems, and electrical systems.

2. Review methods and procedures related to suspended wood ceiling work installation for gypsum board, light fixtures, mechanical systems, and electrical systems. including manufacturer's written instructions.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

B. Mockup:

1. Before beginning work, erect a mockup at a location on the site acceptable to the University Representative to demonstrate proposed suspended wood ceiling work and associated work necessary to form the suspended wood ceiling work as shown on the drawings including construction, installation methods, coordination of the work specified in other relevant sections, accessories, features, color and texture.

2. The University Representative will select mockup size and features, but in no case shall it be less than 5 feet long by 7 feet wide.

   a. Use same personnel, materials and construction techniques intended to be used for the Project, including the selected fasteners specified.

3. University Representative will review the mockup to determine if the Work falls within acceptable ranges for color and texture variation, unevenness, appearance and workmanship. Final acceptance of colors will be made from mockup samples.

4. Make corrections requested by the University Representative, or remove and replace mockup when corrective work is not acceptable. Repeat mockup(s) until University Representative's approval is obtained.

5. Protect approved mockup, which will be used as a standard for all remaining work on the Project, until its removal is authorized. Remove mockup only after completion and final acceptance of suspended wood ceiling work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Panel Grilles and components shall be delivered to the project site in original, unopened packages.

B. The Panel Grilles shall be stored flat and level in a fully enclosed space. For a minimum of seventy-two (72) hours immediately prior to ceiling installation, the Panel Grilles shall be stored in the room in which they will be installed. The temperature and humidity of the room shall closely approximate those conditions that will exist when the building is occupied. The Panel Grilles shall be stored off the floor.

C. Care in handling shall be exercised to avoid damage.

1.09 WARRANTIES

A. Manufacturer: All materials supplied by the ceiling manufacturer shall be guaranteed against manufacturing defects for one (1) year. Because of differing site conditions, wood stains and colorings can vary with age, and are excluded from this warranty.

B. Contractor: All work shall be guaranteed for one (1) year from final acceptance of completed work.

PART 2 - PRODUCT

2.01 PANEL GRILLES

The wood strips shall be manufactured by Rulon Company, (or equal) St.Augustine, Florida, PH: (800)227-8566, Local Representative Denice Staaf, LEED AP (714) 614-2722. The wood strips shall be made from prime grade, Species Ash, Finished with a custom stain (04-30-10-A). The Panel Grille shall be PG-6-12-37D having wood strips 5/8” inches wide x 2 5/16” inches deep with 1 3/8” inches spacing between strips.

Standard Panel Grilles shall be assembled 1' wide - in nominal lengths of 2’ to 10’ in 1’ increments (actual lengths are 1” shorter to allow for a reveal between panels; i.e., an 8’ panel is 7’-11”). Wood strips shall be manufactured without finger-joints, and fastened together with black dowels. The dowels shall be positioned 5-1/2” from the ends and 12" on center, with interconnecting male-to-female dowel attachment for support of the system.

Wood is a natural product that will undergo changes with variations in the environment. Therefore, all dimension tolerances are ± 1/8".

2.02 SUSPENSION SYSTEMS

Panel Grilles shall be suspended from standard heavy-duty 15/16" T-rail carriers (supplied by contractor) - using Rulon dowel clips for connection when removability of panel grilles is necessary for access above the ceiling. #12 gauge wire hangers shall suspend T-rail carriers.

2.03 EDGES, BORDERS, AND PERIMETER TRIMS

Edges, borders, and perimeter trims, shall be designated by specifier in accordance with standard design details available. All wood ceiling products specified shall be supplied by the ceiling manufacturer.

2.04 FINISHES AND COLORS

All Panel Grilles shall be factory-finished with clear sealers, wood stains, or semi-transparent color treatments as selected. All finishes shall be selected by the designer, University Representative, or designated University 's representative.

Wood is a natural product with variations in grain, texture, and color - often ranging from light to dark - thereby, affecting the surface look. Product finishes shall be stain or sealer coats, spray-applied to a smooth-sanded surface.

PART 3 - EXECUTION

3.01 PREPARATION

A. Ceiling Layout: The contractor shall measure ceiling areas, and establish layout of Panel Grilles and T-rails, in accordance with installation instructions.

B. Coordination: The contractor shall furnish the layout for supports that shall be installed for suspension of ceilings. He shall furnish concrete inserts, steel deck hanger clips, or similar devices for installation, in time to coordinate the work. The contractor shall coordinate with other trades the location of devices which will penetrate the Ceiling Panels or interfere with the installation. Recessed or surface devices located within the ceiling panels are to be located and cut in the field.

3.02 INSTALLATION

A. General: The contractor shall install materials in accordance with Rulon Company printed instructions. The installation shall comply with applicable regulations and industry standards.

B. Perimeters: Using a leveling device, the contractor shall lay out and install the perimeter trim as specified.

C. Suspension: The T-rail carriers shall be suspended and leveled in a direction perpendicular to the wooden strip direction. #12 gauge wire hangers shall be used to support T-rail carriers. Hangers shall be placed at 4' intervals along the carrier.

D. Wood Suspension: Panel Grilles shall be suspended from the T-rail carrier system by dowel clips.

3.03 ADJUSTMENT, CLEANING, AND REPAIR

A. The contractor shall make final adjustments to level or contours.

B. Upon completion of ceiling installation, all Panel Grilles and borders shall be cleaned free of dirt, dust, grease, oils, and fingerprints.

C. All work which cannot be successfully cleaned or repaired, shall be removed and replaced.

3.04 INSPECTION

Upon completion of ceiling installation, the University 's representative shall inspect all finished surfaces to ensure that work has been performed in a manner satisfactory to the University . Any deficiencies in the installed ceiling shall be corrected by the contractor at no additional cost to the University , or to the ceiling manufacturer.

END OF SECTION

SECTION 09250

GYPSUM WALLBOARD SYSTEMS

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and the Division-1 Specification sections, apply to work of this Section. Refer to Section 01330 – SUBMITTAL PROCEDURES

1.01 DESCRIPTION OF WORK

A. The extent of the gypsum wallboard work is shown on the Drawings and in schedules, and is hereby defined to include gypsum board work with a tape-and-compound joint treatment system known as "drywall finishing" work.

B. Work Included: Furnish and install all gypsum drywall construction, including light-gauge metal stud non-load bearing wall framing and furring, gypsum wallboard, acoustical batt insulation, all required accessories, and taping and joint finishing, as shown on the Drawings and specified herein or as required to complete the Work.

C. The types of work required include the following:

1. Gypsum wallboard including screw-type metal support system
2. Gypsum wallboard finishing (joint tape-and-compound treatment and skim-coating)
3. Acoustical insulation
4. Sealants and Caulking

D. Related Work Specified Elsewhere:

1. Section 06100: Rough Carpentry
2. Section 08116: Aluminum Metal KD Frames
3. Section 08200: Wood Doors
4. Section 08800: Glass and Glazing
5. Section 09265: Gypsum Wallboard Shaft Wall System
6. Section 09510: Acoustical Ceilings
7. Section 09900: Painting

1.02 QUALITY ASSURANCE

A. Fire-Resistance Rating: Where work is indicated for fire-resistance ratings, including those required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities including UL and A.I.A.

B. Industry Standard: Comply with applicable requirements of GA-216 "Application and Finishing of Gypsum Board" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including there commendations of the manufacturer.

C. Reference Standard: Comply with requirements of ASTM C754, except where more detailed or more stringent requirements are shown including the recommendations of the manufacturer.

D. Requirements of Regulatory Agencies: Comply with the applicable requirements of all governing codes and authorities, unless otherwise shown or specified.

E. Manufacturer: Obtain gypsum boards, trim accessories, adhesives and joint treatment products from a single manufacturer or from manufacturers recommended by the prime manufacturer of gypsum boards.

1.03 PRODUCT HANDLING

A. Deliver gypsum wallboard materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade; store in a dry, well ventilated space, protected from the weather, under cover and off the ground.

1.04 JOB CONDITIONS

A. Maintain ambient temperatures at not less than 50 F, for the period of twenty-four (24) hours before wallboard finishing during installation and until compounds are dry.

B. Ventilation, either natural or supplied by fans, circulators or air conditioning systems shall be provided to remove excess moisture during joint treatment.

1.05 SEQUENCING AND SCHEDULING

A. Coordination: Coordinate installation and finishing of gypsum board systems with insulation, painting, wall covering, mechanical and electrical, or other Sections whose work is dependent upon or related to gypsum board. do not enclose walls or partitions until all required framing, insulation, mechanical, and electrical inspections have been made and approved.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Furnish products manufactured by Eagle Gypsum Products, Domtar Gypsum, Georgia-Pacific, Gold Bond, or U.S. Gypsum.

2.02 METAL SUPPORT MATERIALS

A. General: To the extent not otherwise indicated, comply with ASTM C754, "Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard" (as specified and recommended) for metal system supporting gypsum drywall work.

B. Ceiling suspension Main Runners: 1-1/2" 16 gage Cold Rolled steel channels, 0.475 lb. per foot.

1. Hanger Wire: ASTM A641, soft, Class 1 galvanized, pre-stretched; sized in accordance with ASTM C754.

2. Hanger Anchorage Devices: Provide concrete inserts, clips, bolts, screws and other devices applicable to the indicated method of structural anchorage for ceiling hangers. Size devices for 3x calculated load supported, except size direct-pull concrete inserts for 5x calculated load.

C. Sheet Steel: Conform to applicable provisions of ASTM A568, minimum yield strength 33 ksi for thickness less than 20 gauge and 40 ksi for 20 gauge and heavier, with zinc coating conforming to ASTM A525.

D. Studs:

1. Interior Partitions: Minimum 20 gauge electro-galvanized steel, screw type, with minimum 1-1/4" hemmed legs and pre-punched webs, width as indicated, and complying with applicable provisions of ASTM C645.

2. Design Requirements: Thickness or gauge of studs is subject to height limitations recommended by manufacturer, based on maximum deflection of L/240 when partition or wall assembly is subjected to a 5 psf uniform lateral load at interior partitions.

3. ASTM C645; 20 gauge x 1-5/8", 2-1/2", 3-5/8" deep, except as otherwise indicated.

E. Stud Tracks:

1. Interior Partitions: Minimum 20 gauge electro-galvanized steel, screw type, minimum 1" unhemmed legs, width same as studs for indicated partition, and complying with applicable provisions of ASTM C645. Where studs heavier than 20 gauge are indicated or required, provide track of same gauge as studs.

2. Stud System Accessories: Provide stud manufacturer's standard clips, shoes, ties, reinforcements, fasteners and other accessories as needed for a complete stud system.

F. Metal Furring Channels: DWC Hat shaped, 7/8" (22mm) high, 25 ga. (0.53mm), galvanized per ASTM A164.

G. Furring Anchorages: 16 ga. (1.6 mm) galvanized wire ties, manufacturer's standard wire-type clips, bolts, nails or screws as recommended by furring manufacturer and complying with ASTM C754.

2.03 BOARD MATERIALS

A. Fire Rated Gypsum Wallboard: UL-rated 1/2" or 5/8" thick, 4'-0" wide x minimum 8'-0" long, tapered edge, fire-resistant core gypsum wallboard with manila paper finish, complying with applicable provisions of ASTM C36 and FS SS-L-30D, Type III, Grade X, Class 1.

B. Gypsum Backing Board: Equal to U.S. Gypsum Co. "Sheetrock" backboard, 5/8" thick, Type 'X', unless otherwise indicated, 4' width.

2.04 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials for gypsum wallboard work of the type and grade recommended by the manufacturer of the gypsum board.

B. Polyethylene Vapor Retarder: ASTM D 4397, 6 mils, 0.13 perms.

C. Laminating Adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.

D. Gypsum Board Fasteners:

1. Metal Framing to Structure: Power driven fasteners providing 190 lb. (86.2 kg) single shear resistance and 200 lb. (90.7 kg) bearing strength.

2. Metal to Metal Within Drywall Systems: 3/8" (9.5 mm), Type S or S-12, pan head.

3. Gypsum Wallboard to Metal Framing: Lengths as required Types S or S-12, bugle head.

4. Powder Actuated Fasteners: Hilti Type SDF22 or Equal, as recommended by framing manufacturer.

5. Impact Anchors: Hilti HPS Series or equal, as recommended by framing manufacturer.

E. Trim Accessories: Provide trim accessories of the sized required for the drywall applications (i.e.: all exposed outside corner, edges, openings, etc.) as indicated, shown and specified, fabricated from galvanized steel and of the following types:

1. Provide metal corner bead at external corners with smooth rigid nose and perforated and knurled flanges.

2. Provide metal casing bead trim for protection of exposed drywall edges around openings, with square or round nose, joint compound treatment required.

3. Provide beaded nose with exposed flange knurled for joint treatment.

4. Where kerfed jambs are shown, provide trim with special leg designed for insertion into jamb slot.

5. Refer to Drawings for special head track reveal and trim. All trim pieces shall be spackled, taped and finished unless otherwise noted.

6. Where drywall abuts or intersects dissimilar construction, provide square edge casing bead, joint compound treatment necessary.

7. Where control joints are shown or required in drywall areas, provide one-piece joint assembly of non-corrosive metal with continuous unperforated expansion strip for insertion into joint.

F. Edge Treatment: Galvanized steel type 200 "L" bead, 1/2" or 5/8" thick, with minimum 7/8" wide flange.

G. Corner Treatment: Galvanized steel corner bead with 1-1/4" wide flanges.

H. Control Joints: Galvanized steel type 093, minimum overall width 1-3/4", with tape-protected 1/4" wide reveal.

I. Fasteners: Type S bugle-head drywall screws minimum 1" long for 1/2" wallboard, 1-18" long for 5/8" wallboard, and 1-5/8" long for double thickness wallboard or 1" shaft liner panels.

J. Joint Treatment Materials:

1. Joint Tape: Reinforced, perforated paper tape designed specifically for drywall joint treatment, as recommended by wallboard manufacturer, minimum 2" wide. Provide manufacturer's recommended woven glass fiber joint tape at tile backer board.

2. Joint Compound: Pre-mixed, vinyl-based general purpose joint compound containing no asbestos, as recommended by wallboard manufacturer.

3. Finishing Compound: Pre-mixed, vinyl-based topping compound containing no asbestos, as recommended by wallboard manufacturer.

K. Concealed Acoustical Sealant: Sealant shall be "Tremco Acoustical Sealant", a non-drying, non-skinning, non-staining, permanently resilient, synthetic rubber-based acoustical sealant with "gunning" characteristics at 20 F (-7 C) as manufactured by the Tremco Mfg. Company of Cleveland, Ohio.

1. Acoustical Sealant: Tremco, Presstite No. 579.64, W.W. Henry No. 313B, or approved equal.

2. Backing Rod: Closed-cell, bead or rod polyethylene foam.

L. Concealed Acoustical Tape: Foam type; Norton Sealants Division; Norseal V-730.

M. Special Acoustical Sealant: Provide one Component Silicone Sealant, "Silpruf" by General Electric co. (Sound rated walls).

N. Sheet caulking for junction boxes: "Lowry's Electrical Box Sealer."

O. Acoustical Insulation:

1. Acoustical Wall Insulation: Thermafiber sound attenuating blankets complying with FS HH-1-521; Type I; density of not less than 2.5 pound per cubic foot. Unfaced, self-supporting, semi-rigid blanket or sheet for units to be self-supported by friction fit. Provide 1-1/2", 2-1/2", 3-1/2" nominal thickness or as indicated on the Drawings.

2. Products/Manufacturers: Thermafiber Blanket; U.S. Gypsum or Owens Corning.

P. Environmental Requirements: 1. Select Adhesives that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168. 2. Aerosol adhesives must comply with current Green Seal Standard for Commercial Adhesives GS-36. 3. Select sealants that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer shall examine the substrates and the spaces to receive gypsum wallboard and the conditions under which it is to be installed; and shall notify the Contractor, in writing, of conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

B. General:

1. Construction Tolerances for Gypsum Drywall Work: Do not exceed 1/8" (3.2mm) in 8 ft. (2.4 m) non-accumulative variation from plumb or level in any exposed line of surface, except at joints between units.

(a) Do not exceed 1/16" (1.6 mm) variation between planes of abutting edges or ends. Shim as required to comply with specified tolerances.

2. Cutting, Fitting and Trimming: Accurately measure and precut gypsum drywall units for all penetrations, prior to installation. Make all cuts from face side by scoring and snapping away from face side or by sawing. Completely cut paper on backface; do not

break paper by tearing. Maintain close tolerances for accurate fit at joints between sheets and at framed openings and to allow for covering of edges of cutouts with plates and escutcheons. Cut edges smooth as required for neat and accurate fit.

3. Screws: Apply drywall screws with a positive-clutch electric power-driven screwdriver equipped with an adjustable screw depth control head and a Phillips bit. Drive screws not less than 3/8" (9.5 mm) from ends of edges of wallboard and to a uniform depth not over 1/32" (0.8 mm).

3.02 INSTALLATION OF METAL SUPPORT SYSTEMS

A. General: To the extent not otherwise indicated, comply with ASTM C754, and manufacturer's instructions. Coordinate with Mechanical and Electrical Work. Do not attach or support metal framing to ducts, pipes or conduit.

3.03 INSTALLATION OF STEEL FRAMING FOR SUSPENDED CEILINGS

A. Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.

B. Space ceiling suspension main runners 4'-0" o.c., and space hangers as indicated, or if not otherwise indicated, at 4'0" o.c. along runners; coordinate with structure.

C. Level main runner channels to a tolerance of 1/8" (3.2 mm) in 12 ft. (3.6 m) measured both lengthwise on each runner and transversely between parallel runners.

D. Space ceiling furring members 16" o.c., except as otherwise indicated.

E. Wire-tie or clip furring members to main ceiling runners and to other structural supports as indicated.

F. Fit tight to conduits, duct work, other work concealed by ceiling and/or sound rated walls. Seal all around by packing with "Duxseal" and caulked with "Silpruf".

G. Install supplementary framing, runners, furring, blocking and bracing at opening and terminations in the Work and at locations required to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on gypsum board alone.

H. Provide furring and framing to conceal all pipes, ducts, conduits and raceways not indicated a exposed.

I. Drive screws only through pre-punched holes in channels.

J. Resilient channels are to be attached with mounting flanges facing in only one direction on ceilings and with the gap between the channel and stud faces oriented upward on walls.

K. Hold back ends of channels one to three inches from intersecting surfaces.

L. Locate channels so that gypsum board will not be cantilevered more than 6" from vertical surfaces.

3.04 INSTALLATION - PARTITION METAL FRAMING AND FURRING

A. General: Install metal studs, tracks, furring channels in accessories in strict compliance with manufacturer's installation procedures. Anchor all components firmly into position, and plumb to within 1/8" throughout their height or horizontal plane of any run.

B. Stud Tracks: Attach tracks in continuous runs to floor and overhead structure or ceiling grid as indicated. Use suitable fasteners as recommended by framing manufacturer. Space fasteners maximum 24" o.c., beginning 2" from each end. Bed tracks in two continuous 1/4" beads of acoustical sealant at sound-rated walls or partitions.

C. Studs: Position studs vertically into tracks at uniform 24" spacing unless otherwise indicated, with open sides facing in same direction. Rotate into position for friction fit, and fasten to tracks with self-tapping screws. Screws shall penetrate flanges of both stud and track. Attach both flanges of studs and tracks at top. Install studs in continuous lengths wherever possible; if necessary to splice studs, provide minimum 8" nested lap, with two screws per stud flange.

1. Install 20 gauge studs at each jamb for openings up to 4'-0" wide and with doors 200 lbs or less.

2. Install 2-20 gauge studs at each jamb for openings to 4'-0" wide with doors 200 lbs to 300 lbs.

3. Spot grout jambs anchors for solid core doors over 2'-8" wide.

4. Extend partition stud system through acoustical ceilings where indicated and elsewhere as indicated to the structural support or substrate above the ceiling.

5. Terminate partition stud system at ceilings where shown on Drawings. Provide matching stud diagonal bracing to structure above for partition stability. (4'-0" o.c.. alternate sides.)

6. Partitions shall be continuous over doors or openings same as adjacent walls.

D. Openings and Block-Outs: Install double studs at all door jambs, and continuous track at door heads. Provide continuous framed support at all four sides of openings or block-outs for duct or other penetrations through walls or partitions. Verify required sizes for all openings or block-outs, and provide space for shims as required.

E. Ceiling Framing: Space 1/1-2" cold-rolled suspension channels at maximum 24" o.c. using specified wire hangers. Fasten furring channels to suspension channels at 24" o.c. using pre-formed wire clips or 18 gauge tie wire.

F. Bracing and Support: Provide overhead or diagonal bracing as indicated or as required to secure framing plumb, rigid, and in alignment. Construct bracing from standard stud and track members unless otherwise indicated. Coordinate bracing with ductwork and other overhead systems or utilities to avoid conflicts.

G. Fire-Rated Partitions: Verify stud sizes, gauges, and widths at fire-rated partitions to ensure compliance with specified rating. Provide breakaway anchor clips at intermediate floor framing.

H. Sound-Rated Partitions: Install floor and overhead tracks in continuous beads of acoustical sealant as specified. Provide resilient channels at furring, ceilings, or partition framing as required to achieve the designated sound ratings.

1. Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support free from axial loading.

2. Provide continuous tracks sized to match studs. Align runner tracks accurately to the partition layout at both floor and ceiling. Secure runner tracks as recommended by the stud manufacturer for the floor and ceiling construction involved except do not exceed 24" (0.6 m) o.c. for other types of attachment. Provide fasteners at all corners and ends of runner tracks.

3. Provide steel channel framing secured to floor for low height walls for stability. Alternate return wall 4" perpendicular to partition (4").

3.05 ACOUSTICAL INSULATION

A. General: Comply with applicable provisions of Gypsum Association Publications GA-216-85, Recommended Specifications for the Application and Finishing of Gypsum Board, and GA-600-88, Fire Resistance Design Manual, Unless otherwise noted herein.

B. Non-Rated Partitions: Apply wallboard to framing members horizontally or vertically, at Contractor's option, with joints occurring over framing members. Space fasteners 12" o.c.

C. Fire-Rated Partitions: Apply type X wallboard in single or double layers as required to achieve the specified or required fire rating. Comply with GA Fire Resistance Design Manual regarding thickness orientation of wallboard, placement of joints, and spacing of fasteners.

D. Ceilings: Apply wallboard to ceilings with factory edges occurring over framing members. Stagger end joints approximately 1/2 the panel length. Space fasteners 8" o.c. throughout. Comply with applicable requirements of GA Fire Resistance Design Manual at rated ceiling assemblies.

E. Installation: Install gypsum drywall board with face side out. Do not install imperfect, damaged or damp drywall boards. Butt boards together for a light contact at edges or ends with not more than 1/16" (1.6 mm) open space between boards.

1. At hollow metal door frames, cut boards to fit around hardware reinforcement or mortar boxes. Spot grout frames with a quick setting grout or compound at each jamb anchor clip just prior to insertion of boards into frame. Insert boards into frame so that its edge is fully bedded against inside surfaces of the frame. Butter the edge of boards with joint compound if necessary to achieve full bedding.

2. Locate edges or end joints over supports except in horizontal applications or where intermediate supports or gypsum board backblocking is provided behind end joints. Position boards so that tapered edge joints abut and mill-out or field-cut end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partition walls.

3. Provide additional framing and blocking as required to support gypsum drywall at openings and cutouts and to support built-in anchorage and attachment devices for other work.

4. Neatly cut wallboard at joints, intersections, wall openings, switches and outlet boxes. Excessive Joint with or oversize cuts at openings (greater than 1/8") will be cause for rejection.

5. Where chase walls are shown with metal stud construction, provide bracing between parallel rows of studs. Unless otherwise shown, provide gypsum drywall braces not less than 1/2" (12.7 mm) thick x 12" (0.3 mm) wide and cut to width of chase. Locate at quarter points in wall height between each pair of parallel studs. Fasten with not less than 3 screws at each stud.

6. Install wall/partition boards vertically only, unless otherwise approved by the University Representative. Comply with the method stated in GA-600 for the tested assembly. Install boards long enough to allow for probable variance(s) in level of concrete floor slabs.

7. Form control joints in drywall construction on 30 ft. (9.1 m) centers unless otherwise shown. Allow 1/2" (12.7 mm) continuous opening between edges of adjacent drywall boards to allow for insertions of control joint trim accessory specified.

8. Do not locate joints within 8" (0.2 mm) of corners of openings, except where control joints are shown at jamb lines or where openings occur adjacent to exterior or interior angles of an area. Wherever possible, cut boards so that single vertical joint occurs over center of door openings.

9. Cover both faces of studs with gypsum board in concealed spaces (above ceilings, etc.), unless otherwise shown in the Details.

10. Isolate perimeter of non-load-bearing wallboard partitions at structural abutments. Provide 1/4" to 1/2" space and trim edge with J-type semi-finishing edge trim. Seal Joints with acoustical tape and sealant.

F. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board with "floating" internal corner construction, unless isolation of the intersecting boards is indicated or unless control or expansion joints are indicated.

1. Bottom edge of wallboard shall not be greater than 3/8" from finished floor. Apply finish, tape and float to bottom edge of wallboard.

G. Tile Backer Board: Install reinforced cementitious tile backer board at showers, tub enclosures, and all other areas subject to direct exposure to water. Space fasteners 6" o.c. at ends, edges, and along intermediate supports.

H. Double-Layer Application: Install ceiling base layer of gypsum backing board prior to wall/partition board installation, and install face layer of exposed gypsum board subsequently. Apply both base and finish layers vertically to walls and partitions.

1. Fasten both layers with screws. Offset joints between layers not less than 10".

3.07 SOUND RATED DRYWALL APPLICATION

A. Where sound-rated wallboard work is indicated, including double-layer work and work on resilient furring, seal the work at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with manufacturer's recommendations for location of beads and close off sound-flanking paths around or through the work including sealing of partitions above acoustical ceilings.

1. At partition walls, provide continuous beads of sealant at juncture of both faces of runners or plates with floor and ceiling construction and wherever drywall abuts dissimilar materials. Seal prior to installation of drywall boards.

2. At ceilings, provide continuous beads of sealant wherever drywall abuts dissimilar materials.

3. At control joints, provide continuous bead of sealant at all faces of control joints. Seal prior to installation of surface-applied control joint accessories and locate at proper depth in joint to allow for insertion of expansion portion of control joint accessory.

4. Seal partition air tight to the metal deck above with continuous acoustical caulking. Where partition runs perpendicular to direction of metal deck flutes, scribe gypsum board to deck and caulk.

5. After installation of drywall base layers, cut face layer sheets 1/2" (12.7 mm) less than floor-to-ceiling height and position with 1/4" (6.35 mm) open space between drywall and door, ceiling and dissimilar vertical construction. Fill 1/4" (6.35 mm) open space with continuous sealant beads after installation of face layer.

6. At openings and cutouts, fill open spaces between drywall and fixtures, cabinets, outlet boxes, piping ducts and other flush or penetrating items, with continuous bead of sealant.

7. Seal sides and back of electrical boxes with a minimum 1/8" (3/17 mm) layer of sealant to completely encase box and joints.

8. Outlet and switch boxes for telephone, electrical or computer cables in partitions shall not be placed back to back. Stagger on opposite sides of partition at least one stud space. Seal back of boxes with outlet box pads.

B. Sound Flanking Paths: Where sound-rated partition walls intersect non-rated drywall partition walls, extend sound-rated construction to completely close sound flanking paths through non-rated construction. Seal joints between face layers at vertical interior angles of intersecting partitions.

1. Where partition intersects window mullion, overlap gypsum board on mullion to within 1/2" glass. Attach gypsum board to mullion with mastic and fill voids as necessary. Place metal corner mold at end of gypsum board and paint flat black. Compress backer rod between end of gypsum board and glass.

2. Supply and return air slots shall not be continuous through partition.

3. Sound flanking paths above ceiling between spandrel beams and exterior building wall shall be closed off and sealed air tight with gypsum board or plaster.

4. Gypsum board at intersection with adjoining partitions shall not run continuous through partition on office side.

5. Where demising partition intersects column furring, furred gypsum board shall not run continuous through partition.

6. Install sound attenuation blankets in all sound-rated partition walls. Completely fill space between studs to full height of partition wall. Fit carefully behind electrical outlets and other work which penetrates partition wall. Attach to back face of drywall in accordance with drywall manufacturer's instructions.

3.08 ACOUSTICAL SEALANT INSTALLATION

A. Use acoustical sealant to form an airtight seal at all penetrations and perimeter of sound rated partitions, floors and ceilings. Gypsum Wall Board. Use backer rod where gaps to be sealed exceed 3/8".

B. Use sheet caulking to seal the back and sides of all junction boxes recessed in acoustically rated partitions.

3.09 DRYWALL ACCESSORIES

A. Edge Treatment: Install metal corner beads at all external corners. Unless otherwise indicated, install "L"-beads at exposed ends of wallboard panels and at abutting joints with other materials, leaving a minimum 1/8" reveal for caulking.

B. Control Joints: Install metal control joints at approximately 30'-0" o.c. in large expanses of walls, at 50'-0" o.c. maximum in ceilings and at other locations indicated on the Drawings.

C. Special Accessories and Trim: See Drawings for location, size, and type of special trim pieces, such as reveals and bullnoses.

3.10 INSTALLATION OF WALLBOARD FINISHING

A. General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration.

B. Joints: Center paper joint tape over joints and embed in uniform layer of joint tape of sufficient width and depth to provide firm and complete bond. Apply skim coat of joint compound over tape. Feather edges of joint compound evenly onto adjacent surface of wall board.

C. Interior Corners: Treat interior corners which do not terminate with "L"-beads by folding reinforcing tape to conform to adjacent surfaces and to true, straight angles. Embed tape in joint compound.

D. Metal Accessories and Trim: Conceal metal flanges with at least two coats of joint compound. Feather compound out 8" to 10" beyond nosing of metal trim pieces.

E. Fasteners, Dents and other Depressions: Fill dimples, gauges, and other depressions with joint compound, feathered smooth to match adjacent surfaces.

F. Top or Finish Coat: Sand joint compound as required to obtain uniform, smooth surface prior to application of finishing compound. Apply first coat of finishing compound over joint compound, feathering out beyond edge of joint compound. Allow to thoroughly dry (at least 24 hours), then apply second coat, feathering edges out slightly beyond first coat.

G. Skim Coat: After final sanding of joint and fastener treatment surfaces, apply thin skim coat over entire surface of wallboard to minimize suction and porosity or other variations between treated areas and face paper surfaces, and to improve fastener and joint concealment.

3.11 PROTECTION

A. Completed Work: Protect completed drywall surfaces from injury or damage from work of other trades. Repair any areas damaged prior to final completion and acceptance of the Work, at no additional cost to the University.

3.12 CLEAN-UP

A. Clean floors of drywall debris and leave broom clean. Remove excess material, scaffolding, tools and other equipment upon completion of work.

END OF SECTION

SECTION 09310

CERAMIC TILE / GLASS TILE / PORCELAIN TILE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Ceramic tile flooring, using full cement mortar setting bed.

B. Ceramic tile flooring, using thin-set latex-portland cement mortar.

C. Ceramic / Glass tiled walls, using full cement mortar setting bed.

D. Ceramic / Glass tiled walls, using thin-set latex-portland cement mortar.

E. Marble thresholds.

F. Waterproof membrane substrate.

1.02 RELATED SECTIONS

A. Section 07900 - Sealants and Calking.

B. Section 09110 – Non-Loading Bearing Wall Framing

C. Section 09250 - Gypsum Wallboard System

D. Section 10170 –Toilet Compartments.

E. Section 10800 - Toilet Accessories.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications with certified test reports on physical characteristics and values of materials.

1. Ceramic glazed wall tile.

2. Ceramic unglazed porcelain mosaic tile.

3. Larger Format Profile Glass tile.

4. Integrally colored unglazed floor tile.

5. Grout.

6. Additives.

7. Waterproof membrane.

B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, and setting details.

C. Samples: Mount tile and apply grout on two plywood panels, 12 inch x 12 inch in size illustrating pattern, color variations, and grout joint size variations.

D. Certification: Furnish manufacturer's Master Grade Certificate in accordance with ANSI A137.1, signed by manufacturer, for each shipment of tile, with proper identification of each type on the shipping package.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with ANSI Standards and TCA Handbook for Ceramic Tile Installation.

B. Floor Tile: Non-slip type with a coefficient of friction of 0.60 or higher in accordance with ASTM C1028.

C. Pre-installation Conference: Conduct conference at Project site. Comply with requirements in Division 1 Section "Quality Requirements." Review methods and procedures related to Ceramic / Glass Tile System including, but not limited to, the following:

1. Meet with University, University Representative, University's insurer if applicable, testing and inspecting agency representative, Ceramic / Glass Tile System, and installers whose work interfaces with or affects Ceramic Glass Tile System including installers of acoustical ceilings, gypsum board, light fixtures, mechanical systems, electrical systems, and access panels.

2. Review methods and procedures related to Ceramic / Glass Tile System installation, including manufacturer's written instructions.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays

D. Mock-up:

1. Before beginning work, erect a mock-up at a location on the site acceptable to the University Representative to demonstrate proposed Ceramic / Glass Tile System and associated sealants, and colors necessary to form the Ceramic / Glass Tile System as shown on the drawings including construction, installation methods, coordination of the work specified in other relevant sections, accessories, features, color and texture.

2. The University Representative will select mock-up size and features, but in no case shall it be less than 5 feet long by 7 feet wide.

   a. Use the same personnel, materials and construction techniques intended to be used for the Project, including the selected fasteners specified.

3. University Representative will review the mock-up to determine if the work falls within acceptable ranges for color and texture variation, unevenness, appearance and workmanship. Final colors will be made from mock-up samples.

4. Make corrections requested by the University Representative, or remove and replace mock-up when corrective work is not acceptable. Repeat mock-ups until Architects approval is obtained.

5. Protect approved mock-up, which will be used as a standard for all remaining work on the Project, until its removal is authorized. Remove mock-up only after completion and final acceptance of Ceramic / Glass Tile System work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver tile in manufacturer's original unopened, grade-sealed carton; keep cartons and grade seals intact until tile is used. Deliver other materials in manufacturer's original sealed containers. Do not open containers until ready to use.

1.06 PROJECT CONDITIONS

A. Do not install interior ceramic / glass tile until room temperature has been stabilized for a minimum of two weeks through the building heating and ventilating system. Maintain temperature at a minimum of 60 degrees F.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Ceramic Tile: Refer to finish schedule as indicated on Drawings.

1. Trim Units: Manufacturer's standard trim units as required to complete tile work. Provide coved base and interior corner units, bull-nosed cap and exterior corner units, and combination cove or bull-nose and stretcher units as required. Do not use square angles and corners or narrow cover and bull-nose trim shapes. Use trim shapes of the same material, color, pattern and finish as wall tile.

2. Ceramic tile floor shall have a coefficient of friction of at least 0.6 per ASTM C1028.

B. Glass Tile - Acceptable Manufacturer: Susan Jablon Mosaics. 408 Front Street, Vestal, New York, 13850. Phone 607.748.2302., or equal.

1. Glass Tile: Refer to Material Legend as indicated on Drawings.

C. Porcelain Tile: Dal Tile, 7834 C.F. Hawn Freeway, Dallas, Texas 75217; 1-800-933-8453., or equal.

D. Marble Thresholds: MIA Class A white marble, with smooth boned finish, of size and shape as indicated on the Drawings.

E. Sheet Waterproofing Membrane:

1. Full Mortar Setting Bed: The Noble Company NobleSeal, Compotite Corporation Composeal or equal.

2. Thin-Set Mortar Setting Bed: The Noble Company NobleSeal TS, Compotite Corporation Composeal Gold, or equal.

E. Reinforcing Mesh: 2" x 2" x 16/16 gage welded wire mesh conforming to ASTM A185.

G. Portland Cement Mortar:

1. Portland cement: ASTM C150, Type II.

2. Sand: ASTM C144.

3. Hydrated lime: ASTM C207, Type S.

4. Water: Potable and clear.

H. Latex-Portland Cement Mortar:

1. Portland cement: ASTM C150, Type II.

2. Sand: ASTM C144.

3. Water: Potable and clear.

4. Latex Additive: Custom Building Products Custom Crete, Mapei Keracrete or equal conforming to ANSI A118.4.

I. Dry-Set Portland Cement Mortar Bond Coat:

1. Dry Set Mortar: Custom Building Products Custom Thin Set Mortar, Mapei Kerabond, or equal product conforming to ANSI A118.1.

J. Grout:

1. Joints 1/8" to 1/2": Custom Building Products Polyblend Sanded Colored Tile Grout, Mapei Keracolor Floor Grout, or equal conforming to ANSI A118.6, color as selected by University Representative.

2. Joints up to 1/8": Custom Building Products Polyblend Sanded colored Tile Grout, Mapei Keracolor Wall Grout, or equal conforming to ANSI A118.6, color as selected by University Representative.

K. Expansion Joint Filler: Close-cell polyethylene foam, approximately 20% larger than the width of the joint.

L. Expansion/Control Joint Sealant:

1. Refer to Section 07900.

a. At joints between floors and walls, and at perimeter of metal door frames, provide one-part silicone material.

b. At joints in traffic areas, and at perimeter joints, provide two-part polyurethane material with Shore A hardness of 35-45.

c. Environmental Requirements: Select sealants that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

M. Metal Lath: Galvanized or painted expanded metal lath, 3.4 lbs./sq. yd. Refer to Section 09205.

2.02 MIXES

A. Full Cement Mortar Bed:

1. Floor Application:
   1 part portland cement
   4-5 parts of sand by volume

2. Walls:

   a. Scratch Coat:

      1 part portland cement
      1/2 part lime
      4 parts dry sand to 5 parts damp sand by volume

   b. Mortar Bed:

      1 part portland cement
      1/2 part lime
      5 parts damp sand by volume

      up to

      1 part portland cement
      1 part lime
      7 parts damp sand by volume

B. Latex Portland Cement Mortar Bond Coat:

   1 part portland cement
   1 part sand
   Latex additive (per manufacturer's instruction)

C. Thin-Set Dry Set Portland Cement Mortar Bond Coat: In accordance with manufacturer's printed instructions.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prepare surfaces before installing ceramic tile and accessories. Do not proceed with the work until defects or adverse conditions, which would affect quality and permanence of finished tile work, are corrected.

B. Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes and alignments shown:

   1. Floors: 1/8 inch in 10 ft from any direction.

2. Walls: 1/8 inch in 8 ft from any direction.

C. Verify that grounds, anchors, plugs, recess frames, bucks, and electrical work in or behind tile has been installed before proceeding with tile work.

D. Ensure that substrates are firm, clean, and free of oily film and curing compound.

3.02 INSTALLATION

A. General:

1. Install waterproof membrane in accordance with membrane manufacturer's printed instructions.

2. Set tile with specific mortar as specified, in accordance with Tile Council of America Handbook for Ceramic Tile Installation.

3. Bring each tile to true level and plane by uniformly applied pressure. Lay tile to straight edges, accurately set to lines established to keep joints parallel over the entire area.

4. Ensure that joints in tile work are plumb and level. Space joint widths to accommodate the tile in the given space with a minimum of cutting, except maintain standard mounting widths between units of precast mounted tile.

B. Floor Tile - Full Mortar Bed:

1. Lay tile in portland cement mortar setting bed in accordance with ANSI A108.1 and TCA method F112 or F121 as required. Tamp into mortar to assure proper bond. If mortar indicates initial set, remove and replace with fresh mortar. Clean surface of tile with water while mortar is still plastic.

2. Sound tile after setting. Remove and replace hollow sounding units.

3. Allow tile to set for a minimum of 48 hours prior to grouting.

C. Floor Tile - Thin-Set Mortar Bed:

1. Lay tile in thin-set mortar setting bed in accordance with ANSI A108.5 and TCA method F113 or F122 as required.

2. Sound tile after setting. Remove and replace hollow sounding units.

3. Allow tile to set for a minimum of 48 hours prior to grouting.

D. Wall Tile - Full Mortar Bed:

1. Install tile with portland cement mortar and a bond coat of either latex-portland cement mortar or dry-set mortar, in accordance with ANSI A108.1 and TCA method W221 or W241 as requested.

2. Sound tile after setting. Remove and replace hollow sounding units.

3. Allow tile to set for a minimum of 48 hours prior to grouting.

4. Accurately form corners, base, intersections and returns. Form internal wall angles square

and external angles bullnosed.

E. Wall Tile - Thin-Set Mortar Bed:

1. Install tile in thin-set mortar setting bed in accordance with ANSI A108.5 and TCA method W243 or W244 as required.

2. Sound tile after setting. Remove and replace hollow sounding units.

3. Allow tile to set for a minimum of 48 hours prior to grouting.

4. Accurately form corners, base, intersections and returns. Form internal wall angles square and external angles bullnosed.

F. Expansion Joints:

1. Provide expansion joints where tile abuts restraining surfaces such as curb, column and pipe and perimeter walls and in accordance with TCA method EJ171.

2. Extend expansion joints completely through tile and mortar bed.

3. Expansion joints shall be of the same width as tile joints. Keep joints open and free of mortar and grout until filled with sealant under Section 07920, in accordance with the requirements of this Section. Sealant shall match color of grouting material.

G. Marble Threshold: Install threshold where shown on the Drawings with latex-portland cement mortar.

H. Grouting:

1. Using grout of type or mix as specified, apply grouting material in accordance with ANSI A108.10 installation standards.

2. Clear joints of cushion edge tile to depth of cushion. Fill joints of square-edge tile flush with surface.

3. Fill all gaps and skips in tile joints with finish grout that is uniform in color, smooth and free of void or pin hole. Remove grout on surface before it hardens. Avoid scratching finishes.

I. Curing: Damp-cure and protect floor and wall tile installation for a minimum of 72 hours.

3.03 CLEANING

A. Use fiber brushes for cleaning tile surfaces. Do not use muriatic acid as cleaning agent. Perform floor cleaning 24 hours after curing. Use cleaner as recommended by tile manufacturer.

END OF SECTION

SECTION 09330

EPOXY-RESIN TERRAZZO FLOORING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Thin-set epoxy-resin terrazzo flooring and base.

B. Related Section:

1. Division 07 Section "Joint Sealants" for sealants installed with terrazzo.

1.03 SUBMITTALS

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

B. Shop Drawings: Include terrazzo installation requirements. Include plans, elevations, sections, component details, and attachments to other work. Show layout of the following:

1. Divider strips.
2. Control-joint strips.
3. Accessory strips.
4. Abrasive strips.
5. Terrazzo patterns.

C. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare samples of same thickness and from same material to be used for the Work in size indicated below:

1. Terrazzo: 6-inch square Samples. For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
2. Accessories: 6-inch long Samples of each exposed strip item required. For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

D. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

E . Material Certificates: For each type of terrazzo material or product from manufacturer.

F. Maintenance Data: For terrazzo to include in maintenance manuals. (2 copies of maintenance recommendations)

1.04 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who is acceptable to terrazzo manufacturer to install manufacturer's products.

1. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.

B. Source Limitations: Obtain primary terrazzo materials from one source from a single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.

C. Manufacturer Qualifications: Company specializing in manufacture of products specified in this Section with minimum 5 years documented experience.

D. Installer Qualifications: Company specializing in applying Work of this Section with minimum 5 years documented experience.

E. Acceptable suppliers

1. Suppliers shall be Associate members of the Westem States Terrazzo Association (WSTA) and National Terrazzo & Mosaic Association (NTMA) and shall supply materials in accordance with the standards and specification of the WSTA and NTMA.
2. Marble chips and/or glass aggregates shall be standard colors and gradated sizes as supplied by WSTA Associate supplier members.

F. Acceptable installers

Terrazzo installation contractor shall be current Contractor members of the NTMA and WSTA, and shall perform all work in accordance with NTMA and WSTA specifications

and standards. (See http://westemslatesterrazzo.com/contactus.htm for Contractor Member information).

G. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of granular materials from one source with resources to provide materials of consistent quality in appearance and physical properties.

H. NTMA Standards: Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.

I. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups for terrazzo including accessories.

a. Size: Minimum 25 sq. ft. of typical poured-in-place flooring and base condition for each color and pattern in locations directed by University Representative.

2. Approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.

1.05 PRE-INSTALLATION CONFERENCE / MOCK-UP REQUIREMENTS

A. Pre-installation Conference: Conduct conference at Project site. Comply with requirements in Division 1 Section "Quality Requirements". Review methods and procedures related to terrazzo tile work including, but not limited to, the following:

1 Meet with University, University Representative, University's insurer if applicable, testing and inspecting agency representative, terrazzo manufacture and installer, and installers whose work interfaces with or affects terrazzo work including installers of gypsum board, resilient flooring, self-leveling underlayment concrete, mechanical systems, and electrical systems.

2. Review methods and procedures related to terrazzo work installation for gypsum board, resilient flooring, self-leveling underlayment concrete, mechanical systems, and electrical systems including manufacturer's written instructions.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

B. Mockup:

1. Before beginning work, erect a mockup at a location on the site acceptable to the University Representative to demonstrate proposed terrazzo work and associated work necessary to form the terrazzo work as shown on the drawings including construction, installation methods, coordination of the work specified in other relevant sections, accessories, features, color and texture.

2. The University Representative will select mockup size and features, but in no case shall it be less than 5 feet long by 5 feet wide.

a. Use same personnel, materials and construction techniques intended to be used for the Project, including the selected fasteners specified.

3. University Representative will review the mockup to determine if the Work falls within acceptable ranges for color and texture variation, unevenness, appearance and workmanship. Final acceptance of colors will be made from mockup samples.

4. Make corrections requested by the University Representative, or remove and replace mockup when corrective work is not acceptable. Repeat mockup(s) until University Representative's approval is obtained.

5. Protect approved mockup, which will be used as a standard for all remaining work on the Project, until its removal is authorized. Remove mockup only after completion and final acceptance of suspended wood ceiling work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with sources or manufacturer's name, material or product brand name, and lot number if any.

B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1 .07 PROJECT CONDITIONS

A. Environmental Limitations: instructions for substrate moisture, ventilation, and installation. Comply with manufacturer's written temperature, ambient temperature, and other conditions affecting terrazzo.

B. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.

C. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

D. Control and collect dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

PART 2 – PRODUCTS

2.01 EPOXY-RESIN TERRAZZO

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

1. Crossfield Products Corp. , Dex-O-Tex Division; Terrazzo.
2. General Polymers Corporation; Terrazzo.
3. Key Resin Company; Key Epoxy Terrazzo.
4. Master Terrazzo Technologies LLC; Morricite.
5. Polymerica Incorporated; MasterPiece ETS.

6. Quadrant Chemical Corporation; Quadset Epoxy Terrazzo.
7. TEC Specialty Construction Brands, Inc.; Tuff-Lite Epoxy Terrazzo.
8. Terrazzo & Marble Supply Companies; Terroxy Resin Systems.

B. Materials:

1. Flexible Reinforcing Membrane: Manufacturer's resinous membrane for substrate crack preparation and reflective crack reduction.

   a. Reinforcement: Fiberglass scrim.

2. Primer: Manufacturer's product recommended for substrate and use indicated.
3. Epoxy-Resin Matrix: Manufacturer's standard recommended for use indicated and in color required for mix indicated.
4. Terrazzo Tile shall be slip-resistant.

   a. Physical Properties without Aggregates:

      1) Hardness': 60 to 85 per ASTM D 2240. Shore D.
      2) Minimum Tensile Strength: 3000 psi per ASTM D 638 for a 2-inch specimen made using a "C' die per ASTM D 412.
      3) Minimum Compressive Strength: 10.000 psi per ASTM D 695, Specimen B cylinder.
      4) Chemical Resistance: No deleterious effects by contaminants listed below after seven-day immersion at room temperature per ASTM D 1308.

         a) Distilled water.
         b) Mineral water.
         c) Isopropanol.
         d) Ethanol.
         e) 0.025 percent detergent solution.
         f) 1.0 percent soap solution.
         g) 10 percent sodium hydroxide.
         h) 10 percent hydrochloric acid.
         i) 30 percent sulfuric acid.
         j) 5 percent acetic acid.

   b. Physical Properties with Aggregates: For resin blended with Georgia white marble, ground, grouted, and cured per requirements in NTMA's 'Terrazzo Specifications and Design Guide." comply with the following:
      1) Flammability: Self-extinguishing, maximum extent of burning 0.25 inch per ASTM D 635.
      2) Thermal Coefficient of Linear Expansion: 0.0025 inch/inch per deg F for temperature range of minus12 to plus140 deg F per ASTM D 696.

4. Aggregates: Complying with NTMA gradation standards for mix indicated and containing no deleterious or foreign matter.

   a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131.
   b. 24-Hour Absorption Rate: Less than 0.75 percent.
   c. Dust Content: Less than 1.0 percent by weight.

5. Finishing Grout: Resin based.

C. Terrazzo: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and marble-chip proportions and mixing.

1. Formulated Mix Color and Pattern: As selected by University Representative from manufacturer's full range.

D. Terrazzo: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and aggregate proportions and mixing.

1. Custom Mix Color and Pattern: Match University Representative's sample.

2.02 STRIP MATERIALS

A. Thin-Set Divider Strips: L-type angle or T-type, 3/8” inch deep.

1. Material: Aluminum. (16 gauge aluminum)
2. Top Width: Per approved sample

B. Control-Joint Strips: Separate, double L-type angles, positioned back to back, that match material, thickness, and color of divider strips and in depth required for topping thickness indicated.

C. Accessory Strips: Match divider strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:

1. Base-bead strips for exposed top edge of terrazzo base.
2. Edge-bead strips for exposed edges of terrazzo.
3. Nosings for terrazzo stair treads and landings.

2.03 MISCELLANEOUS ACCESSORIES

A. Strip Adhesive: Epoxy-resin adhesive recommended by adhesive manufacturer for this use and acceptable to terrazzo manufacturer.

1. Environmental Requirements: Select Adhesives that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

B. Anchoring Devices:

1. Strips: Provide mechanical anchoring devices for strip materials as required for secure attachment to substrate.

C. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

D. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

E. Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.

F. Sealer: Slip and stain-resistant penetrating-type sealer that is chemically neutral with pH factor between 7 and 10; does not affect color or physical properties of terrazzo; is recommended by sealer manufacturer; and complies with NTMA's "Terrazzo Specifications and Design Guide" for terrazzo type indicated.

1. Environmental Requirements: Select sealants that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1113.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and areas, with Installer present, for compliance with requirements for installation of Resinous Matrix Terrazzo Flooring tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

3.02 PREPARATION

A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.

B. Concrete Slabs:

1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form release gents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.

a. Shot-blast surfaces with an apparatus that abrades the concrete surface,

contains the dispensed shot within the apparatus, and re-circulates the shot by vacuum pickup.

b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.

c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.

2. Verify that concrete substrates are visibly dry and free of moisture.

3. Moisture Testing: As and if recommended by terrazzo manufacturer.

C. Protect other work from dust generated by grinding operations. Control dust to prevent air pollution and comply with environmental protection regulations.

D. Installation of terrazzo indicates acceptance of surfaces and conditions.

3 .03 EPOXY-RESIN TERRAZZO INSTALLATION

A. General:

1. Comply with NTMA's written recommendations for terrazzo and accessory installation.
2. Place, rough grind , grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."
3. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet; noncumulative.
4. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
5. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.

B. Thickness: 3/8 inch nominal.

C. Flexible Reinforcing Membrane:

1. Prepare and pre-fill substrate cracks with membrane material.
2. Prepare membrane according to manufacturer's written instructions before applying substrate primer.

D. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.

E. Strip Materials:

Resinous Matrix Terrazzo Flooring

1. Divider and Control-Joint Strips:

a. Locate divider strips in locations indicated.

b. Install control-joint strips back to back directly above concrete-slab control joints.

c. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.

2. Accessory Strips: Install accessory strips as required to provide a complete installation.

3. Abrasive Strips: Install with surface of abrasive strip positioned 1/32 inch higher than terrazzo surface.

F. Fine Grinding: Grind with stones 120 grit or finer until all grout is removed from surface. Repeat rough grinding, grout coat, and fine grinding if large voids exist after initial fine grinding. Produce surface with a minimum of 70 percent aggregate exposure.

G. Repair: Remove and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by University Representative.

3.04 CLEANING AND PROTECTION

A. Cleaning:

1. Remove grinding dust from installation and adjacent areas.

2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow to dry thoroughly.

B. Sealing:

1. Seal surfaces according to NTMA's written recommendations.

2. Apply sealer according to sealer manufacturer's written instructions.

C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

1.04 GUARANTEE / WARANTY

Terrazzo materials and installation shall be guaranteed for a period of (I) year from date of substantial completion. Guarantee shall be limited to the repair and/or replacement of matenals or workmanship found to be defective per NTMA and WSTA standards and specifications.

Final polish of terrazzo surface shall match Ana Sacks samples for finish

END OF SECTION

SECTION 09500

SOLID SURFACE COUNTERTOPS

PART 1 - GENERAL

1.01 SUMMARY

1. Provide solid surface countertops including accessories as shown on the drawings and as specified, complete.

   A. Section Includes: Quartz surfacing for:

      1. Countertops.
      2. Other interior applications as shown on Drawings.

   B. Related Sections

      1. Section 06200 – Finish Carpentry and 09250 Gypsum Board. Provide framing and blocking to support quartz surfacing within specified tolerances and in accordance with manufacturer's instructions.

      2. Templates may be required for sinks and plumbing trim, stove tops, hardware, etc. Templates showing cutouts required for installation of items installed on or penetrating through quartz surfacing shall be provided under Sections where items are specified.

1.02 REFERENCES

A. ASTM INTERNATIONAL

1. ASTM C97 – Absorption and Bulk Specific Gravity of Dimension Stone.
2. ASTM C99 – Modulus of Rupture of Dimension Stone.
3. ASTM C170 – Compressive Strength of Dimension Stone.
4. ASTM C217 – Weather Resistance of Slate.
5. ASTM C482 – Bond Strength of Ceramic Tile to Portland Cement.
6. ASTM C484 – Thermal Shock Resistance of Glazed Ceramic Tile.
7. ASTM C501 – Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
8. ASTM C531 – Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
9. ASTM C880 – Flexural Strength of Dimension Stone.
10. ASTM C1028 – Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
11. ASTM D256 – Izod Pendulum Impact Resistance of Plastics.
12. ASTM D2047 – Static Coefficient of Friction of Polish-Coated Floor Surfaces by the James Machine.
13. ASTM D2299 – Relative Stain Resistance of Plastics.
14. ASTM E84 – Surface Burning Characteristics of Building Materials.

B. International Organization for Standardization:

1. ISO 9002 – Quality systems -- Model for Quality Assurance in Production, Installation and Servicing.

2. ISO 14001 – Environmental Management Systems

3. NSF

1.03 SUBMITTALS

A. Product Data:

1. Quartz Surfacing: Submit manufacturer's product data, and fabrication and installation instructions.

2. Accessories: Submit manufacturer's product data and installation instructions.

B. Shop Drawings: Show field-verified dimensions, quartz surfacing dimensions, locations and dimensions of cutouts, required locations of support and blocking members, edge profiles, and installation details and methods. Identify color[s] and finish[es].

C. Samples:
Coordinate Subparagraphs 1. and 2. with the color specifications in Part 2 – Products.

1. Samples for Color Approval: Submit two 2 samples 10 x 10 inches (250 x 250 mm) of each color and finish selected.

2. Stone Adhesive: Submit two 2 samples of an adhesive joint for each color quartz surfacing selected. Show color match of adhesive.

D. Fabricator Qualifications: Submit evidence of fabricator's qualifications.

E. Closeout Submittals: Submit completed warranty form.

1.04 DELIVERY, STORAGE AND HANDLING

A. Packaging, Shipping, Handling, and Unloading: Observe manufacturer's recommendations and handle in manner to prevent breakage or damage. Brace parts if necessary. Transport in the near-vertical position with finished face toward finished face. Do not allow finished surfaces to rub during shipping or handling.

B. Storage and Protection: Store in racks in near-vertical position. Prevent warpage and breakage. Store inside away from direct exposure to sun. Store between 25 and 130 ºF (4 and 54 ºC). Store with finished face toward finished face.

1.05 WARRANTY

A. Provide manufacturer's ten-year limited warranty against product defects when fabricated and installed by a CaesarStone certified fabricator.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Qualifications: Manufacturer shall be ISO 9002 and ISO 14001 certified.

B. Acceptable Manufacturer: Provide **CaesarStone Quartz Surfacing** distributed by **U.S. Quartz Products Inc (CaesarStone U.S.A., Inc.);** Van Nuys, CA; phone 877-9-QUARTZ; www.caesarstoneus.com., or equal.

2.02 QUARTZ SURFACING

A Composition: 93 percent crushed quartz aggregate combined with resins and pigments and fabricated into slabs using a vacuum vibro-compaction process.

CaesarStone can be fabricated in larger sized pieces due to its superior flexural strength compared to natural stone. This may reduce the number of joints in an installation and permit more economical and better looking jobs. It may also allow the use of thinner material, producing additional economies and weight reductions.

Thickness: 3/4" is the minimum recommended for countertops; use 1-1/4" material when greater strength or thicker edges are required.

Size: If the extra width is required, consult CaesarStone before specifying to assure availability.

B. Dimensions: Thickness:

1. Nominal 3/4 inch (20 mm) as shown on Drawings.

2. Size: Slabs shall be not less than 56.5 x 120 inches (1.44 x 3.05 m) to minimize number of joints in installation.

The back of each slab of CaesarStone is imprinted with a trademarked zigzag pattern to simplify jobsite identification.

C. Identification: Material shall be labeled with batch number and imprinted on back with manufacturer's identifying mark.

D. Performance:

1. Flexural Strength: 7,420 psi, ASTM C880.

2. Comprehensive Strength: ASTM C-170
Dry: 10,430 psi average.
Wet: 11, 265 psi average.

3. Izod Impact Strength: 0.361ft. lbs./inch of notch average; ASTM D256.

4. Bond Strength: 205 psi; ASTM C482 modified.

5. Modulus of Rupture: 2,110 average, ASTM C99.

6. Mohs Hardness: 6.5-7.5; scratch test.

7. Absorption: 0.022%; ASTM C97.

8. Stain and Acid Resistance: Not affected; ASTM D2299.

9. Surface Burning Characteristics: Flame spread = 10, smoke density = 195; ASTM E84.

10. Thermal Shock Resistance: Passes 5 cycles, 75°F-295°F; ASTM C484.

11. Coefficient of Thermal Expansion: 1.36x10 inch per °F.; ASTM C531.

12. Weathering Resistance: Not affected after seven days in 1% sulfuric acid; ASTM C217.

13. Freeze-Thaw Resistance: No visible damage or discoloration after 25 cycles (-45°C to 23°C); S.L.P. with ASTM C62 as guide.

14. Wear Resistance: 36.12 gram average; ASTM C501, tested with 1 kg. load, 1000 cycles at 70 r.p.m.

F. Color and Finish:

1. Provide color[s] and finish[es] selected by University Representative from manufacturer's stocked standards. Allow for selection of up to two (2) colors.

2. Provide Nougat, Color No. 6600 with polished finish.

3. Finish:
   a. Polished Surface shall have gloss greater than or equal to 35% at 50º.

   b. Honed Surface shall have a matte finish.

G. Exposed Edges:

1. Countertops:
   a. Edges: Square - Miter Edge profile, double layer thick.

   b. Outside corners: Square. 2 inches.

2. Backsplash and Wall Cladding
   a. Edges: Square – Miter Edge

   b. Outside Corners: Square butt-joints

2.03 ACCESSORIES

A Mounting Adhesives:

1. Provide structural-grade silicone or epoxy adhesives of type recommended by manufacturer for application and conditions of use.

2. Acceptable Silicone Manufactures:

a. Dow Corning.
b. GE Sealants and Adhesives.

3. Acceptable Epoxy Manufacturers:
   a. Akemi North America.
   b. Bonstone Material Corporation.
   c. Tenax USA.

4. Provide spacers, if required, of type recommended by adhesive manufacturer.

5. Environmental Requirements: Select Adhesives that meet or do not exceed South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

B. Stone Adhesive:

1. Provide epoxy or polyester adhesive of type recommend by manufacturer for application and conditions of use.

2. Acceptable Manufacturers:
   a. Akemi North America.
   b. Bonstone Material Corporation.
   c. Tenax USA.

3. Color: Adhesive which will be visible in finished work shall be tinted to match quartz surfacing.

4. Environmental Requirements: Select Adhesives that meet or do not exceed South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

C. Joint Sealants:

1. Clear silicone sealant of type recommended by manufacturer for application and conditions of use..

2. Provide anti-bacterial type in toilet and bath rooms, food preparation areas, and conference room.

3. Acceptable Manufactures:
   a. Dow Corning
   b. GE Sealants and Adhesives.

4. Environmental Requirements: Select sealants that meet or do not exceed South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

D. Solvent: Product recommended by adhesive manufacturer to clean surface of quartz surfacing to assure adhesion of adhesives [and sealants].

E. Cleaning Agents: Non-abrasive, soft-scrub type kitchen cleansers.

2.04 FABRICATION

Include manufacturer authorization if manufacturer's warranty is specified.

A. Fabricator: Firm shall have five years experience fabricating architectural stone and shall have water-cooled cutting tools.

B. Shop Assembly: Observe proper safety procedures and comply with manufacturer's instructions.

C. Layout: Layout joints as shown on Drawings to minimize joints and to avoid L-shaped pieces of quartz surfacing.

D. Inspect Material:
   1. Inspect material for defects prior to fabrication.

   2. Color Match: Materials throughout Project shall be from the same batch and shall bear labels with same batch number. Visually inspect materials to be used for adjacent pieces to assure acceptable color match. Inspect in lighting conditions similar to those on Project.

   3. Variation in distribution of aggregates in quartz surfacing which are within manufacturer's tolerances is not a defect.

E. Tools: Cut and polish with water-cooled power tools.

F. Cutouts:

As with any type of stone, smaller radii increase potential for crack propagation at inside corners; in no case should radius less than 3/8 inch be used.

   1. Cutouts shall have 3/8 inches (10 mm) inches minimum inside corner radius. Inside corners shall be reinforced in an acceptable manner to prevent cracking.

   2. Where edges of cutout will be exposed in finished work, polish edges.

The following is recommended in areas subject to heavy service or where additional strength is justified.

   3. If the remaining material outside a cutout is less than three inches (76 mm) inches wide, reinforce area by laminating it with a strip of quartz surfacing.

G. Laminations: Laminate layers of quartz surfacing as required to create built-up edges, trim, and other areas requiring additional thickness.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLER

A. Installer: Firm shall have five years experience installing architectural stone.

3.02 EXAMINATION

A. Site Verification

   1. Verify dimensions by field measurements prior to fabrication.

   2. Verify that substrates supporting quartz surfaces are plumb, level, and flat to within

1/16 inch in ten feet (1.6 mm in 3000 mm) and that necessary supports and blocking are in place.

3. Base Cabinets: Cabinet units shall be securely fixed to adjoining units and back wall.]

B. Inspect finished surfaces for damage. Do not install until damage materials have been repaired in an acceptable manner or replaced.

3.03 PREPARATION

A. Protect finished surfaces against scratches. Apply masking where necessary. Guard against grit, dust, and other trades.

3.04 INSTALLATION

A. Install materials in accordance to manufacturer's recommendations. Lift and place to avoid breakage.

B. Preliminary Installation and Adjustment: Position materials to verify that materials are correctly sized and prepared. Make necessary adjustments.

1. If jobsite cutting, grinding, or polishing is required, use water-cooled tools. Protect jobsite and surfaces against dust and water. Perform work away from installation site if possible.

2. Countertops: Gypsum drywall back walls which are not fire or acoustically rated may be routed up to half the thickness of the drywall to allow countertop to fit.

3. Allow gaps for expansion of not less than 1/16 inch (1.5 mm) per five feet when installed between walls or other fixed conditions.

4. Drainage: Adjacent to sinks and where drainage is required, shim countertops slightly to insure positive drainage.

C. PERMANENT INSTALLATION

1. After verifying fit, remove quartz surfacing from position, clean substrates of dust and contamination, and clean quartz surfacing back side and joints with solvent.

2. Apply sufficient quantity of mounting adhesive in accordance with adhesive manufacturer's recommendations to provide permanent, secure installation.

3. Spacing of mounting adhesive shall not exceed:
   a. Horizontal Surfaces: 4 inches on center.
   b. Vertical Surfaces: 4 inches on center; provide temporary shims until adhesive cures.

4. Install surfacing plumb, level, and square and flat to within 1/16 inch in ten feet (1.6mm in 3000 mm).

D. Joints:

1. Joints Between Adjacent Pieces of Quartz Surfacing:
   a. Joints shall be flush, tight fitting, level, and neat.
   b. Securely join with stone adhesive. Fill joints level with quartz surfacing.
   c. Clamp or brace quartz surfacing in position until adhesive sets.

2. Joints Between Backsplashes and Countertops: Seal joints with silicone sealer.

3.05 REPAIR

A. Repair of replace damaged materials in a satisfactory manner.

3.06 CLEANING

A. Remove masking and excess adhesives and sealants. Clean exposed surfaces.

3.07 PROTECTION

A. Protect surfacing from damage by other Sections.

3.08 SCHEDULES

SUITE 550:

A. RECEPTION – ROOM 502
   1 Countertops: CaesarStone (or Equal) Polished Finish, Color 1141, ¾” thick, with 2” thick square – miter edge. (See elevations for special condition of top transition to wall face)

END OF SECTION

SECTION 09650

RESILIENT FLOORING

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

1.01 DESCRIPTION OF WORK

A. The extent of resilient flooring and accessories is shown on the Drawings and in schedules and includes:

1. Resilient floor tiles
2. Resilient base and accessories

1.02 QUALITY ASSURANCE

A. Wherever possible, provide resilient flooring and accessories produced by a single manufacturer.

B. Flame Spread Rating: ASTM E84 flame spread of seventy-five (75) or less.

1. Install tile after other finishing operations, including painting, have been completed. Moisture content of concrete slabs, building air temperature and relative humidity shall be within limits recommended by tile manufacturer.

2. Resilient Flooring shall be slip resistant.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and installation instructions for each type of resilient flooring and accessory. Refer to Section 01340 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, for procedures.

B. Samples: Submit two (2) sets of samples of each type, color and finish of resilient flooring and accessory required.

1. Full size tile samples
2. 6" long sample of resilient flooring accessories

C. Maintenance Instructions: Submit manufacturer's written instructions for recommended maintenance practices for each type of resilient flooring and accessories.

D. Replacement Material: Deliver to the University, after completion of work, replacement materials from the same manufactured lot as material installed and as follows:

1. Tile flooring, not less than one (1) box for each fifty (50) boxes, or fraction thereof, for each type, size and color installed.

1.04 JOB CONDITIONS

A. Continuously heat areas to receive flooring to 65oF for at least forty-eight (48) hours prior to Installation when project conditions are such that heating is required. Maintain 65oF temperature continuously during and after installation as recommended by flooring manufacturer, but for not less than forty-eight (48) hours.

B. Installer shall review installation procedures and coordination with other work, with Contractor and other Contractors and Subcontractors whose work will be affected by flooring.

1. Existing floor shall be leveled with floorstoning or grinding to a tolerance of 1/4" in 10'-0" (non-accumulative)

1.05 DELIVERY AND STORAGE

A. Deliver materials to the project site in the manufacturers' original unopened containers, clearly marked to indicate pattern, gauge, lot number and sequence of manufacture.

B. Carefully handle all materials and store in original containers at not less than 65oF (18oC) for at least forty-eight (48) hours before start of installation. Stack all boxes of each pattern and color in sequence as numbered by factory.

PART 2 - PRODUCTS

2.01 TILE FLOORING

A. Vinyl Tile: FS SS-T-312B, Type IV, 12"x12"x1/8" gauge unless otherwise indicated, pattern extending through full tile thickness.

Manufacturer: Ozoloc, Product: Granite Line, No. 71180 KG, (or equal) 12 x 24 tile. See plans for location.

2.02 ACCESSORIES

A. Resilient Base: Provide rubber base complying with FS SS-W-40, Type I, with matching end stops and corner units (cut from rubber base material), 1/8" gauge, (RB-1) straight base without cove at carpeted floors, topset style elsewhere.

1. Preformed or molded corner units not allowed.

WALL BASE:

Manufacturer: Allstate, Color: No. 491 White, (or Equal) Size: 4"
Refer to drawings.

B. Strips: Resilient Edge Strips: 1/8" thick, homogenous vinyl or rubber composition, tapered or bullnose edge, carpet edge guard is specified in Section 09680.

C. Vinyl Reducer Strips Between Carpet and Tile: As selected.

D. Adhesive for Resilient Flooring: Type recommended by resilient flooring manufacturer, best suited for the purpose.

E. Adhesive for Resilient Bases: Waterproof type as recommended by base manufacturer.

F. Primer: Non-staining type primer as recommended by resilient flooring manufacturer.

G. Leveling and Patching Compounds: Latex types as recommended by flooring manufacturer.

H. Wax: FS P-W-55, 16% concentration; slip resistant, water emulsion base.

I. Environmental Requirements: Select Adhesives that meet or do not exceed current South Coast Air Quality Management District (SCAQMD) standards Rule No. 1168.

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer shall examine the substrate and conditions under which resilient flooring and accessories are to be installed. Notify Contractor, in writing, of conditions detrimental to proper and timely completion of Work. Do not proceed with Work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.02 PREPARATION

A. Prior to laying the flooring, broom clean or vacuum surfaces to be covered and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

B. Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in sub-floors. Contractor include the cost to level at least 25% of the suite with no less than 1” of floor level compound and an additional 25% of the suite with no less than 1/2" of floor level compound. The balance of the suite shall require substantial preparation and floor level compound of no less than ¼”. Any leveling not required shall be credited to the University.

C. Perform moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured and ready to receive flooring.

D. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.03 INSTALLATION

A. General: Install flooring after finishing operations, including painting, have been completed and permanent heating system is operating. Moisture content of concrete slabs, building air temperature and relative humidity shall be within limits recommended by flooring manufacturer and as hereinbefore specified.

1. Place flooring with adhesive cement in strict compliance with manufacturer's recommendation. Extend flooring into toe spaces, door reveals, closets and similar openings.

2. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

3. Install flooring on covers for telephone and electrical ducts and other such items as occur within finished floor areas.

4. Maintain overall continuity of color and pattern with pieces of flooring installed in these covers. Tightly cement edges to perimeter of floor around covers and to covers.

B. Prime Coat: Apply primer to concrete surfaces working well into surface using minimum quantity that will assure complete surface over age. Allow primer to dry before applying adhesive. Prime coat may be omitted if recommended by resilient flooring manufacturer.

C. Adhesive: Apply to substrate with properly notched steel trowels; allow adhesive to become tacky before applying resilient flooring.

1. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks or other surface imperfections.

D. Tile Floors: Unless otherwise indicated on the Drawings, lay tile from center marks established with principal walls, discounting minor offset so that tile at opposite edges of the room are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2" tile at room perimeters. Lay tile square to room axis, unless otherwise shown.

1. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged. Cut tile neatly to and around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable.

a. Lay tile with grain running in one direction.

2. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

E. Sheet Flooring: Lay sheet flooring to provide as few seams as possible with economical use of materials. Match edges for color shading and pattern at seams in compliance with manufacturer's recommendations.

1. Adhere sheet flooring to substrates using method approved by flooring manufacturer for type of sheet flooring and substrate condition indicated.

2. Use conventional full spread adhesive method unless otherwise indicated.

3. Use modified conventional full-spread adhesive method with two-part epoxy adhesive under seams, latex-resin base multi-purpose adhesive elsewhere.

4. Use conventional perimeter bonding adhesive procedures where recommended by flooring manufacturer.

5. Use special perimeter bonding adhesive for vinyl sheet tension flooring.

6. Prepare seams in vinyl sheet flooring with manufacturer's special routing tool and heat weld with vinyl thread in accordance with manufacturer's instructions.

7. Prepare seams in vinyl sheet flooring in accordance with manufacturer's instructions for most inconspicuous appearance, sealing continuously with fluid-applied sealant or adhesive as standard with manufacturer.

8. Provide integral flash cove base where shown on Drawings including cove support strip and metal top edge strip. Construct coved base in accordance with manufacturer's instructions.

F. Accessories: Apply resilient base to walls, columns, pilasters and other permanent fixtures in rooms or areas where base is required.

1. Install base in as long lengths as practicable, with preformed corner units or fabricated from base materials with mitered coped inside corners. Straight pieces less than 24" long are not permitted.

2. Tightly bond base to backing throughout the length of each piece, with continuous contact at horizontal and vertical surfaces.

3. On masonry surfaces or other similar irregular surfaces, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.

4. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at all unprotected edges of flooring, unless otherwise shown.

3.04 CLEANING AND PROTECTION

A. Remove any excess adhesive or other surface blemishes using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring from damage by covering.

B. Finishing: Not more than four (4) days before acceptance or occupancy by the University, clean the resilient flooring and base. Wash thoroughly with a cleaner recommended by the flooring manufacturer, in accordance with the flooring manufacturer's recommendations. As soon as the resilient flooring is completely dry, apply wax and buff, with number of coats of wax and buffing procedures in accordance with the floor and wax manufacturer's instructions.

END OF SECTION

SECTION 09900

PAINTING

PART 1 – GENERAL

A good faith effort to comply with the USGBC "LEED" protocol is required. All products submitted shall be environmentally friendly and shall comply with all South Coast Air Quality Management District (SCAQMD) standards and comply with USGBC requirements for products of that intended use. If there are questions with a product, Contractor shall submit them as an RFI during the bid process for University clarification. Although the LEED certification process is not being followed, compliance with the LEED protocol is required relating to product selection, documentation, application and close-out.

Refer to finish schedule if Scuff-Master paint is required over new or existing HM doors and/or frames. Ensure adequate prep and application per manufacturers guidelines. Ensure suitable floor prep is carried out. Refer to building rules. Due to the prep and noxious smell, Scuff-Master painting work shall only be done Friday after hours until Sunday midnight..

A. Standard paint on drywall shall also be after hours but may be Monday – Friday as well as weekends. Refer to building rules.

B. Comply with LEED / Green Documents.

Related Documents.

Drawings and general provisions of the Contract, including General and Supplementary Conditions and the Division-1 Specification sections, apply to work of this Section

A. Work included:

1. Submittals.
2. Preparation of surfaces.
3. Painting of all interior surfaces, except as otherwise specified.
4. Painting of all exterior surfaces, except as otherwise specified.

B. Related Work:

1. Shop prime coats and factory finishes.
2. Painting specified as Work of other Sections.
3. Sealants and caulking.
4. Water repellent sealer.
5. Anti-graffiti coating.

C. Surfaces Not To Be Painted:

1. Non-ferrous metal work (other than zinc-coated surfaces) and plated metal, unless particular items are specified to be painted.
2. Integrally colored concrete block.
3. Portland cement plaster scheduled to receive elastomeric coating unless otherwise shown or scheduled.
4. Sandblast finished concrete.
5. Exterior concrete walls and surfaces unless otherwise scheduled.

6. Surfaces concealed in walls and above solid ceilings.
7. Non-metallic walking surfaces unless specifically shown or specified to be painted.
8. Factory finished surfaces.
9. Ceramic tile and plastic surfaces.
10. Resilient flooring and base.
11. Elastomeric coatings.
12. Galvanized gratings.
13. Surfaces indicated not to be painted.
14. Surfaces specified to be finish painted under other Sections.

1.02 SCAQMD RULES: Furnish paint materials that conform to the current rules and regulations of all governing Air Quality Management Districts and other public environmental control and protection agencies having jurisdiction. If any paint materials specified herein do not conform to said rules and regulations, paint manufacturer of proposed paint materials shall prepare a list of non-conforming specified painting materials and proposed substitute conforming paint materials; Contractor shall deliver the list to the University Representative for review. Refer to Section 01340 for basic substitution requirements.

1.03 SUBMITTALS: For paints and coatings, including printed statement of VOC content and Chemical components. A good faith effort to comply with the USGBC “LEED” protocol is required. All products submitted shall be environmentally friendly and shall comply with all South Coast Air Quality Management District (SCAQMD) standards and comply with USGBC requirements for products of that intended use. If there are questions with a product, Contractor shall submit them as an RFI during the bid process for University clarification. Although the LEED certification process is not being followed, compliance with the LEED protocol is required relating to product selection, documentation, application and close-out.

A. List of Paint Materials: Prior to submittal of Samples, submit a complete list of proposed paint materials that identifies each material by manufacturer's name, product name and number, including primers, thinners, and coloring agents, together with manufacturers' catalog data fully describing each material as to contents, recommended usage, and preparation and application methods. Identify surfaces to receive various paint materials. Do not deviate from approved list.

B. Color Samples: Prior to submittal of Samples obtain Architects color and gloss selections and instructions. Using materials from approved list, prepare and submit 8-1/2" by 11" Samples of each complete opaque paint finish.

C. Natural or Stain Finish Samples: Prepare these Samples on 12" squares of the same species and appearance of wood as used in the Work.

1.04 JOB CONDITIONS.

A. Protection: Protect all painting while in progress and cover and protect adjoining surfaces and property of others from damage. Exercise care to prevent paint contacting surfaces not to be painted. During painting of exterior work, cover windows, doors, concrete, and other surfaces not to be painted.

B. Weather Conditions: Apply paint to clean, dry, prepared surfaces. Do not apply exterior paint during rainy, damp, foggy, or excessively hot and/or windy weather. Arrange for temporary heat and ventilation for interior painting.

C. Precaution: Place oily rags and waste in self-closing metal container and remove from site at the end of each day. Do not let rags and waste accumulate.

D. Cover all return air grills with a visqueen barrier during any painting preparation work and actual painting. Ensure all doors remain closed during preparation and painting process.

PART 2 - PRODUCTS

MATERIALS: Use the paint products of only one paint manufacturer unless otherwise specified or approved. In any case, primers, intermediate, and finish coats in each painting system shall all be the products of the same manufacturer, including thinners and coloring agents, except for materials furnished with shop prime coat by other trades. To the maximum extent feasible, factory mix paint materials to proper color, gloss, and consistency for application. Furnish paints from one of the following manufacturers: Frazee Paint Company products specified herein designate the intended types and qualities.

A. Frazee
B. Benjamin Moore Pristine (Eco Spec product)
C. Dunn Edwards Ecoshield (Current University Standard)
D. Or equal.

Chemical Components of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions:
Flat Paints and Coatings: VOC content of not more than 50 g/L.
Non-Flat Paints and Coatings: VOC content of not more than 150 g/L.
Anticorrosive Coatings: VOC content of not more than 250 g/L.
Varnishes and Sanding Sealers: VOC content of not more than 350 g/L.
Stains: VOC content of not more than 250 g/L.
Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
Restricted Components: Paints and coatings shall not contain any of the following:
Acrolein.
Acrylonitrile.
Antimony.
Benzene.
Butyl benzyl phthalate.
Cadmium.
Di (2-ethylhexyl) phthalate.
Di-n-butyl phthalate.
Di-n-octyl phthalate.
1,2-dichlorobenzene.
Diethyl phthalate.
Dimethyl phthalate.
Ethylbenzene.
Formaldehyde.
Hexavalent chromium.
Isophorone.
Lead.
Mercury.
Methyl ethyl ketone.
Methyl isobutyl ketone.
Methylene chloride.
Naphthalene.
Toluene (methylbenzene).
1,1,1-trichloroethane.
Vinyl chloride.

PART 3 - EXECUTION

3.01 INSPECTION: Examine all surfaces to be finished under this Section and verify satisfactory condition. Report to University Representative in writing all those conditions that prevent or interfere with correct preparation and application of Work of this Section. Do not proceed with painting and finishing on involved surfaces until all reported conditions are corrected. Application of the first coat of any finishing system constitutes acceptance of the surface by Painting Subcontractor. This does not relieve the Contractor from proper preparation of surfaces.

3.02 WORKMANSHIP: Apply paint materials in accordance with the manufacturer's instructions by brush or roller; spray painting is not allowed without specific approval in each case. Apply each coat at the proper consistency, free of brush or roller marks, sags, runs, or other evidence of poor workmanship. Do not lap paint on glass, hardware, and other surfaces not to be painted; apply masking as required. Sand between enamel coats.

3.03 PREPARATION: Properly prepare surfaces to receive finishes.

A. Concrete: Fill all cracks, holes and other blemishes with portland cement patching plaster or a stiff paste mixed of finish paint and fine sand, finished to match adjoining surfaces. Remove surface glaze by sanding, wire brushing, or light brush-off sandblasting. Neutralize all alkali conditions according to the paint manufacturer's directions. Dry surfaces to receive a breathing type latex paint at least two weeks, free of visible moisture, and dry surfaces to receive oil, alkyd, or epoxy based paint until the moisture content does not exceed 8% when tested with an electronic moisture-measuring instrument.

B. Masonry: Repair minor holes and cracks with a stiff paste of finish paint and fine sand or vinyl type block filler. Report major or unsightly defects to the University Representative for correction. Neutralize all alkali and efflorescence according to paint manufacturer's directions.

C. Gypsum Wallboard: Touch-up minor defects with spackle and sand smooth and flush. Report other defects for correction as specified.

D. Shop Coated Metal: Degrease and clean of foreign matter. Clean and spot paint field connections, welds, soldered joints, burns, or abraded portions with same material used in shop coat. After complete hardening, sand entire surfaces for coat to follow.

E. Uncoated Ferrous Metal: Degrease and clean of dirt, rust, mill scale, and all other foreign matter using rotary brushes, solvent, or sandblasting. Remove pits and welding slag, and clean surfaces to bright metal before priming. Apply metal primer not more than three hours after preparation.

F. Galvanized Metal: Degrease and clean of foreign matter. Apply specified pretreatment and immediately apply primer paint as soon as pretreatment is dry.

G. Enameled Woodwork: Sand smooth with grain and dust clean. After priming, putty nail holes, cracks, or other defects with putty matching color of finish paint. Cover knots and sappy areas with shellac or approved knot sealer. Sand each base coat smooth when dry. Use extra care for wood doors to level grain and repair defects so doors, when fully painted, do not show any evidence of wood grain or defects when viewed under any lighting condition or angle.

H. Transparent Finished Woodwork: Sand smooth with the grain and dust clean. Repair all defects with filler tinted to match stain or wood color, as required, after first coat of sanding sealer and remove all smears.

I. Fixtures, Equipment, and Hardware Items: Cooperate with other trades and coordinate removal of fixtures, equipment, and hardware as required to perform painting. Items to be removed include, without limitation: signs and graphics; switch and receptacle plates; escutcheons and like plates; all surface-mounted equipment; free-standing equipment blocking access; grilles and louvers at ducts opening into finished spaces; and other items as required and directed.

J. Surfaces Not Mentioned: Prepare surfaces according to recommendations of the paint manufacturer and as approved.

3.04 COATS AND COLORS: The number of paint coats specified to be applied are minimum. Ensure acceptable paint finishes of uniform color, free from cloudy or mottled areas and evident thinness on arises. "Spot" or undercoat surfaces as necessary to produce such results. Tint each coat a slightly different shade of finish color to permit identification. Conform to the approved Samples. Obtain approval of each coat before applying next coat; otherwise, apply an additional coat over entire surface involved at no additional cost to University.

3.05 EXTERIOR PAINTING: (Use the following manufacturers or approved equals)

A. Concrete Block Masonry - 100% Acrylic Flat:

1st Coat: 262 Block Filler
2nd Coat: 203 Duratec

B. Metal - Ferrous - 100% Acrylic Gloss Enamel:

1st Coat: 561 Metal Prime or 168 Prime Plus
2nd Coat: 143 Mirro Glide Gloss
3rd Coat: 143 Mirro Glide Gloss

Exception: On exposed surfaces of steel stairs, including steel pipe or tubing railings on stairs or separately on walls, and on exterior and interior sides of steel doors and frames, apply 2 coats of 648 Aro-Plate Industrial Enamel or equal in lieu of the 2nd and 3rd Coats above.

C. Metal – Ferrous and Galvanized - 100% Acrylic Semi-Gloss Enamel:

1st Coat: 561 Metal Prime or 168 Prime Plus
2nd Coat: 128 Satin Glide II
3rd Coat: 128 Satin Glide II

D. Metal - Galvanized: Treat with Jasco Prep N'Prime pre-treatment before priming.

1st Coat: 561 Metal Prime or 168 Prime Plus
2nd Coat: 143 Mirro Glide Gloss
3rd Coat: 143 Mirro Glide Gloss.

Exception: On roof and wall flashings, wall louvers, and other sheet metal flashings to be painted and visible on building exterior surfaces, apply two coats of 203 Duratec or equal in lieu of the 3rd Coat above (total of four coats in addition to vinyl wash primer).

E. Wood - Opaque Semi Gloss Acrylic Paint:

1st Coat: 168 Prime Plus
2nd Coat: 128 Satin Glide II

3rd Coat: 128 Satin Glide II

F. Wood - Stain Finish: Apply one coat of Frazee 385 Madera Semi Transparent stain, or one coat of UGL Zar Rain Stain Semi-Transparent oil type semi-transparent or approved equal as selected.

3.06 INTERIOR PAINTING: Provide paint finishes as scheduled on the Drawings or directed, gloss of finishes as scheduled or, where not scheduled, as designated by the University Representative (Use the following manufacturers or equals).

A. Enamel Finishes: Of following glosses:

1. Gloss 100% Acrylic Enamel(non-blocking for doors, trim):143 Mirro Glide
2. Semigloss 100% Acrylic Enamel (non-blocking for doors, trim): 032 Envirokote
3. Semi Gloss Acrylic Co-Polymer Enamel (for walls): 032 Envirokote
4. Eggshell Acrylic Co-Polymer Enamel (for walls): 029 Envirokote

B. Enamel - Drywall:

1st Coat: 061 Aqua Seal or equal.
2nd Coat: Enamel, gloss as scheduled or designated
3rd Coat: Enamel, gloss as scheduled or designated

C. Latex – Drywall Ceilings:

1st Coat: W101 Vinylastic or equal.
2nd Coat: W401 Decovel or equal.
3rd Coat: W401 Decovel or equal.

D. Enamel - Concrete and Plaster:

1st Coat: 168 Prime Plus or equal.
2nd Coat: Enamel, gloss as scheduled or designated
3rd Coat: Enamel, gloss as scheduled or designated

E. Enamel - Wood:

1st Coat: 168 Prime Plus or equal.
2nd Coat: Enamel, gloss as scheduled or designated

F. Stain and Polyurethane: FOR VERY LIGHT STAIN OR UNSTAINED WOOD:

1st Coat: 685 Wood Stain (where stain is scheduled)
2nd Coat: 2002 Frazee/Flecto Satin Polyurethane or equal.
3rd Coat: 2002 Frazee/Flecto Satin Polyurethane or equal.

G. Stain and Polyurethane: FOR MEDIUM TO DARK STAINED WOOD:

1st Coat: 685 Wood Stain (where stain is scheduled)
2nd Coat: McCloskeys Urethane, Semi-Gloss or equal.
3rd Coat: McCloskeys Urethane, Semi-Gloss or equal.

H. Flat - Metal: Treat galvanized metal with Jasco Prep N'Prime or equal.

1st Coat: 561 Metal Prime or 168 Prime Plus
2nd Coat: 002 Majestic or equal.
3rd Coat: 002 Majestic or equal.

I. Enamel - Metal: Treat galvanized metal with Jasco Prep N'Prime or equal.

1st Coat: 561 Metal Prime or 168 Prime Plus or equal.
2nd Coat: Enamel, gloss as scheduled or designated
3rd Coat: Enamel, gloss as scheduled or designated

Exception: On exposed surfaces of steel stairs, steel pipe or tubing railings on steel stairs or separately on walls, and all surfaces of steel doors and door frames, apply 2 coats of 628 Aro-Plate Semigloss Enamel in lieu of the 2nd and 3rd Coats above.

3.07 MISCELLANEOUS PAINTING:

A. Duct Interiors: Paint with flat black fire-retardant paint to the extent visible through grilles and `registers in finished rooms and spaces.

B. Fire Extinguisher and Fire Hose Cabinets: Apply 2 coats of paint finish, inside and out, matching finish and color of adjoining areas, unless otherwise noted or directed.

C. Color Coding: In mechanical and electrical equipment rooms, paint ducts, piping, conduit, equipment, and machinery, except such items having a complete factory finish, as specified for interior metal, colors as directed. Not more than 8 colors will be required.

D. Weather stripping or Sound Seals: Paint all exposed metal surfaces of the seals to match the door frame, whether or not unfinished, furnished with factory prime coat, or factory treated for paint adhesion.

E. Mechanical and Electrical Work: Carefully review Divisions 15 and 16 of these Specifications regarding painting performed hereunder and other painting required to be performed under this Section. Perform painting of mechanical and electrical equipment and materials not expressly specified to be painted as part of Work of Divisions 15 or 16, including required identification and color code painting, stenciling, and paint banding.

F. Miscellaneous: For any items not specifically indicated or specified that require a paint finish, apply 3 coats of paint as directed.

3.08 CLEAN-UP PROTECTION

A. Clean-Up: During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.

1. Upon completion of painting work, make a detailed inspection of paint finishes, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping using care not to scratch or otherwise damage finished surfaces. Touch-up and restore all damaged or defaced painted surfaces. after all painting is completed make good all damage caused by cleaning. Carefully touch-up all abraded, stained or otherwise disfigured painting, as approved, and leave entire painting in first-class acceptable condition

B. Protection: Protect work of other trades, whether to be painted or not, against damage by

painting and finishing work. Correct any damage by cleaning, repairing or replacing and repainting as acceptable to the University Representative.

1. Provide "Wet Paint" signs as required to protect newly painted finishes. remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

END OF SECTION

SECTION 10260

WALL SURFACE PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

Refer to drawings and finish schedule for new common area wall covering, a new building standard. Comply with manufacturers installation guidelines.

A. Section Includes:
   1. Wall protection systems:
      a. Wall Guards.
      b. Crash Rails.
      c. Corner Guards.
      d. Wood Handrails and Chair Rails.
      e. Bumper Guards.
      f. Handrails.
      g. Bed Locators.
      h. Chair Rails.
      i. Semi-rigid Protective Wallcoverings.
      j. Extruded Corner Guards.
   2. Door Protection Systems:
      a. Door Frame Protectors.
      b. Kick/push Plates.
      c. Door Knob Protectors.
      d. Door Edge Protectors.
B. Related Sections/Items:
   1. Steel angle and bent plate corner guard, refer to Section 05500.
   2. Wood blocking and grounds, refer to Section 06100.
   3. Stainless steel mop plates, kick plates, and armor plates, refer to Section 08710.
   4. Sheet vinyl wall covering, refer to Section 09950.
   5. Tack panel systems.

1.02 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
B. Product data indicating compliance with specified requirements.
C. Shop drawings showing methods of attachment to substrate.
D. Samples: For selection of color, pattern and surface texture.
   1. 12-inch (300 mm) long samples of each type of wall and corner guard required. Include examples of joinery, corners, and field splices.
   2. 7 x 9-inch (175 x 225 mm) samples of each rigid sheet or panel type wall surface protection material required.
   3. 6-inch long sample of wood handrail (chair rail).

1.03 QUALITY ASSURANCE

A. Fire Performance Characteristics: Comply with ASTM E 84 for the fire performance characteristics indicated below. Identify components with markings from testing and inspection organization.
   1. Flame Spread: 25 or less.
   2. Smoke Developed: 450 or less.

B. Single Source Responsibility: Obtain wall surface protection system components from a single source.
C. Deliver materials in original factory wrappings and containers, clearly labeled with manufacturer and brand name.
D. Store materials in original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
   1. Maintain room temperature within the storage area between 60 deg F (16 deg C) and 80 deg F (27 deg C) during the period plastic materials are stored. Keep materials out of direct sunlight to avoid excessive surface temperatures.
   2. Store rigid plastic corner guard, wall guard and handrail covers in a horizontal position for a minimum of 72 hours, or until the plastic material attains the ambient room installation temperature of between 65 deg F (18 deg C) and 75 deg F (24 deg C).

1.04 PROJECT CONDITIONS

A. Maintain ambient temperature within building at not less than 65 deg F (18 deg C) or greater than 75 deg F (24 deg C) for a minimum 72 hours prior to beginning of installation.
B. Do not install wall surface protection system components until the space is enclosed, weatherproof and climate controlled.
C. Do not install semi-rigid wall protection systems until temperature is stable and permanent lighting is in place.

1.05 MAINTENANCE

A. Maintenance Instructions: Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.
B. Replacement Materials: Minimum 2 percent of each type, color, and pattern of wall surface protection materials and components, unless specified otherwise in Section 01010 or University Representative's drawings. Include accessory components as required. Replacement materials shall be from the same production run as installed materials. Package with protective coverings and appropriate labels.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Koroseal Wall Protection Systems, Muncy, PA (800) 628-0449., or equal.

2.02 MATERIALS
A. Plastic Sheet Wall Covering Material: Textured, chemical- and stain-resistant, high-impact, acrylic modified vinyl plastic sheets, thickness as indicated. Comply with specified requirements of ASTM D 256 for impact resistance and ASTM E 84 for flame spread and smoke developed characteristics.
   Color and/or Pattern: As selected by University Representative from the manufacturer's full range of standard colors and textures.
B. Rigid Plastic Material: Extruded, textured, chemical- and stain-resistant, high-impact, acrylic modified vinyl plastic, thickness as indicated. Comply with specified requirements of ASTM D 256 for impact resistance and ASTM E 84 for flame spread and smoke developed characteristics.
   Color: As selected by University Representative from the manufacturer's full range of standard colors.
C. Aluminum Extrusions: ASTM B 221 (ASTM B 221M) for 6063-T6.
D. Fasteners: Provide non-corrosive metal screws, bolts, and other fasteners compatible with aluminum components, hardware, anchors, and other items being fastened. Use theft-proof fasteners where exposed to view.

2.03 WALL GUARDS

A. Crash Rail Type Wall Guards:
   1. Cover: Extruded, rigid, impact-resistant plastic, minimum 0.078-inch (1.9 mm) thick, in profile indicated.
   2. Retainer:
      a. Continuous, one-piece, extruded aluminum retainer, minimum 0.062-inch (1.6 mm) thick, with continuous vinyl cushion(s) or bumper(s) centered in the extrusion.
      b. 2-inch long extruded aluminum clips (specify specific model number: C460, C660, or C860).
      c. Continuous vinyl cushion on aluminum retainer attached to 2-inch long extruded aluminum clips (specify specific model number: C870).
   3. C400 Series: 4-inch (100 mm) high, surface-mounted flush on wall.
   4. C420 Series: 4-inch (100 mm) high, surface-mounted on 1/8-inch (6 mm) cushion spacers.
   5. C430 Series: 4-inch (100 mm) high, surface-mounted on ½-inch (13 mm) cushion spacers.
   6. C440 Series: 4-inch (100 mm) high, extended mounting on 1-1/2 inch (38 mm) bell flange mounting brackets.
   7. C450 Series: 4-inch (100 mm) high, extended mounting on 2-inch (50 mm) bell flange mounting brackets.
   8. C460 Series: 4-inch (100 mm) high, surface-mounted with 2-inch aluminum clips flush on wall, low to medium impact.
   9. C600 Series: 6-inch (150 mm) high, surface-mounted flush on wall.
   10. C610 Series: 6-inch (150 mm) high, surface-mounted flush on wall, with solid color insert.
   11. C620 Series: 6-inch (150 mm) high, surface-mounted on 1/8-inch (6 mm) cushion spacers.
   12. C630 Series: 6-inch (150 mm) high, surface-mounted on ½-inch (13 mm) cushion spacers.
   13. C640 Series: 6-inch (150 mm) high, extended mounting on 1-1/2 inch (38 mm) bell flange mounting brackets.
   14. C650 Series: 6-inch (150 mm) high, extended mounting on 2-inch (50 mm) bell flange mounting brackets.
   15. C660 Series: 6-inch (150 mm) high, surface-mounted with 2-inch aluminum clips flush on wall, low to medium impact.
   16. C680 Series: 6-inch (150 mm) high, surface-mounted flush on wall, low to medium impact with pre-laminated Traffic Patterns™ wallcovering insert.
   17. C800 Series: 8-inch (200 mm) high, surface-mounted flush on wall.
   18. C820 Series: 8-inch (200 mm) high, surface-mounted on 1/8-inch (6 mm) cushion spacers.
   19. C830 Series: 8-inch (200 mm) high, surface-mounted on ½-inch (13 mm) cushion spacers.
   20. C840 Series: 8-inch (200 mm) high, extended mounting on 1-1/2 inch (38 mm) bell flange mounting brackets.
   21. C850 Series: 8-inch (200 mm) high, extended mounting on 2-inch (50 mm) bell flange mounting brackets.
   22. C860 Series: 8-inch (200 mm) high, surface-mounted with 2-inch aluminum clips flush on wall, low to medium impact.
   23. C870 Series: 8-inch (200 mm) high, surface-mounted with 2-inch aluminum clips and continuous vinyl cushion flush on wall.
   24. Accessories: Prefabricated, injection-molded or foam-molded (C600 Series) end caps and inside and outside corners with concealed splices, cushions, and other accessories as required.
      a. End caps and inside and outside corners shall match plastic cover color.
      b. Provide self-adjusting connector plate to align end caps.

25. Color: As selected.

B. Bumper Rail Type Wall Guards:
1. Cover: Rigid, extruded, impact-resistant plastic, minimum 0.10-inch (2.5 mm) thick, in dimensions and profiles indicated.
2. Retainer:
a. Continuous, one-piece, extruded aluminum retainer, minimum 0.08-inch (2 mm) thick.
Continuous, one-piece, extruded plastic retainer, minimum 0.08-inch (2 mm) thick (specify specific model number: B300).
3. B120 Series: 3-1/2 inch (89 mm) high, surface-mounted on 1/8-inch (6 mm) cushion spacers.
4. B130 Series: 3-1/2 inch (89 mm) high, surface-mounted on ½-inch (13 mm) cushion spacers.
5. B140 Series: 3-1/2 inch (89 mm) high, extended mounting on 1-1/2 inch (38 mm) bell flange mounting brackets.
6. B150 Series: 3-1/2 inch (89 mm) high, extended mounting on 2-inch (50 mm) bell flange mounting brackets.
7. B200 Series: 1-1/2 inch (38 mm) high flexible extruded PVC bumper, surface mounted.
8. B300 Series: 2-inch (50 mm) high, surface-mounted flush on wall, plastic retainer, low to medium impact.
9. Accessories: Prefabricated, injection molded end caps and corners with concealed splices, cushions, mounting hardware, and other accessories as required. End caps and outside corners: Match plastic cover color.
10. Color: As selected.

2.04 HANDRAILS

A. Bumper Rail Type Handrails: Comply with requirements of ANSI A117.1.
1. Cover: Rigid, extruded, impact-resistant plastic, minimum 0.078-inch (2.0 mm) thick, in dimensions and profiles indicated.
2. Retainer: Continuous, one-piece, extruded aluminum retainer, minimum 0.080-inch (2.0 mm) thick with continuous vinyl bumper cushion centered in the extrusion.
3. H100 Series: 5-1/2 x 1-1/2 inch (140x38 mm), extended mounting on high-impact, injection-molded plastic mounting brackets.
4. H110 Series: 5-1/2 x 1-1/2 inch (140x38 mm), extended mounting on high-impact, injection-molded plastic mounting brackets with solid color accent strip.
5. H180 Series: 5-1/2 x 1-1/2 inch (140x38 mm), extended mounting on high-impact, injection-molded plastic mounting brackets with pre-laminated Traffic Patterns™ wallcovering accent strip.
6. Accessories: Prefabricated, injection-molded or foam-molded end caps and inside and outside corners with concealed splices, cushions, and other accessories as required.
a. End caps and inside and outside corners:
(1) Match plastic cover color.
(2) Self-aligning connector plate.
7. Color: As selected.

B. Handrails: Comply with requirements of ANSI A117.1.
1. Cover: Rigid, extruded, impact-resistant plastic, minimum 0.080-inch (2.0 mm) thick, in dimensions and profiles indicated.
2. Retainer: Continuous, one-piece, extruded aluminum retainer, minimum 0.080 inches (2.0 mm) thick.
3. H500 Series: 1-1/2 x 1-1/2 inch (140x38 mm), mounted over continuous aluminum retainer with mounting brackets.
4. Accessories: Prefabricated, injection-molded caps and inside and outside corners with concealed splices, and other accessories as required.
a. End caps and inside and outside corners: Match plastic cover color.
5. Color: As selected.

2.05 BED LOCATORS

Bed Locators: Snap-on-type, aluminum retainer, two molded-plastic bed locator end caps, and two molded-plastic mounting brackets. Mount assemblies at height indicated.

1. Cover: Rigid, impact-resistant plastic, minimum 0.100-inch (2.5 mm) thick, in dimensions and profiles indicated.
2. Retainer: Continuous, one-piece, extruded aluminum retainer, minimum 0.08-inch (2.0 mm) thick.
3. B140 Series: 3-1/2 inch (89 mm) high, extended mounting on 1-1/2 inch (38 mm) bell flange mounting brackets.
4. B150 Series: 3-1/2 inch (89 mm) high, extended mounting on 2-inch (50 mm) bell flange mounting brackets.
5. Accessories: Two prefabricated, injection-molded plastic bed locator end caps with concealed splices, cushions, mounting hardware, and other accessories as required.

a. End caps: Match plastic cover color.

6. Color: As selected.

CORNER GUARDS

A. Surface-Mounted, Resilient Plastic Corner Guards:

1. Cover: Rigid, impact-resistant plastic, minimum 0.078-inch (1.9 mm) thick, in dimensions and profiles indicated.

Retainer:

a. Continuous, one-piece, extruded aluminum retainer, minimum 0.062-inch (1.6 mm) thick.

b. Continuous, one-piece, extruded plastic retainer, minimum 0.062-inch (1.6 mm) thick (specify specific model number: G160).

3. G100 Series: 2-inch (50 mm); Corner Radius: ¼-inch (6.35 mm).
4. G160 Series: 2-inch (50 mm); Corner Radius: ¼-inch (6.35 mm), plastic retainer, low to medium impact.
5. G110 Series: End wall condition with two G100 corner guards with high impact filler between.
6. G200 Series: 3-inch (75 mm); Corner Radius: ¼-inch (6.35 mm).
7. G400 Series: 2-11/16 inch (70 mm); Corner Radius: 1-1/4 inches (27.8 mm).
8. G410 Series: End wall condition with two G400 corner guards with high impact filler between.
9. Accessories: Prefabricated aluminum retainer with concealed splices, mounting hardware, and other accessories as required.

End caps:

(1) Match plastic cover color.
(2) Field adjustable for close alignment with snap-on plastic covers.

10. Color: As selected.

B. Flush-Mounted, Resilient Plastic Corner Guards:

1. Cover: Rigid, impact-resistant plastic, minimum 0.078-inch (2.0 mm) thick, in dimensions and profiles indicated.
2. Retainer: Continuous, one-piece, extruded aluminum retainer, minimum 0.062-inch (1.6 mm) thick.
3. R100 Series: 2-inch (50 mm); Corner Radius: ¼-inch (6.35 mm).
4. R110 Series: 2-inch (50 mm) end of wall type; Corner Radius: ¼-inch (6.35 mm).
5. R120 Series: 2-inch 2-hour Fire Barrier mounted on aluminum retainer.
6. R400 Series: 3-inch (74 mm); Corner Radius: ¼-inches (27.8 mm).
7. R410 Series: 3-inch (74 mm) 135 degree type; Corner Radius: ¼-inches (27.8 mm).
8. R420 Series: 3-inch 2-hour Fire Barrier mounted on aluminum retainer.

NOTE: END CAP IS ONLY USED WITH SURFACE-MOUNTED CORNER GUARDS.

9. Accessories: Aluminum base with concealed splices, mounting hardware, and other accessories as required.
10. Color: As selected.

C. Surface-Mounted Plastic Corner Guards: Thermoformed, embossed, resilient plastic acrylic modified vinyl sheet corner guards, height as indicated. Provide 90-degree turn, unless otherwise indicated, and formed edges.
. Wing Size: As indicated.
6. Mounting Method: Recommended contact cement, construction adhesive, or double-faced self-adhesive foam tape.
7. Color: As selected.
8. Coordinating Design: As selected.

D. Extruded Corner Guards: Adhered 90-degree high impact extruded vinyl acrylic corner guards, nominal 0.078-inch (2 mm) thick. ASTM E84 Class I fire rating. Corner radius ¼-inch (6 mm).
1. G875 Series: ¾-inch (19 mm).
2. G815/G915 Series: 1-1/2 inch (38 mm).
3. Adhesive and Primer: As recommended by manufacturer.

2.07 WOOD HANDRAILS AND CHAIR RAILS – NOT USED

2.08 IMPACT-RESISTANT WALLCOVERINGS

A. Semi-rigid, Integrally-colored Sheet Wallcovering: Semi-rigid, embossed, impact-resistant plastic sheets or roll stock. Comply with fire performance characteristics specified and be chemical- and stain-resistant.
1. 500 Series: Solid colors.
a. Sheet/Roll Thickness: 0.028-inch (0.7 mm) thick, Class I/A Fire-Rated.
b. Sheet/Roll Thickness: 0.040-inch (1.0 mm) thick, Class I/A Fire-Rated.
c. Sheet Thickness: 0.060-inch (1.5 mm) thick, Class I/A Fire-Rated.
d. Sheet Thickness: 0.080-inch (2.0 mm) thick, Class II/B Fire-Rated.
Sheet Thickness: 0.125-inch (3.2 mm) thick, Class II/B Fire-Rated.
2. 600 Series: Solid colors.
Sheet Thickness: 0.080-inch (2.0 mm) thick, Class I/A Fire-Rated.
Sheet Thickness: 0.125-inch (3.2 mm) thick, Class I/A Fire-Rated.
3. Korostone™ Series: Speckled-pattern colors.
Sheet Thickness: 0.040-inch (1.0 mm) thick, Class I/A Fire-Rated.
Sheet Thickness: 0.060-inch (1.5 mm) thick, Class I/A Fire-Rated.
4. Color: As selected.

B. Semi-rigid Laminated Sheet Wallcovering: Semi-rigid, embossed, impact-resistant, capped vinyl-plastic sheets. Comply with Class I/A fire performance characteristics and be chemical- and stain-resistant.
1. Traffic Patterns™ Series: Teflon® capped Sheet Thickness: 0.030-inch (0.76 mm) thick.
2. Korowood™ Series: Sheet Thickness: 0.040-inch (1.2 mm) thick.
3. Pattern and/or Color: As selected.

C. Color Matched or Complimentary Accessory Moldings: Manufacturer's standard.
1. J-molding: #82.
2. Divider Bar: #87/88
3. Inside Corner: #83
4. Outside Corner: #85
5. Color: As selected.

D. Color Matched Caulk: Manufacturer's standard.

Adhesive and Primer: As recommended by manufacturer.

2.09 DOOR PROTECTION SYSTEMS

A. Door Surface Protection: Comply with requirements of ANSI A156.6. 0.040-inch thick (0.028,

0.060, 0.080). Provide the following standard sizes or custom sizes as indicated:
1. Kick Plate: 8-inches (200 mm) high by 1-inch (25 mm) less than door width.
2. Kick Plate: 10-inches (250 mm) high by 1-inch (25 mm) less than door width.
3. Kick Plate: 12-inches (300 mm) high by 1-inch (25 mm) less than door width.
4. Armor Plate: 32-inches (800 mm) high by 1-inch (25 mm) less than door width
5. Armor Plate: 48-inches (1200 mm) high by 1-inch (25 mm) less than door width.
6. Push Plate: 12-inches (300 mm) high by 3-inches (75 mm) wide.
7. Push Plate: 15-inches (375 mm) high by 3-1/2 inches (89 mm) wide.
8. Push Plate: 16-inches (400 mm) high by 4-inches (100 mm) wide.
9. Color: As selected.

B. Door Frame Protection: 0.040 (0.060) rigid, impact-resistant, thermoformed vinyl plastic with return legs. Comply with fire performance characteristics specified and be chemical- and stain-resistant.

Color: As selected.

C. Door Frame Guard: Door frame guard mounted on continuous aluminum retainer. High-impact vinyl extrusion locked in place, nominal 0.10-inch (2.5 mm) thick. ASTM E84 Class I fire rating.
1. Extrusion: Pebble grain finish.
2. Retainer: Continuous 6063-T6 aluminum retainer behind entire height of door frame guard, minimum 0.060 (1.5 mm) thick.
   F360 Series: 2-11/16 inch (70 mm); Corner Radius: 1-1/4 inches (27.8 mm).
   End Caps: Injection molded unit of color and texture similar to profile extrusion.

2.10 FABRICATION

A. Comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thicknesses of components.
B. Shop-assemble components to the greatest extent possible. Disassemble only as necessary for shipping and handling.
C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of evidence of wrinkling, chipping, uneven coloration, dents, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.
D. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors for interconnection of members to other construction.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions in which wall surface protection components and wall protection systems will be installed.
B. Complete finishing operations, including painting, before beginning installation of wall surface protection system materials.
C. Wall surfaces to receive impact-resistant wall covering materials shall be dry and free from dirt, grease, loose paint, and scale.
D. Do not proceed with installations until unsatisfactory conditions have been corrected.

3.02 PREPARATION

Properly prepare substrate and clean to remove dust, debris, and loose particles.

3.03 INSTALLATION

A. Install wall surface protection units plumb, level, and true to line without distortions.
B. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in

the finished work.

C. Install aluminum retainers, mounting brackets, and other accessories in strict accordance with the manufacturer's instructions.

D. Where splices occur in horizontal runs of over 20 feet (6 m), splice aluminum retainer and plastic cover at same locations along the run.

3.04 CLEANING

A. Clean plastic covers and accessories using a standard non-ammonia based household cleaning agent.

B. Clean metal components in accordance with the manufacturer's recommendations.

C. Remove excess adhesive using methods and materials recommended by manufacturer.

END OF SECTION

SECTION 10400

IDENTIFICATION DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide identification devices as shown on the Drawings and as specified, complete.

1.02 SUBMITTALS

A. Refer to Section 01340, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, for procedures.

B. Manufacturer's Literature: Furnish brochures showing signs, including general specifications, materials and construction.

C. Shop and Layout Drawings: Furnish complete drawings showing details of fabrication and erection, color type and style of letters, background and frame, setting details and full-size templates of lettering layouts.

D. Samples: Furnish one (1) full-size sample of each room and door sign, indicating construction, color, size, layout of letters and method of attachment.

E. Maintenance Instructions: Furnish manufacturer's recommended procedures for care of finished surfaces.

F. Certificates: Furnish manufacturer's certification that materials meet specification requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Sign manufacturer shall have Los Angeles area fabrication or distribution system, so that additional signs may be ordered as the need arises.

B. Manufacturers: to be determined by Contractor.

2.02 TOILET ROOM IDENTIFICATION SIGNS

A. Size: As indicated on Drawings.

B. Facing: Single-sided, matte finish acrylic plastic with die-cut subsurface pictogram symbols.

C. Fabrication: Graphic symbols shall be developed in accordance with the United States Department of Transportation Standards.

D. Finish: Color shall be as selected by University's Representative.

E. Signage Types: Provide the following.

1. Handicapped sign with wheelchair symbol.

2. Men's toilet room sign with pictogram symbol.
3. Women's toilet room sign with pictogram symbol.
4. A.D.A. latch signage is mandatory.

2.03 PAINTED STEEL SIGNAGE FOR STAIR SHAFTS

A. Size: 16" x 24".
B. Facing: Single-sided.
C. Fabrication: 16-gauge galvanized metal.
D. Lettering: Numbers to be painted 10 inches high.
E. Finish: Painted, color as indicated on the Drawings.
F. Standard: Custom-designed sign as manufactured by (refer to drawings). Refer to Paragraph 2.02 B above for equal products.

2.04 FASTENERS AND OTHER MATERIALS

A. Fastenings: Provide non-corrosive fasteners, hangers and mounting devices which are compatible with sign material and finish.

B. Related Materials: Other materials, not specifically described but required for a complete installation of signs, shall be : Tenants Suite identification signs (to match building standard) and other signs as required in other sections of these specifications and those that may be required to complete the project.

PART 3 - EXECUTION

3.01 INSPECTION

A. Substrate: Examine foundations, walls, doors, ceilings and other areas scheduled to receive signs for conditions that would affect quality and execution of work and inform University's Representative of such conditions. Do not proceed until approval is received.

3.02 INSTALLATION

A. Fastening Signs: Install sign units and components at locations shown or scheduled, securely mounted with concealed theft-resistant fasteners, unless otherwise indicated. Attach signs to substrates in accordance with manufacturer's printed instructions, unless otherwise indicated.

END OF SECTION

SECTION 10522

FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers, cabinets and accessories as indicated on the drawings.

1.02 SUBMITTALS

A. Manufacturer's Data: Submit data on fire extinguisher and cabinet showing dimensions, operational features, color and finish, wall-mounting brackets with anchorage details, and rough-in measurements, location, and details.

B. Maintenance Data: Submit maintenance data with refill or recharge schedule, and re-certification requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Extinguisher: Multi-purpose dry chemical type 5 lb., 2-A-20-B: C rated as manufactured by Potter Roemer, or equal.

B. Fire Extinguisher Cabinet: Potter Roemer Alta 7000 Series Cabinet with duo vertical panel and vertical letter work, recessed cabinet-stainless steel color as selected by University Representative, or equal.

C. Mounting Hardware: Manufacturer's standard, appropriate for cabinet mounting.

2.02 FABRICATION

A. Form body of cabinet with tight inside corners and seams.

B. Predrill holes for anchorage.

C. Form perimeter trim by welding, filing and grinding smooth.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install each cabinet plumb and level, and secure rigidly in place in accordance with manufacturer's instructions.

END OF SECTION

SECTION 10800

TOILET ROOM ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide accessories for toilet rooms as shown on the Drawings and as specified, complete.

1.02 SUBMITTALS

A. Refer to Section 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Shop Drawings: Submit drawings showing installation details and required backing plate locations.

C. Manufacturer's Data: Complete catalog cuts showing parts lists, fabrication and installation data of each item.

D. Samples: Submit such samples as University's Representative may request, which will be returned to Contractor. Approved samples may be installed in the work.

E. Certificates: Report of test by independent laboratory of grab bar strength and installation methods.

1.03 REFERENCE STANDARDS

A. Stainless and heat-resisting chromium-nickel steel plate, sheet and strip, ASTM A167.

B. Seamless and welded austenitic stainless steel tubing for general service, ASTM A269.

C. Plumbing fixtures and accessories, FS WW-P-541/8A.

1.04 PRODUCT DELIVERY AND STORAGE

A. Deliver items in manufacturer's original unopened packaging, and store under protective cover until installed. Where accessories are furnished with strippable coatings, leave coatings intact until final acceptance.

1.05 GUARANTEE

A. Furnish to University a written guarantee against all defects in material and workmanship, including against silver spoilage, for ten (10) years from the date of acceptance.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. All accessories, insofar as possible, shall be products of a single manufacturer.

B. Basis of Design: Bobrick

C. Fixtures may be equal by Bradley or American Specialties.

2.02 MATERIALS

A. Stainless Steel: ASTM A167, Type 302 or 304, with No. 4 finish.

B. Steel: ASTM A366, commercial quality, cold-rolled.

C. Zinc Coating: ASTM A123, Class G-90.

D. Chromium Plating: ASTM B456, Type SC2.

E. Aluminum:

1. Extrusions. 6063 T5, satin anodized finish.

2. Sheet. 5005 H14.

F. Brass: FS WW-P-541, cast or forging quality alloy.

G. Mounting Devices: ASTM A386, galvanized steel.

2.03 SCHEDULE OF ACCESSORIES (Basis of Design: Bobrick, unless noted otherwise)

H.	Recessed toilet seat cover dispenser	B-3013
J.	Recessed paper towel dispenser and waste receptacle	B-3830
K.	Recessed toilet tissue dispenser For double roll	B-6977
L.	Recessed paper towel dispenser	B-359
M.	36” x 1-1/4” Ø horizontal grab bar +33” A.F.F.:	B-5806 x 36.
	42” x 1-1/4” Ø horizontal grab bar +33” A.F.F.:	B-5806 x 42.
N.	Mirror	Custom. Verify dimensions in field.
P.	Recessed soap dispenser	B-306

2.04 FABRICATION

A. Recessed accessories shall have seamless one (1)-piece flange on exposed face. Weld all corners, leave no open miters.

B. Locked dispensing units shall be keyed alike for all accessories. Coin boxes, where they occur, shall be keyed differently from dispensing unit.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Insure that openings to receive accessories are constructed to correct size, are plumb, level and in alignment with other items so indicated.

B. Insure that surfaces to receive accessories are in alignment, make corrections as needed so that installed accessories will be flat, level, plumb and fitted snugly against adjoining surfaces without gaps.

3.02 INSTALLATION

A. Provide backing plates per manufacturer’s requirements as indicated in Section 05990 MISCELLANEOUS METAL.

B. Install all accessories square, plumb and level. Securely anchor by mechanical means only using stainless steel fasteners. Conform to rough-in and installation templates. Exact locations shall be as indicated or approved by University's Representative.

3.03 ADJUSTMENT AND CLEANING

A. At completion, adjust all accessories for smooth operation, and clean and polish all surfaces. Deliver keys and maintenance instructions to University's Representative.

END OF SECTION

SECTION 12306

PLASTIC FACED CASEWORK

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

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

1.01 DESCRIPTION OF WORK

A. The extent of plastic faced casework is shown on the Drawings.

B. The Work includes the fabrication and installation of custom plastic faced casework composed of base cabinets, wall cabinets, counter tops, storage cabinets, shelf units and other miscellaneous units.

C. Related Work Specified Elsewhere:

1. Section 06100: Rough Carpentry
2. Section 06400: Architectural Woodwork
3. Section 07270: Firestopping
4. Section 07900: Caulking and Sealants

1.02 QUALITY ASSURANCE

A. Quality Standards: Except as otherwise shown or specified, comply with provisions of the Architectural Woodwork Institute (AWI) "Quality Standards," Revised 1990. Highest grade applicable.

B. Plastic Laminate Casework: AWI Section 400, premium grade except use premium standard for orientation of laminate grain.

1. Use medium density (forty-five [45] lbs./cu. ft.) particle board for all core materials. (3/4" thick U.N.O.)

C. Plastic Laminate:

1. Details, Sections, etc., may only show and/or indicate finished face or exposed plastic laminate for design and/or detailing purposes. General Contractor and Millwork Contractor is required to provide install, etc., all plastic laminate to cover all other exposed areas, cabinet interiors, edges, etc., and to provide all required balance matching. All color finish and graining to match face color, typical.

1.03 WORKMANSHIP

A. Quality of workmanship shall be the highest known "cabinetmaker or furniture quality." All miter joints shall be tight with no gaps or open spaces. Loose joints shall be hairline, flat, in single plane, with no exposed fasteners. All dimensions, reveals and joints shall be exact.

1.04 DESIGN RESPONSIBILITY

A. The Drawings and Specifications indicate the design intent of this Work and define special required elements.

B. When various details or requirements are vague, or in contradiction, this Contractor shall immediately request a clarification.

1.05 WARRANTY

A. This Contractor agrees to warrant his work for two years against becoming unserviceable or objectionable in appearance as a result of being defective or non-conforming., This Contractor further warrants the overall effective integration and correctness of individual parts, the whole of the system(s) and compatibility with adjoining substrates, materials and work by other trades.

B. Contractor shall repair or replace defective work to the satisfaction of the University.

1.06 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings showing plans, elevations, ends, cross-sections, service run spaces, location and type of service fixtures with lines thereto. Show details and location of anchorages and fitting to floors, walls and base.

1. Include layout of units with relation to surrounding walls, doors, windows and other building components.

2. Coordinate Shop Drawings with other work involved.

B. Samples: Submit two (2), 2"x3" samples of manufacturer's plastic laminate colors, patterns and textures for exposed and semi-exposed materials for University Representative's selection. Samples will be reviewed by University Representative for color, texture and pattern only. Compliance with other specified requirements is the exclusive responsibility of the Contractor.

C. Refer to Section 01340 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, for procedures.

1.07 PRODUCT HANDLING

A. Deliver plastic faced casework only after wet operations in building are completed.

B. Store completed plastic faced casework in a ventilated place, protected from the weather, with relative humidity therein of 50% or less at 70oF.

C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

1.08 JOB CONDITIONS

A. Humidity and Temperature Controls: Advise Contractor of requirements for maintaining heating, cooling and ventilation in installation areas as required to reach relative humidity necessary to maintain optimum moisture content.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Definitions: The following definitions apply to plastic faced casework units:

1. Exposed: Surfaces visible when doors and drawers are closed. Bottoms of casework more than 4' above floor. Backs and edges of hinged door.

2. Semi-Exposed: Surfaces that become visible when drawers and doors are opened. Tops of casework 6'-6" or more above floor.

3. Concealed: Surfaces permanently hidden after installation, such as backs of cabinets against walls.

4. Semi-concealed: Knee spaces on work units and tables.

B. Board Products:

1. Particle Board: Medium density (minimum forty-five [45] lbs.'cu./ft.) minimum wood chip and phenolic resin binders, compressed board, 3/4" thickness unless otherwise indicated. (Use where noted on Drawings as plywood.)

2. Hardboard: PS 58, Class 1 (tempered), smooth one side or both sides where indicated, 1/4" thickness unless as otherwise indicated.

3. Environmental Requirements: Particle Board and Hardboard shall contain no added ureaformaldehyde.

C. Plastic Laminate: Comply with NEMA LD3; Type 2, .050" thickness.

D. Design and Construction Features: Comply with the details shown for profile and construction of plastic faced casework. Where not otherwise shown, comply with applicable Quality Standards, with alternate details (indicate on shop drawings) as Fabricator's option.

E. Pre-Cut Openings: Fabricate plastic faced casework with pre-cut openings, wherever possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth the edges of cut-outs and, where located in countertops and similar exposures, seal the edges of cutouts with a water-resistant coating. Color approved by University Representative.

1. Grommet(s): Provide for all pre-cut openings and/or where shown on the drawings.

F. Measurements: Before proceeding with fabrication of casework required to be fitted to other construction, obtain field measurements and certify dimensions and Shop Drawings details as required for accurate fit.

1. Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scribing and trimming of casework for accurate fit.

G. Material Thickness: The following thickness for cabinet work shall apply except when shown thicker on the Drawings:

1. Tops, Bottoms, Ends, Divisions: 3/4" thick.

2. Face Plates: Equal to door thickness with 3/4" minimum.

3. Web Frames: 3/4" minimum.

4. Drawer Bottoms: 1/4" KorTron II, "Color as selected." Drawers over 24" wide require center bottom support. Weight all drawers.

5. Drawer Fronts: Provide double fronts equal to door thickness. 3/4" minimum.

6. Drawer Backs and Sides: 1/2", full dovetail construction.

7. Shelves: 3/4" to 28"; 1" to 40"; 1-1/2" to 60" maximum unsupported lengths. Where shelving is to receive plastic laminate, cover front and back edges, top and bottom of shelf with plastic laminate.

8. Storage Shelving: Plastic laminate or KorTron.

H. Bases: Finishes as indicated on Drawings. Design to space as shown on drawings.

I. Doors (Cabinet): 3/4" minimum thickness except doors over 36" wide and 60" high to be 1-1/4". Use overlay type except where shown otherwise on Drawings. The finish on door fronts, backs and edges to be the same.

J. Plastic Laminate: Plastic laminate colors, finishes and patterns:

1. Manufacturers: As noted on Drawings.

K. Finishes:

1. Plastic laminate for horizontal surfaces: NEMA Type 2, 0.050" thick, General-Purpose Type (high pressure).

2. Plastic laminate for postforming: NEMA Type 3, 0.042 thick, Postforming Type (high pressure).

3. Plastic laminate for external vertical surfaces: NEMA Type 4, 0.028" thick, General-Purpose Type (high pressure).

4. Plastic laminate for cabinet linings: 0.020" thick.

5. Plastic laminate for concealed panel backing: 0.020" thick, Backer-Type (high pressure).

L. Fabricate exposed edges of casework, including edges and inside faces of doors, and drawers when open, with matching plastic laminate, except as otherwise indicated.

M. Plastic Laminate Countertops: Except as other wise indicated, provide separate plastic laminate countertops (installed on other casework or other support system as indicated) to comply with the requirements for casework for plastic laminate finish.

2.02 CABINET HARDWARE AND ACCESSORY MATERIAL

A. General: Provide cabinet hardware and accessory materials associated with plastic faced casework except for units which are specified as "door hardware" in Section 08700 or in other sections of these Specifications.

B. Hardware Standards: Except as otherwise indicated, comply with ANSI A156.9 "American National Standard for Cabinet Hardware."

C. Hinges: Number per leaf as per Manufacturer's load charts, but not less than three (3) per leaf. Full or half overlay as required spring loaded for ease of door operation as required.

1. Prameta or Mepla, European style concealed hinges

D. Pulls:

1. Tydex Wire Pulls

E. Touch Latch: Glynn Johnson No. 4

F. Magnetic Latch: Provide two catches on doors over 4' high. Hafela 264.26.702.

G. Drawer Guides: Grant or Accuride, of correct size for drawer depth. Use full extension type for file drawers and where indicated. Provide one pair guides for each drawer.

1. Accuride #C3037
2. Accuride #C4437 (heavy duty)

H. Adjustable Shelf Supports: KV 255 pilaster standards and KV 256 supports.

I. Adjustable Shelf Supports: KV 87 slotted standards and KV 187 slot supports, (heavy duty) (spaced at 36" o.c.)

J. Adjustable Shelf Supports: KV 85 double slot standard and KV double slot bracket. (spaced at 30" o.c.)

K. Closet Bars: Garcy, #A3337, Flagne Garcy #3361 size as required.

L. Shelf Clips: Capitol #86 pin shelf support, bright Zincro. Size as required. Provide predrilled holes in cabinet sides spaced at 1" o.c. and not more than 1-1/2" from shelf edges. Finish zinc plate and/or chrome.

M. Hand Rods: Capitol #641-2 with flangeless socket #262-2, 1-3/16" diameter extra lengths as required.

N. Silencers: Neoprene pads as required to match frame.

O. Locks: Locks for all millwork cabinet doors and drawers shall be located per the elevations of per the approval of the University Representative.

1. Locations of all locks as well as keying shall be reviewed with the University Representative prior to installation of locks.

P. Approved Manufacturers: National Lock, Corbin or approved equal.

1. Provide all required hardware in finish as selected.

Q. Undercounter Light: Where shown by others. Refer to plans and lighting schedule. Coordinate location of fixture, junction boxes and cutouts with the Electrical Contractor. Provide cut-outs, grommets and boxes as required for electrical work by others.

2.03 FABRICATION

A. Fabricate plastic faced casework to dimensions, profiles and details shown. Comply with AWI 400B Premium Grade.

B. Assemble units in the shop in as large components as practicable to minimize field cutting and jointing. Mortise and tenon, glue and screw joints for maximum strength using precision jigs and clamps to insure square corners and plumb vertical surfaces.

C. Provide 1-1/2" (minimum) lumber edges (glued to core prior to laminating) on the hinge side of all doors. Provide the same lumber edge on the leading edge of cabinet divider for hinge attachment. For hardware installation, drill pilot holes and use full-threaded screws.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examination: This Contractor shall examine the substrates and conditions under which the Work is to be installed, and notify the University Representative, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to this Contractor.

3.02 PREPARATION

A. Deliver concrete inserts and similar anchoring devices to be built into substrates well in advance of the time substrates are to be built.

B. Prior to installation of casework, examine shop fabricated work for completion and complete work as required including removal of packing.

3.03 INSTALLATION

A. Install the work plumb, level, true and straight with no distortions.

B. Shim, as required, using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including counter tops) and with 1/32" maximum offset in flush adjoining surfaces, 1'8" maximum offsets in revealed adjoining surfaces.

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

D. Anchor casework to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with casework and matching laminate.

E. Casework and/or cabinets: Install without distortion so that doors and drawers will fit openings properly and be accurately aligned.

1. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.

F. Countertops: Anchor securely to base units and other support systems as indicated.

3.04 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Repair damaged and defective casework wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace casework. Adjust joinery for uniform appearance.

B. Clean hardware, lubricate and make final adjustments for proper operation.

C. Clean casework on exposed and semi-exposed surfaces. Wet wipe inside of all drawers. Touch-up shop-applied finishes to restore damaged or soiled areas.

D. Protection: This Contractor shall provide protection and maintain protection necessary to ensure that the Work will be without damage or deterioration at the time of acceptance. Method as approved by the University Representative.

1. Instruct University of adjustments and preventive maintenance (i.e., cleaning methods, materials).

2. This Contractor shall be required to conduct a site walk through and adjust all casework six months after installation.

END OF SECTION

SECTION 12494

WINDOW SHADES AND BLINDS

GENERAL

1.1 SECTION INCLUDES

A. Manually operated sunscreen roller shades.

1.2 RELATED SECTIONS

A. Section 06200 - Finish Carpentry: Wood blocking and grounds for mounting roller shades and accessories.

B. Section 09250 - Gypsum Wallboard: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.

C. Section 09510 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.

1.3 REFERENCES

A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. NFPA 70 - National Electrical Code.

C. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

** NOTE TO SPECIFIER ** Delete paragraph below if EcoVeil is NOT being specified.

B. Submit Environmental Certification and Third Party Evaluation per Section 1.5 Qualifications.

C. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
   3. Storage and handling requirements and recommendations.
   4. Mounting details and installation methods.

D. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.
   1. Prepare shop drawings on Autocad or Microstation format using base sheets provided electronically by the University Representative.

E. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.

F. Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.

G. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.

H. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.

B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.

C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

D. Electrical Components: NFPA Article 100 listed and labeled by either UL or ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use, and tested as a system. Individual testing of components will not be acceptable in lieu of system testing.

E. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

F. Environmental Certification: Submit written certification from the manufacturer, including third party evaluation, recycling characteristics, and perpetual use certification as specified below. Initial submittals, which do not include the Environmental Certification, below will be rejected. Materials that are simply 'PVC free' without identifying their inputs shall not qualify as meeting the intent of this specification and shall be rejected.

G. Third Party Evaluation: Provide documentation stating the shade cloth has undergone third party evaluation for all chemical inputs, down to a scale of 100 parts per million, that have been evaluated for human and environmental safety. Identify any and all inputs, which are known to be carcinogenic, mutagenic, teratogenic, reproductively toxic, or endocrine disrupting. Also identify items that are toxic to aquatic systems, contain heavy metals, or organohalogens. The material shall contain no inputs that are known problems to human or environmental health per the above major criteria, except for an input that is required to meet local fire codes.

H. Recycling Characteristics: Provide documentation that the shade cloth can and is part of a closed loop of perpetual use and not be required to be down cycled, incinerated or otherwise thrown away. Scrap material can be sent back to the mill for reprocessing and recycling into the same quality yarn and woven into new material, without down cycling. Certify that this process is currently underway and will be utilized for this project.

I. Perpetual Use Certification: Certify that at the end of the useful life of the shade cloth, that the material can be sent back to the manufacturer for recapture as part of a closed loop of perpetual use and that the material can and will be reconstituted into new yarn, for weaving into new shade cloth. Provide information on each shade band indicating that the shade band can be sent back to the manufacturer for this purpose.

J. Mock-Up: Provide a mock-up (manual shades only) of one roller shade assembly for evaluation of mounting, appearance and accessories.
1. Locate mock-up in window designated by University Representative.
2. Do not proceed with remaining work until, mock-up is accepted by University Representative.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 WARRANTY

A. Roller Shade Hardware, Chain and Shadecloth (except EcoVeil™): Manufacturer's standard non-depreciating twenty-five year limited warranty.
1. EcoVeil standard non-depreciating 10-year limited warranty.

B. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: MechoShade Systems, Inc.; 42-03 35th Street, Long Island City, NY 11101. ASD. Tel: (718) 729-2020. Fax: (718) 729-2941. Email: info@mechoshade.com, www.mechoshade.com., or equal.

B. Contact: Architype, Jean-Guy Poitras, 511 N. La Cienega Boulevard, Suite 214, West Hollywood, CA, 90048, Tel 310-652-2263, Email, jgpoitras@architype.net

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

D. Alternates: The following products and manufacturers may be bid as an alternate product in accordance with Section 01030. Any pricing for alternate products shall be listed separately from the base bid specified product. Any alternate pricing shall include line-by-line compliance or non-compliance with the specifications. If the alternate product is acceptable

to the University Representative, the specified manufacturer will be given the opportunity to provide an equivalent proposal.

1. Suburban/2 Shade System by MechoShade Systems, Inc.

2.2 APPLICATIONS/SCOPE

A. Roller Shade Schedule:

1. Shade Type 1: Manual operating, chain drive, sunscreen roller shades in all exterior windows of rooms and spaces shown on the Drawings.

2.3 SHADE CLOTH

A. Visually Transparent Single-Fabric Shadecloth: MechoShade Systems, Inc., EuroVeil "5300" 0.010 diameter (0.254 mm) non-raveling vinyl/polyester yarn, fabric thickness 0.025 inches (0.635 mm)., or equal.

1. Dense Basket Weave "5300 series, 5 percent open.
2. Color: No. 5301 - White

2.4 SHADE BAND

A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.

1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
2. Shade band and Shade Roller Attachment:
   a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
   b. Provide for positive mechanical engagement with drive / brake mechanism.
   c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.
   d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
   e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.5 SHADE FABRICATION

A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.

B. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:

1. Bottom hem weights.
2. Concealed hemtube.
3. Exposed hemtube.
4. Exposed blackout hembar with light seal.
5. Exposed blackout hembar with polybond seal.

C. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

D. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to University Representative. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.

E. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.

F. Blackout shadebands, when used in side channels, shall have horizontally mounted, roll-formed stainless steel or tempered-steel battens not more than 3 feet (115 mm) on center extending fully into the side channels. Battens shall be concealed in a integrally-colored fabric to match the inside and outside colors of the shadeband, in accordance with manufacturer's published standards for spacing and requirements.
   1. Battens shall be roll formed of stainless steel or tempered steel and concave to match the contour of the roller tube.
   2. Batten pockets shall be self-colored fabric front and back RF welded into the shadecloth. A self-color opaque liner shall be provided front and back to eliminate any see through of the batten pocket that shall not exceed 1-1/2 inches (38.1 mm) high and be totally opaque. A see-through moiré effect, which occurs with multiple layers of transparent fabrics, shall not be acceptable.

2.6 COMPONENTS

A. Access and Material Requirements:
   1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
   2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
   3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.

B. Manual Operated Chain Drive Hardware and Brackets:
   1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.

2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable
7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket / Brake Assembly:
   a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
   b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
   c. The brake shall be an over -unning clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
   d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.
   e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.

C. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.7 SHADE MOTOR DRIVE SYSTEM

A. Not Used:

2.8 ACCESSORIES

A. Roller Shade Pocket for recessed mounting in acoustical tile, or drywall ceilings as indicated on the Drawings (for Shade Type Series 1000, 5300 and 6000).
   1. Provide either extruded aluminum and or formed steel shade pocket, sized to accommodate roller shades, with exposed extruded aluminum closure mount, tile support and removable closure panel to provide access to shades.

a. Provide "Vented Pocket" such that there will be a minimum of four 1 inch (25.4 mm) diameter holes per foot allowing the solar gain to flow above the ceiling line.

B. Fascia (for Shade Type Series 1000, 5300 and 6000):
1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
2. Fascia shall be able to be installed across two or more shade bands in one piece.
3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
5. Notching of Fascia for manual chain shall not be acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify University Representative of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.

B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

D. Engage Installer to train University's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 15300

FIRE SUPPRESSION SYSTEM

PART 1 GENERAL

1.01 SUMMARY:

A. Design, fabricate, install and secure required approvals of a complete fire suppression sprinkler system as specified herein, and as needed for a complete and proper installation in accordance with pertinent requirements of NFPA, all local authorities, and the buildings Insurance Underwriter. System shall include but not necessarily be limited to:

1. Modifications to fire sprinkler system, as required, to suit requirements of new space.
2. Upsize existing mains and sprinkler branches serving the space, as required.
3. Valve supervisory switches.
4. Sprinkler piping systems complete with valves, fittings, and specialties.
5. Sprinklers.
6. Draining and testing piping.
7. Access door for valves, etc., as required. Access doors in accordance with Section 08305 and architectural drawings.
8. All necessary hangers, inserts, and incidentals as required to make system complete.
9. Preparation of design drawings and hydraulic sprinkler calculations. Submittal, review and approval by local authorities. Including all fees.
10. Testing and adjusting of system.
11. Applications and fees for all permits, services, and inspections.

All work shall be done in strict accordance with the prevailing California Building, Mechanical, and Plumbing Codes; and the requirements of all local authorities. ***The most stringent requirements of the above standards and agencies shall prevail***.

1.02 SUBMITTALS:

A. Furnish the following:

1. Sprinkler piping shop drawings and hydraulic calculations signed and sealed by a professional engineer, and stamped as having been approved by all local authorities having jurisdiction.
2. Sprinkler system apparatus data and catalog cuts.

B. Project Record Drawings:

1. Record all changes as the work progresses on a set of prints kept at the jobsite. At the completion of the work, furnish record drawings to Architect.

2. Furnish sprinkler system diagrams and valve charts as described herein.

1.03 QUALITY ASSURANCE:

A. Codes and Regulations:

1. The Contractor shall be licensed with the state and local authorities and evidence of the ability of the contractor to perform work of this scope shall be provided upon request.

2. Apply for and obtain all necessary permits required by any of the legally constituted public authorities having jurisdiction, including connection charges and fees.

3. The following specifications are minimum requirements and shall govern, except that building law, Underwriter Laboratory requirements and/or drawings shall govern when the requirements are in excess hereof.

4. All work shall be in accordance with the "Standards of the National Fire Protection Association for Installation of Sprinkler and Standpipe System", NFPA No. 13, latest edition, the local fire marshal, and any other authorities having jurisdiction.

5. Make all necessary arrangements, give all notices and obtain all permits required by the utility companies for connection to water main and for installation of detector check valves, backflow preventers, vaults, etc., to make a complete system.

6. Prepare all necessary shop drawings and complete hydraulic calculations required for this sprinkler system installation. Drawings and calculations shall be reviewed and approved by the local fire department, and all other authorities having jurisdiction; and shall be submitted to the Architect for shop drawing review prior to commencement of work.

1.04 COORDINATION:

A. All Architectural and Engineering documents shall be considered as a part of the work insofar as these drawings furnish the contractor with information relating to design and construction of the building.

B. Upon completion of the installation, furnish a complete set of Record Drawings to the Architect clearly marked with the changes to the construction drawings.

1.05 PRELIMINARY:

A. Examine the site and/or premises and the conditions under which to operate in performing work.

B. Familiarize oneself of any and all peculiarities and limitations of the spaces available for this installation.

C. Work shall be coordinated with the work of the other trades toward the general purpose of having the construction progress as rapidly and as smoothly as possible with a minimum of interference between one trade and another.

1.06 WARRANTY:

A. Provide written guarantee for workmanship and materials for a period of one year from the date of final acceptance of the installation. Repair and replacement of items shall be made without cost during guarantee period. See Special Conditions Section for form of guarantee.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Furnish and install all required materials which shall be new and shall conform to the requirements of the governing authorities.

B. Piping: Schedule 40 black steel ASTM A-53.

C. Valves: National Fire Protection Association (NFPA) approved by 175 P.S.I. design.

1. Control Valves: Rising system (OS&Y) iron body, bronze mounted. Milwaukee No. F-4 or approved equal.

2. Drain Valves: Angle or globe pattern type, screwed with brass bodies and trimmings and iron wheeled handles.

3. Check Valves: Iron body with bronze swing disc and hinge for 175 psi water working pressure. Viking Model "D".

D. Sprinkler Heads: Viking Model "M" automatic spray sprinklers upright or pendant with 1/2" orifice of the required temperature rating as manufactured by the Viking Corporation, Hastings, Michigan or approved equal. Stock of extra sprinklers (6 of each type used), wrench and locking cabinet shall be provided. Sprinkler heads occurring in areas that have finished ceilings shall be recessed type with white escutcheons. Sprinkler heads shall be UL listed and FM approved.

E. Furnish and install supervisory switches for all sprinkler system OS&Y gate valves.

F. Test the sprinkler system as required by and in the presence of representatives of agencies having jurisdiction. Conduct, duration and other details of tests not covered by agencies' requirements shall be in accordance with NFPA 13.

G. Provide instruments, equipment, pay expenses incurred in making tests; obtain approvals and certificates.

PART 3 EXECUTION

3.01 INSTALLATION:

A. Sprinkler system shall be installed by competent sprinkler mechanics, skilled in the class of installation.

B. Sprinkler system shall conform to all requirements of the local ordinances and governing bodies or agencies. System shall be installed in accordance with approved drawings.

C. Excavating, trench work and backfilling required for the installation of the work shall be performed in accordance with the requirements of governing authorities and of the earthwork specifications.

D. Piping shall be run concealed in all finished areas and shall be sleeved and sealed at all wall, ceiling and floor penetrations. Care shall be taken to support mains from adequate structural members.

E. Sprinkler Heads:

1. Location of all heads, and pipe routing shall be subject to approval of Architect.
2. Sprinkler heads shall be located to clear all lights and air conditioning devices and equipment and shall be spaced so as to provide a symmetrical ceiling pattern in finished ceiling areas as approved by the Architect.

F. Do all cutting, chipping, digging and drilling under the supervision of the General Contractor as may be necessary for the proper installation of the work specified or shown. Make certain all chases, shafts and openings are properly located.

G. Any and all electrical work, conduits, wires, devices, equipment and connections of alarms, etc. required in conjunction with the above systems shall be furnished under other parts of these specifications.

H. Furnish and install any and all pits, foundations, bases, or valves, etc., which shall be shown and detailed on the drawings. Location of same to be coordinated by the General Contractor.

3.02 VALVE SEALS, SIGNS, TAGS & CHARTS:

A. Provide identification signs of standard design and fasten securely at designated locations as per NFPA 13.

B. Tags shall be fastened to all control valves.

C. Furnish two (2) copies of approved sprinkler system diagrams and valve charts, giving designation numbers, functions, locations of each valve, to the Owner's Representative.

3.03 CLEANING:

A. After the sprinkler installation has been completed, tested, and approved, remove all oil, grease, etc., from piping, heads, etc. and leave the system in a neat, clean, and workmanlike manner.

B. After inspection of this work, remove all waste material, debris, etc. resulting from this work, leaving everything in a complete and satisfactory condition.

END OF SECTION

SECTION 15400

PLUMBING

PART 1 GENERAL

1.01 SUMMARY

A. Provide the plumbing systems where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
   1. Domestic hot and cold water piping systems;
   2. Drain, waste, and vent systems;
   3. Plumbing fixtures and trim as shown on the drawings;
   4. Pipe insulation;
   5. Sterilization of potable water system;
   6. Access panels and boxes for valves;
   7. All necessary hangers, supports, inserts, valves, etc.;
   8. Testing, adjusting and balancing;
   9. Applications and fees for all plumbing permits, services, and inspections.
   10. Demolition and removal of all piping and equipment, where no longer required as part of this remodel. Turn over equipment to owner, or dispose of as directed.

All work shall be done in strict accordance with the prevailing California Building, Mechanical, and Plumbing Codes; and the requirements of all local authorities. ***The most stringent requirements of the above standards and agencies shall prevail***.

1.02 SUBMITTALS

A. Furnish the following:

1. Equipment Submittals:
   a. Prior to the installation or purchase of any materials or equipment, submit for approval 5 copies of manufacturers brochures containing complete equipment dimensional and performance characteristics, fixture specifications, plumbing appurtenances, wiring diagrams, and installation and operation instructions.
   b. All items submitted shall be clearly identified and referenced by corresponding specification section and/or mark indicated on plans.
   c. Clearly indicate all accessories and components as specified and as required.
   d. Generally, no substitutions will be allowed. However, if a substitution is requested, clearly cloud and identify as such, along with a reason for proposing such substitution. Contractor shall reimburse owner for all engineering costs associated with review and evaluation of proposed substituted item. Owner shall receive credit for cost savings associated with any approved substitute.

2. As-Built Drawings:
   a. The contractor shall maintain "as-built" drawings of all work, continuously as the job progresses. A separate set of prints, for this purpose only shall be kept at the jobsite at all times and shall be required that these drawings be kept up to date. At job completion, contractor shall provide the building owner, a complete set of reproducible drawings.

3. Sterilization Certificates: Upon completion of water line sterilization, deliver to the

Owner's Representative two (2) copies of an acceptable "Certificate of Performance" for that activity.

B. Project Record Drawings:

1. Record all changes as the work progresses on a set of prints kept at the jobsite. At the completion of the work, furnish record drawings to Architect.

1.03 QUALITY ASSURANCE

A. Codes and Regulations:

1. All materials, apparatus, and equipment and the installation thereof shall comply with all state and county ordinances and all other governmental and/or private authorities having jurisdiction.

2. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent will govern.

1.04 DRAWINGS AND COORDINATION

A. The plumbing drawings show the general arrangements of all piping, ductwork, equipment, etc., and shall NOT BE SCALED. This work shall be coordinated with ALL trades. If a conflict arises, the Architect shall be notified immediately, in writing.

B. All Architectural and Engineering documents shall be considered as a part of the work insofar as these drawings furnish the Contractor with information relating to design and construction of the building. Because of the small scale of the mechanical drawings, it is not possible to indicate all offsets, fittings, and accessories which may be required to meet such conditions.

C. The Contractor shall verify the dimensions governing the mechanical work in the building. He shall examine adjoining work, on which mechanical work is dependent for optimum efficiency, and shall report any work which must be corrected. No waiver of responsibility for defective work shall be claimed or allowed due to failure to report unfavorable conditions affecting the mechanical work.

1.05 WARRANTY

A. Guarantee all materials and equipment to be free from defect of material and workmanship for a period of twelve (12) months after final acceptance.

B. Provide manufacturer's standard warranty on all products as is applicable.

C. Repair and/or replace all defective material and/or work for the twelve (12) month period after Owner's final acceptance.

D. The Contractor shall be responsible for all damage to any part of the premises caused by leaks or breaks in the pipe lines, ductwork, fixtures or equipment provided under this Section of the Specifications, for a period of one (1) year after date of acceptance by the Owner.

1.06 OPERATING AND MAINTENANCE DATA

A. Upon completion of the installation provide two (2) complete sets of operating and maintenance instructions for the systems specified in this section to the Owners Representative.

PART 2 PRODUCTS

2.01 GENERAL

A. The word piping shall mean pipe, fittings, nipples, valves, etc. completely assembled.

2.02 DOMESTIC WATER SYSTEM.

A. Water Lines:

1. Copper: Type "K" hard drawn, conforming to ASTM B88-7 Specifications, for all water pipe above concrete or ground.

B. Fittings: Wrought copper, conforming to ANSI B16.18 and B16.22 Specifications.

2.03 SANITARY DRAINAGE SYSTEM

A. Waste & Vent Lines:

1. Cast Iron - Above Ground: No-hub cast iron soil and vent pipe, coated inside and out, conforming to CISPI 301-69T Specifications, for all soil and waste lines above ground and for all vent lines with inside diameter 2 inches and larger. Standard weight soil and waste fittings will be accepted throughout. Pipe shall conform to CISPI Standard 301. Couplings shall be stainless steel with neoprene gaskets.

2.05 PRIMARY AND SECONDARY CONDENSATE PIPING:

A. Type 'K' hard drawn copper conforming to ASTM B88-7 specifications, for all condensate piping above slab.

B. Provide trap (and vent where required) at connection to HVAC unit (unless internally trapped).

C. Connect piping to condensate pumps. Terminate piping at an approved receptor.

D. Insulate all condensate piping within the building.

2.06 ACCESS DOORS

A. Furnish access doors for the General Contractor's installation (in finished work) for all concealed valves, cleanouts, and to concealed parts of the plumbing system that requires accessibility for proper operation, maintenance, and repair. Doors are not required for suspended acoustical ceilings with lift-out panels.

B. Access doors shall be of proper size for respective concealed items; minimum size, 18" X 18". Door shall be flush type, with No. 13 U.S. Standard Gauge Steel door and trim, concealed hinges and screwdriver operated, stainless steel cam lock. Doors shall be shop painted with one coat of zinc chromate primer. Doors shall be fire rated where required.

C. Provide the Architect with a drawing, for review and approval, indicating all proposed access panel sizes and locations prior to installing any piping in the building.

2.08 VALVES

A. Provide all valves as required to permit complete control of all systems. Each valve shall bear the name or trademark of the manufacturer, and shall be domestically manufactured. Valves shall be installed to control all hot and cold water branches to each group of fixtures and to individual fixtures and pieces of equipment. All valves shall have screwed ends.

B. Ball valves shall be full port with stainless steel ball and stem with screwed connections. Valves 2” and smaller shall be Nibco T-585-70-66 or Hammond 8303A. Valves 2-1/2” Nibco T-595-Y-66 or Hammond 8603. Valves 3” and larger shall be carbon steel flanged ball valves Nibco F-515-CS-F-66-FS or Hammond 9943.

C. Gate Valves: "Milwaukee" #1140, 150# bronze body, threaded ends type gate valve with non-rising stem for all lines up to 4 inches in diameter.

Solder end valves are not acceptable.

2.09 PIPE HANGERS AND SUPPORTS:

A. Support piping as required by code.

B. Install Trisolator #500 isolators around all uninsulated copper lines where hanger occurs. Install dielectric fitting between all ferrous and non-ferrous piping with a 12" section of red brass pipe in between.

C. Size all hangers on insulated lines to fit around outside diameter of insulation specified with allowance for sheet metal shield. Pipe shield shall be 169A, 1/3 the circumference of insulation of a length of not less than 3 times the diameter of the insulation (maximum 24").

D. Overhead Supported: Each horizontal pipe shall be supported on adjustable wrought iron clevis hangers equal to Grinnell Company, Figure 260, except that groups of pipes shall be supported on trapeze hangers made up of steel rods and steel channels or angles. Pipe shall be "U" bolted to trapeze and trapeze spaced for the smallest pipe in the group.

E. Wall Supported: Horizontal piping mounted on walls shall be supported by cast iron bracket similar to Grinnell Co. Figure 213, with Figure 260 Clevis type hanger attached.

F. Vertical Piping: Vertical piping shall be supported at floor level with Grinnell Company, Figure 261 supports, or equal.

G. Rooftop Pedestals: Horizontal piping mounted on roof shall be supported with approved supports, anchored to the roof and to the piping.

2.10 PLUMBING SYSTEM INSULATION:

A. All insulation shall be applied in a neat and workmanlike manner. Remove and replace all insulation not applied in strict accordance with manufacturer's specifications or not presenting a neat appearance. Insulation shall be continuous through wall and ceiling openings and sleeves. All insulation shall be applied by contractor specialized in insulation application, in accordance with best trade practices and as guided by manufacturer's printed installation directions.

B. Insulation is required for the following:
- All domestic hot water piping and domestic hot water recirculating piping.
- All condensate piping above finished ceilings, behind walls, or within unconditioned space.

C. All insulation shall be applied strictly in accordance with the manufacturer's recommendations. All insulation on indoor work shall have composite fire and smoke hazard ratings as tested by procedure NFPA 255 not exceeding: Frame Spread 25, Fuel Contributed 50, Smoke Developed 50. Accessories, such as adhesives, mastics, cements, tapes, and cloth for fitting, shall have the same component ratings as listed above. Insulation shall have an average thermal conductivity not to exceed 0.25 BTU/inch of thickness per square foot per 1 degree F. at a mean temperature of 75 degrees F.

D. Domestic Hot Water Piping: All domestic hot water piping shall be insulated with 1" thick fiberglass pipe insulated with foil kraft laminate vapor barrier fastened with pressure sensitive tape and stapled 12" on center. All fittings, valves, flanges, etc. shall be covered with PVC fitting cover, taped and tacked fastened.

E. Condensate piping shall be insulated with 1/2" thick fiberglass insulated with foil kraft laminated vapor barrier fastened with pressure sensitive tape and staples 1" o.c. All fittings, valves, strainers, flanges, etc. shall be covered with PVC fitting cover, taped and tacked fastened.

F. At lavatories and sinks for handicapped persons provide and install remanufactured safety covers over all lavatory supplies and traps. Covers shall be "Lavguard" by Truebro.

2.12 CLEANOUTS:

A. Where indicated on the drawings and as required by local plumbing code, make all cleanouts accessible by one of the following means:

1. Within 6 inches from ceiling access panel.

2. Extending to floor or grade above.

3. Locate in wall with removable plate.

B. Size: Same as pipe on which installed.

C. Installation: Covers set flush with finished wall, floor or grade, to be securely anchored by means of integral lugs or bolts. Where surfacing materials such as resilient floor covering is used, install the clean out with top so that finished surface is smooth and flush.

D. Manufacturers: Cleanout equal and equivalent to items specified. Acceptable manufacturers: Wade or J.R. Smith.

E. Wall Cleanouts: Stainless steel chrome plated bronze deep cover with center screw.

2.13 FIXTURE SUPPORTS:

A. Steel plated supports for all wall hung fixtures shall be supported with three eighths inch thick by six inches wide (3/8" X 6") steel plates recessed and lag-screwed to wood studs or welded to steel studs and tapped for fixture bolts. Length and number of plates as required to satisfactorily support the fixtures, shall be installed.

2.14 PLUMBING FIXTURES AND TRIM:

A. General: Furnish and install plumbing fixtures complete with trim and caulk. See drawings for Plumbing Fixture Schedule.

1. At the time of the final acceptance of the work, each and every fixture shall be in perfect condition. All fixtures shall be Class "A".

2. All fixtures supported from walls shall be provided with JR Smith or equal carriers.

3. Furnish, set and connect all plumbing fixtures including all necessary supports, and chrome plated exposed work and fittings. Provide fixtures stops for all fixtures. Stops shall be loose key type unless specifically stated otherwise herein.

B. All plumbing fixtures shall be furnish complete with all necessary supports, hangers, trim and accessories to insure the specified installation and operation of each fixture. Trim and accessories shall include stops, supply pipes, drains, strainers, tailpieces, p-traps, escutcheons, and bolt caps. All exposed items and piping items and piping shall be chrome-plated.

1. All fixtures stops shall be loose key, all brass with I.P.S. threaded inlet. Threaded pipe nipple shall be I.P.S. brass or copper pipe adapter shall be sweat x M.I.P. Compression fittings are not permitted. Manufacturer shall be Chicago Faucets, Brass Craft “H” Series, or equal.

2. Supply pipe risers shall be rigid copper tubing ASTM B-68 with brass nuts or couplings.

3. All traps shall be L.A. pattern cast brass adjustable ground union joint elbow and cast brass slip nuts. Trap arm extension shall be I.P.S. threaded brass nipple.

4. Water stops, risers and trap assembly shall be insulated with pre-molded PVC covering conforming with ADA regulations. Manufacturer shall be McGuire Prowrap, Truebro, or equal.

5. Traps exposed above the floor shall be chromium plated adjustable brass, with approved cleanout plugs, cast set screw wall escutcheon and casing, all chrome plated.

2.15 IDENTIFICATION

A. Pipe Identification

1. Install plastic snap on pipe identification markers indicating contents of pipe and direction of flow. Space a maximum of 30 ft apart. Minimum one per floor.
2. Seton Co.

B. VALVE TAGS:
1. Install 2" diameter brass tags on all valves. Tags shall be stamped with 1" number and letters.
2. Provide schematic drawing of each piping system indicating location of each tagged valve.

2.16 SLEEVES
1. Through slabs and concrete wall sleeves shall be Schedule 40 steel pipe.
2. Through drywall partitions sleeves shall be "Adjust-0-Crete" adjustable sleeve with galvanized thimbles.

2.17 ESCUTCHEONS:
1. Chrome plated stamped steel with set screws.

2. Beaton & Corbin.

2.18 ACOUSTICAL PROVISIONS

A. To minimize sound and noise within the building, piping shall be completely isolated from direct contact within structure.

B. Sanitary waste piping and storm and storm water overflow piping mounted from structure above shall be isolated from direct contact with hanger supports using 1/2" thick closed cell foam with exterior steel jacket. Isolation pieces shall be 3 inches in length.

C. All water piping shall be isolated from direct contact with structure using Acousto-Plumb isolation products, carefully installed in accordance with manufacturers installation instructions. At completion of installation, contractor shall arrange for an Acousto-Plumb factory representative to inspect installation, to confirm, in writing that the system meets their installation standards and requirements.

PART 3 EXECUTION

3.01 GENERAL:

A. Surface Conditions: Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

B. Refer to the "Products" portion of this section for specific product installation criteria, as well as the criteria outlined hereinafter.

3.02 PLUMBING SYSTEM LAYOUT:

A. Lay out the plumbing system in careful coordination with the drawings, determining proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system.

B. Follow the general layout shown on the drawings in all cases except where other work may interfere.

C. Lay out pipes to fall within partition, wall, or roof cavities, and to not require furring other than as shown on the drawings.

3.03 INSTALLATION OF PIPING AND EQUIPMENT, GENERAL:

A. General:

1 Proceed as rapidly as the building construction will permit.

2. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.

3. Cut pipe accurately, and work into place without springing or forcing, properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.

4. Show no tool marks or threads on exposed plated, polished or enameled connections

from fixtures. Tape all finished surfaces to prevent damage during construction.

5. Make changes in directions with fittings; make changes in main sizes with eccentric reducing fittings. Unless otherwise noted, install water supply and return piping with straight side of eccentric fittings at top of the pipe.

6. Run horizontal sanitary and storm drainage piping at a uniform grade of 1/4" per foot, unless otherwise noted. Run horizontal water piping with an adequate pitch upwards in direction of flow to allow complete drainage.

7. Provide sufficient swing joint, ball joints, expansion loops, and devices necessary for a flexible piping system, whether or not shown on the drawings.

8. Support piping independently at tanks, and similar locations, so that weight of pipe will not be supported by the equipment.

9. Pipe the drains from drip pans, relief valves, air vents, and similar locations, to spill over an open sight drain, floor drain, or other acceptable discharge point, and terminate with a plain end unthreaded pipe 6" above the drain.

10. Securely bolt all equipment, isolators, hangers, and similar items in place.

11. Support each item independently from other pipes. Do not use wire for hanging or strapping pipes.

12. Provide complete dielectric isolation between ferrous and non-ferrous metals.

13. Provide union and shut-off valves suitably located to facilitate maintenance and removal of equipment and apparatus.

14. Install offsets, swing joints, expansion joints, pipe clamps, and anchors as required to permit expansion and contraction of piping system.

B. Equipment Access:

1. Install piping, equipment, and accessories to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to the Owner.

2. Provide access doors as previously specified and coordinate locations with all trades.

C. Workmanship:

1. Install all work pertaining to water, and sewer system as close as possible to layout shown on the drawings. Employ skilled mechanics to install all systems in a manner acceptable to the Owner's Representative. Drawings are generally diagrammatic and all fixtures, equipment, and specialty items are to be located as directed by the Owner's Representative.

2. Connections to Equipment: Provide all plumbing and piping connections to equipment as specified to be furnished by Owner or under other sections of these specifications, including P-traps, waste tubing, stops and flexible tube riser.

3. Tests and Inspections: No piping in any location shall be concealed until it has been inspected and approved. All labor, materials, as well as all costs and apparatus

necessary for all tests, shall be furnished by the Contractor.

4. Flushing and draining of system and cleaning of piping. The contractor shall be required to fill all piping systems with water and drain these systems before they are placed in operation in order to remove foreign materials that may have been left or deposited in the piping system during its erection.

5. Clean-Up: Before acceptance of work, clean all fixtures, trim and exposed piping, flush out all lines and leave system ready for operation.

3.04 PIPE JOINTS:

A. Copper Piping:

Copper piping and fittings shall be installed as follows:

1. All copper fittings shall be approved type, factory made, Wrot or Cast pressure fittings and have integral formed pipe stops on each connection. Mechanical formed tee fittings utilizing mechanically extracted collars or brazed outlets shall not be used.

2. Cut square, remove burrs and clean outside of pipe and inside of female fittings and to a bright finish with steel wool, wire brush, sandpaper or emery cloth. Apply solder flux with brush to tubing. All solder shall be lead free.

3. All soldered or brazed joints shall be made by a brazer currently certified for the size of pipe being brazed or for minimum 1-1/2-inch pipe. Certifying individual or agency shall in turn be certified by AWS.

4. All soldered or brazed joints shall be acceptable only if 100% full joint penetration of the soldering or brazing alloy is achieved.

5. All soldered or brazed joints shall comply with section IX of ASME Boiler and Pressure Vessel Code.

6. Joints for copper tube shall be as follows:

   a. Systems Operating at Below 120 Degrees F: 95-5 tin-antimony solder.
   b. Systems Operating at 120 Degrees F. and above, medical gases (oxygen, nitrogen, vacuum, medical air and nitrous oxide) and all underground piping: Sil-Fos brazing.

7. Fittings and joints above grade, sizes ½ inches thr 4-inches down streams of the buildings PRV station may be made using a pressed connection method rated at a working pressure of 200 psi. Joining system shall comply with ASTMD2000, ASTM B88, ANSI/ASME B 16.22 and NSF 61. There shall be press points on both sides of seal, fitting to be wrought copper. Rigid Viega, Propress or equal (no known equal).

8. Fittings and joints above grade sizes 2 1/2-inches and larger may be roll grooved utilizing mechanical grooved fittings rated at 300 psi.

3.05 PIPE SUPPORTS:

A. Support suspended piping with clevis or trapeze hangers and rods in accordance with products

section.

B. Provide sway bracing on hangers longer than 18".

C. Support vertical piping with riser clamps secured to the piping and resting on the building structure. Provide at each floor unless otherwise noted.

D. Provide insulation continuous through hangers and rollers. Protect insulation by galvanized steel shields.

E. Arrange pipe supports to prevent excessive deflection, and to avoid excessive bending stress.

F. Support piping from inserts or anchors in concrete slabs. Provide the inserts under this section and arrange for the placing thereof.

G. Hubless Piping:

1. Provide hangers on the piping at each side of, and within 6" of, hubless pipe coupling so the coupling will bear no weight.

2. Do not provide hangers on couplings.

3. Provide hangers adequate to maintain alignment and to prevent sagging of the pipe.

4. Make adequate provision to prevent shearing and twisting of the pipe and the joint.

3.06 PIPE PROTECTION:

A. In addition to the requirements noted elsewhere in these specifications, underground piping shall be wrapped or coated or sleeved and/or embedded in sand in accordance with soils engineer requirements. See pertinent sections of soils reports prior to bidding project.

B. Where metallic pipelines penetrate concrete structures such as building floors or walls, use plastic sleeves, rubber seals or approved dielectric material to prevent pipe contact with the concrete and reinforcing steel.

C. On all pipe, coat bare steel appurtenances such as bolts, joint harnesses, or flexible couplings with coal tar or elastometer based mastic, coal tar epoxy, moldable sealant, was tape or approved equivalent.

3.07 SLEEVES AND OPENINGS:

A. Provide sleeves for each pipe passing through walls, partitions, floors, roofs, and ceilings.

1. Set pipe sleeves in place as early as practicable.

2. For uninsulated pipe, provide sleeves two pipe sizes larger than the pipe passing through, or provide a minimum of 1/2" clearance between inside and outside of the pipe.

3. For insulated pipe, provide sleeves of adequate size to accommodate the full thickness of pipe covering, with clearance for packing and caulking.

B. Caulk the space between sleeve and pipe or pipe covering, with sealant as specified in the Sealants and Caulking Section, or pack with non-combustible packing material to within 1/2" of

both wall faces and caulk.

C. Finish and Escutcheons:

1. Smooth up rough edges around sleeves with plaster or spackling compound.

2. Provide 1" wide chrome or nickel plated escutcheons on all pipes exposed to view where passing through walls, floors, partitions, ceilings, and similar locations.

a. Size the escutcheons to fit pipe and covering.
b. Hold escutcheons in place with set screw.

3.08 DEMOLITION AND PATCHING:

A. Where cutting becomes necessary, the contractor shall employ the trade installing the work originally to restore such cut work and close openings communications from one point to another at no expense to the Owner. Cutting the work of other trades shall not be done without the consent of the General Contractor. No structural member shall be cut without the written consent of the Architect.

B. The plumbing contractor shall be responsible for all demolition, patching and repair of all finished interior surfaces pertaining to the installation of his particular phase of work. All surfaces shall be finished to match the adjacent materials, finishes, and color. All work shall be coordinated with the Owner before work begins.

3.09 CLEANOUTS:

A. Secure the Architect's approval of locations for cleanouts in finished areas prior to installation.

B. Provide cleanouts of same nominal size as the pipes they serve; except where cleanouts are required in pipes 4" and larger provide 4" cleanouts.

C. Make cleanouts accessible. After pressure tests are made and approved, thoroughly graphite the cleanout threads.

3.10 VALVES:

A. Provide valves in water system. Locate and arrange so as to give complete regulation of apparatus, equipment and fixtures.

B. Provide valves in at least the following locations:

1. In branches and/or headers of water piping serving a group of fixtures.

2. On both sides of apparatus and equipment.

3. For shutoff of risers and branch mains.

4. For flushing and sterilizing the system.

5. Where shown on the drawings.

C. Locate valves for easy accessibility and maintenance.

3.11 WATER HAMMER ARRESTERS:

A. Provide water hammer arresters on hot water lines and cold water lines.

1. Install in upright position at all quick closing valves, solenoids, isolated plumbing fixtures, and supply headers at plumbing fixture groups.

2. Locate and size as specified or as shown on the drawings and where not shown, located in accordance with Plumbing and Drainage Institute Standard WH-201.

3. Install water hammer arresters behind access panels.

3.12 BACKFLOW PREVENTION:

A. Protect plumbing fixtures, faucets with hose connections, and other equipment having plumbing connection, against possible back siphonage.

B. Arrange for testing of backflow devices as required by the governmental agencies having jurisdiction.

3.13 CONCRETE:

A. Provide concrete required for the work of this section in strict accordance with the Concrete Section.

3.14 PLUMBING FIXTURE INSTALLATION:

A. Installation:

1. Set up fixtures level and in proper alignment with respect to walls and floors, and with fixtures equally spaced.

2. Provide supplies in proper alignment with fixtures and with each other.

3. Provide flush valves in alignment with the fixture, without vertical or horizontal offsets.

B. Grout wall and floor mounted fixtures watertight where the fixtures are in contact with walls and floors.

C. Caulk deck-mounted trim at the time of assembly, including fixture and casework mounted. Caulk self-rimming sinks installed in casework.

3.15 ISOLATION OF DISSIMILAR METALS:

Use isolator fittings wherever ferrous and non-ferrous piping material are joined together. Conventional dielectric unions and couplings have been found to be unreliable. Only the flowing will be accepted:

In all HVAC, Domestic or Industrial water system piping, use threaded M.P.S. minimum 3-inches long zinc electro-plated steel casing with inert NSF/FDA listed lining, ASTM F-492 rated at 225F, 300 psi, “Clear Flow” or equal (no known equal).

3.16 DISINFECTION OF WATER SYSTEMS:

A. Flush and chlorinate all potable water systems in accordance with the requirements of the Uniform Plumbing Code; the local health department; and ***Appendix 1 of The University of California, Los Angeles – Campus Capital Programs – Mechanical – Electrical – Plumbing Design and Construction Standards dated February 2009;*** and all authorities having jurisdiction; whichever is most stringent.

Appendix 1 – Disinfection specifications

Disinfection of Domestic and Laboratory Hot/Cold Water Systems and Fire Lines.

1. General: All newly installed water systems and lines shall be disinfected by a Contractor-furnished commercial water line chlorinator. The commercial chlorinator shall also take water samples for bacteriological analysis. These samples shall be submitted to a California state licensed testing laboratory by the chlorinator.
2. Incurred Costs: All expenses that may result from the disinfection and testing of water systems and lines, and the taking and analysis of water samples shall be borne by Contractor.
3. Advance Notice: Contractor shall notify University's Representative and the UCLA Office of Environment, Health and Safety (EH&S), at least 72 hours in advance of all disinfection and testing procedures. All disinfection and testing procedures shall occur in the presence of an EH&S representative. Notification shall include location, number of chlorinations and tests, day and time.
4. Labor and Materials: Contractor's chlorinator shall furnish labor, equipment, materials and transportation need to correctly disinfect and test domestic and laboratory hot/cold water systems and fire lines and to take water samples for bacteriological analysis. This includes all items needed to facilitate the introduction of the disinfecting agent into the water systems/lines such as service cooks and valves.
5. Disinfecting Agents: Chlorine is approved for water system disinfection and may be used in gaseous or liquid form. Other types of disinfecting agents may be only with the prior approval of University" representative.
6. Disinfecting Procedure: The disinfection of water systems and lines shall be in accordance with the requirements of Title 22, California Code of Regulations (CCR) and the American Water Works Association (AWWA) standards. The disinfecting procedure shall include the following:

    a. Post signs on all water outlets of the system being disinfected reading Water System Being Chlorinated – Do Not Drink" or similar warning.
    b. With system full of water and under "main" pressure, open all faucets to permit simultaneous trickle flow.
    c. Introduce the disinfectant into the system until a test of the water at each outlet shows a free chlorine residual concentration of:

        1. 25 parts per million (ppm). This chlorine concentration shall be held in the pipes for a 24 hour period; or
        2. 100 ppm. This chlorine concentration shall be held in the pipes for a 3-hour period.

7. Water samples for bacteriological analysis:
    a. Water samples for bacteriological analysis shall be collected by Contractor's chlorinator in sample bottles prepared as required by Title 22, CCR and AWWA standards. Samples shall be taken from a representative number of water outlets so as to ensure an accurate sampling of the water system/line. Water samples shall be taken in the presence of an EH&S representative (University may also collect a sample).
    b. The water samples shall be delivered by Contractor's chlorinator in a timely manner

to a California state approved water analysis laboratory. The samples must test negative for coliform organisms and less than 500 for a Standard Plate Count (HPLC).

c. If the results are positive, the above steps 6(a) through 6(f) shall be repeated. Two consecutive negative tests must be obtained prior to using the water system.

8. Final Results: Submit a copy of the laboratory analysis to the University's Representative and EH&S. If the analysis results do not meet the standards specified, the disinfecting procedureshall be repeated until the specified standards are met, at no additional cost to University. The complete procedure may take up to 4 days if negative results are obtained. This procedure will be longer if the results are positive.

3.17 OTHER TESTING AND ADJUSTING:

A. Provide personnel and equipment, and arrange for and pay the cost of all required tests and inspections required by governmental agencies having jurisdiction.

B. Where tests show materials or workmanship to be deficient, replace or repair as necessary, and repeat the test until the specified standards are achieved.

END OF SECTION

SECTION 15500

HEATING, VENTILATING & AIR CONDITIONING

PART 1 GENERAL

1.01 SUMMARY

A. Provide the heating, ventilating, and air conditioning systems where shown on the drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:

1. Variable volume boxes, with and without hot water reheat, as required, and as scheduled on drawings.
2. Ductwork systems.
3. Duct insulation or internal duct lining as indicated on the drawings.
4. Heating hot water pipe insulation.
5. Piping systems including heating hot water piping and cooling water piping for self contained HVAC unit(s), where specified.
6. HVAC control system, per building standard.
7. Duct smoke detectors for automatic system shutdown, as required.

All work shall be done in strict accordance with the prevailing California Building, Mechanical, and Plumbing Codes; and the requirements of all local authorities. ***The most stringent requirements of the above standards and agencies shall prevail***.

B. Related Work in Other Sections:

1. Water and electric power wiring, power connections to air conditioning units, and exhaust fans.

1.02 SUBMITTALS

A. Furnish the following:

1. Equipment Submittals:
   a. Prior to the installation or purchase of any materials or equipment, submit for approval 5 copies of manufacturers brochures containing complete equipment dimensional and performance characteristics, wiring diagrams, and installation and operation instructions.
   b. All items submitted shall be clearly identified and referenced by corresponding specification section and/or mark indicated on plans.
   c. Clearly indicate all accessories and components as specified and as required.
   d. Generally, no substitutions will be allowed. However, if a substitution is requested, clearly cloud and identify as such, along with a reason for proposing such substitution. Contractor shall reimburse owner for all engineering costs associated with review and evaluation of proposed substituted item. Owner shall receive credit for cost savings associated with any approved substitute.

2. Shop Drawings:
   a. Submit 5 copies of fabrication and installation drawings, newly prepared (do not submit copies of contract documents), drawn accurate and to scale. Include all equipment dimensions, necessary offsets and transitions, distribution piping, ductwork, etc.

b. Drawings shall be coordinated with all architectural, structural, electrical and other building elements.

3. Record Drawings:
   a. The contractor shall maintain record drawings of all work, continuously as the job progresses. A separate set of prints, for this purpose only shall be kept at the jobsite at all times and shall be required that these drawings be kept up to date. At job completion, contractor shall provide the building owner, a complete set of reproducible drawings.

B. Record Drawings: Upon completion of the installation, furnish a set of record drawings to the Architect clearly marked with the changes authorized during construction.

1.03 QUALITY ASSURANCE

A. Codes and Regulations:

1. Regulations: Comply with all applicable codes, rules, and regulations, including all building and safety laws relating to building, public health and safety.
2. Codes: All materials, equipment and work must conform to the current Mechanical Code and any other applicable requirements.
3. Permits: Obtain and pay for all required permits.
4. Inspections: All work must be inspected and approved by local authorities. Furnish the Owner's Representative with certificates of inspections and approvals by local authorities.

B. Manufacturers:

1. Use first grade materials and equipment, adequate in all respects to accomplish the intended results and fabricated by manufacturers recognized by the trade as being capable of producing first class and acceptable materials and items.
2. Equipment, materials, and items as applicable, shall meet the requirements of the National Board of Fire Underwriters, the governing authority having jurisdiction and the State Industrial Accident Commission and/or other governing boards.
3. All items, material and equipment shall bear the Underwriters' label of approval.
4. Obtain Architects approval of all manufactured or fabricated items, material and equipment prior to manufacturer or fabrication.

1.04 DRAWING COORDINATION

A. The HVAC drawings show the general arrangement of all piping, ductwork, equipment, etc., and shall **NOT BE SCALED**. This work shall be coordinated with **ALL** trades.

B. The Architectural and Structural documents shall be considered as a part of the work insofar as these drawings furnish the Contractor with information relating to design and construction of the building. Because of the small scale of the mechanical drawings, it is not possible to indicate all offsets, fittings, and accessories which may be required to meet such conditions.

C. The Contractor shall verify the dimensions governing the mechanical work in the building. He shall examine adjoining work on which mechanical work is dependent for optimum efficiency, and shall report any work which must be corrected. No waiver of responsibility for defective work shall be claimed or allowed due to failure to report unfavorable conditions affecting the mechanical work.

D. Contractor shall refer to other parts of these specifications covering the work of other trades, which must be carried on in conjunction with the mechanical work so that the construction operation can proceed without harm to the Owner from interference, delay or absence of

coordination.

1.05 WARRANTY

A. Guarantee all material and equipment to be free from defect of material and workmanship for a period of twelve (12) months after final acceptance.

B. Provide manufacturer's standard warranty on all products as is applicable.

C. Repair and/or replace all defective material and/or work for the twelve (12) month period after Owner's final acceptance.

1.06 ACCESSIBILITY

A. Unions, valves, dampers, controls, etc. shall not be placed in any location that will be inaccessible after the system is complete.

B. All damper control handles, electric controls, and other apparatus which must be located in an inaccessible location shall be provided with suitable access doors or covers (fitted in a framed hole) which will permit proper operation and servicing of the apparatus.

1.07 NOISE REQUIREMENTS

A. All power driven equipment shall be quiet in operation and free from vibration. All metal partitions, ducts, sheet metal housing, etc., shall be so constructed and braced that there will be no vibration or rattling when the system is in operation.

B. Connections to equipment shall be constructed so that noise and vibration will not reach the conditioned area through ducts, piping, sheet metal constructions, or building construction.

1.08 CONTRACTION AND EXPANSION

A. Install pipe work in such a manner that its contraction and expansion will not do any damage to the pipes, the connected equipment or the building. Install off-sets, swing joints, expansion joints, etc., as required to prevent excessive strains in the pipe work to contract and expand freely without putting any strain or stress on the piping system.

1.09 ELECTRIC WIRING

A. Sensors, thermostat and control switches shall be located as shown or directed, and all controls, magnetic starters relays, starters, and wiring shall conform to the National Electrical Code and all local applicable requirements. All controls shall be furnished and properly identified with instruction for proper electrical connections. The responsibility for proper connections and operations although field wired by the Electrical Contractor is included under this division. Verify all electrical connections before ordering any equipment.

PART 2 PRODUCTS

2.01 DUCTWORK - GENERAL

A. For exhaust systems and for the heating, ventilating, and air conditioning systems, provide galvanized sheet metal ducts fabricated and installed to pertinent ASHRAE and UMC standards, or to the requirements of governmental agencies having jurisdiction, whichever requirement is more stringent.

DUCTWORK

1. Ductwork shall be galvanized sheet metal and shall be constructed in accordance with UMC standards. Main loop ductwork, and duct branches between main duct and vav boxes shall be rated to a minimum working pressure of 4” s.p. All ductwork shall be externally insulated, with exception to the sections of ductwork which are exposed to view of the building occupants. This ductwork shall be double wall internally insulated duct and fittings. See architectural drawings for exact locations.

2. Round duct shall be constructed of spiral galvanized steel.

3. Double thickness turning vanes shall be used on all rectangular duct turns of 90 degrees.

4. Where concealed from view, ductwork immediately connected to diffusers shall be flexible acoustical ductwork.

5. Flexible duct shall be insulated type, U.L. listed and shall not exceed 7'0" in length. Duct shall have a double ply, metal polyester vapor barrier with tri-directional reinforcements. All taps for individual flexible duct are to be made with factory made spin-in (dove-tail not allowed) sheet metal collars. Flexible duct shall be attached to spin-in collars with stainless steel clamps or panduit straps (the use of tape is not acceptable). On air devices, flexible duct shall be the same size as the neck size unless shown otherwise. Ductwork shall be ATCO UPC#037.

B. At branch ducts, provide manually operated dampers of the type and arrangement shown on the drawings, two gages heavier than the duct in which installed, and equipped with locking quadrants.

C. Seal all duct seams, transverse and longitudinal, air tight. Use 4 inch minimum width 6 oz. canvas pasted on with Arbol type lagging adhesive or approved Scotch or Childers duct sealant.

D. Construct all fittings, elbows, and transitions to provide a minimum of noise and resistance. Where space permits, elbows shall have a minimum radius of 1-1/2 times the width (or depth). Transitions must be gradual with changes not to exceed 1" by 4". When structural conditions necessitate (or otherwise indicated on the drawings) fittings and elbows shall be made sharply, as required, but with full radius turning vanes.

E. Flash all ducts passing through roof or exterior walls. Silicone caulk all joints.

F. Duct sizes shown on drawings shall be inside net clear dimensions (to inside wall of lining, if applicable).

G. Install flexible duct connections at all HVAC units and fan connections, both inlet and discharge, and elsewhere as indicated on drawings. Flexible ducts shall be made with flexible, waterproof, fire retardant material, neoprene coated, glass fabric that is airtight, and a minimum of 6" long. Duro Dyne or equal. Where exposed to sunlight, provide suitable sheet metal sunshield. Sunshield shall not short circuit flexible connection.

H. Fabricate all sheet metal ducts of prime grade, lock forming quality galvanized steel sheets using gauges of metal and reinforcing between joints in accordance with UMC requirements.

I. All ducts shall be supported from overhead members with strap iron or angles. Where ductwork is exposed within finished areas, hang ducts from suitable threaded galvanized steel rods. For rectangular ductwork, mount threaded rod to unistrut bracket mounted on the bottom of the duct.

J. Access Panels and Access Opening in Ductwork shall be galvanized sheet steel, 2 gauge heavier

than the duct with rolled edges, felt strips, or neoprene gasketing and attached to duct with sheet metal screws a maximum of 6" on center.

K. Install double thickness turning vanes at all locations where square elbows are required.

2.02A INSULATION - Ductwork

A. General:

1. Provide materials complying with NFPA Bulletin 90-A, as determined by UL method NFPA 225, ASTM E84 and complying with the governing code, with flame spread rating under 25 and smoke developed rating under 50.
2. Where vapor barriers are used, provide intact and continuous throughout.
3. Acceptable manufacturers:
   a. Owens/Corning Fiberglass
   b. Manville
   c. Certainteed

B. Where routed within soffits or above finished ceilings, ductwork shall be insulated with 2" thick 3/4" lb. density fiberglass faced with factory installed reinforced aluminum foil and flame resistant kraft paper backing.

C. Where ductwork is visible to building occupants, or otherwise indicated on the plans to be internally lined, ductwork shall be double wall ductwork, similar to United McGill Airflow LLC k27 ductwork. Liner shall be 1" thick, 1.5 lb/Cu.Ft. density, installed in strict conformance with manufacturer recommendations.

Silicone seal all duct joints.

D. All duct dimensions are to the inside of insulation (clear).

2.02B INSULATION - Piping

A. All insulation shall be applied in a neat and workmanlike manner. Remove and replace all insulation not applied in strict accordance with manufacturer's specifications or not presenting a neat appearance. Insulation shall be continuous through wall and ceiling openings and sleeves. All insulation shall be applied by contractor specialized in insulation application, in accordance with best trade practices and as guided by manufacturer's printed installation directions.

B. Insulation is required for the following:
- All heating hot water piping.

C. All insulation shall be applied strictly in accordance with the manufacturer's recommendations. All insulation on indoor work shall have composite fire and smoke hazard ratings as tested by procedure NFPA 255 not exceeding: Frame Spread 25, Fuel Contributed 50, Smoke Developed 50. Accessories, such as adhesives, mastics, cements, tapes, and cloth for fitting, shall have the same component ratings as listed above. Insulation shall have an average thermal conductivity not to exceed 0.25 BTU/inch of thickness per square foot per 1 degree F. at a mean temperature of 75 degrees F.

D. Domestic Heating hot water piping: shall be insulated with 1.5" thick fiberglass pipe insulated with foil kraft laminate vapor barrier fastened with pressure sensitive tape and stapled 12" on center. All fittings, valves, flanges, etc. shall be covered with PVC fitting cover, taped and tacked fastened.

2.03 GRILLES, REGISTERS, AND DIFFUSERS

A. Furnish and install all grilles, registers, ceiling diffusers, and door grilles where indicated and as scheduled on the drawings.

B. All diffusers and all supply, exhaust, and return air registers shall be provided with interior painted flat black.

C. Where grilles, registers, and ceiling diffusers as set in construction, they shall be set flush and true to the wall or ceiling to prevent air leakage around the edges. All units shall be provided with neoprene gasketing around the inside of the frame.

D. All units shall be factory finished of color selected by Architect.

2.04 FANS

A. Furnish and install all fans complete with all bases, backdraft dampers, speed switches, and duct connections as indicated on the drawings.

B. Provide all motors with flush type manual motor starters (except motors with built-in motor protection).

2.05A PIPING - Copper

A. Heating hot water piping and cooling water piping shall be type copper” Type "L" hard drawn, conforming to ASTM B88-7 Specifications. Joints shall be soldered, brazed or flared.

B. Provide hangers and supports as required, straps and/or wire is unacceptable.

C. Do not install piping in direct contact with structure. Where piping is installed in walls or enclosed shafts, completely enclose in fiberglass batt insulation for their entire length.

2.05B PIPING – Steel

Steel pipe shall be ASTM A53 electric resistance welded or seamless only.

Hot water piping systems shall use Garlock 3200/3400 gasket or equal, no known equal.

Avoid bull-headed tees in all piping and ductwork systems.

2.06 DAMPERS

A. FIRE DAMPERS

1. Fire dampers shall be installed in ducts passing through fire walls, and rated shafts, and where shown on drawings.
2. Dampers shall be installed in conformance with NFPA Standard 90A and shall be California Fire Marshall listed.
3. Airtight, hinged access doors with catches shall be installed adjacent to all dampers and shall be sized for easy inspection or maintenance of the dampers. Access doors shall not be obstructed with piping, conduit etc. Provide required ceiling access doors in areas with other than removable type ceiling. All fire rated access doors shall be UL listed.
4. Dampers shall be classified in accordance with the rating of the assembly being penetrated.
5. All dampers shall be of the dynamic type and incorporate a fusible link.

6. Fire dampers shall be equivalent to Ruskin DIBD series, style B with damper blades outside of airstream. For round duct provide style LR.

B. COMBINATION SMOKE/FIRE DAMPERS

1. Combination fire/smoke dampers shall be installed in ducts extending into fire rated corridors and through fire rated demising partitions.
2. Dampers shall be installed in conformance with NFPA Standard 90A and shall be California Fire Marshall listed.
3. Airtight, hinged access doors with catches shall be installed adjacent to all dampers and shall be sized for easy inspection or maintenance of the dampers. Access doors shall not be obstructed with piping, conduit etc. Provide required ceiling access doors in areas with other than removable type ceiling. All fire rated access doors shall be UL listed.
4. Fire damper shall be Ruskin FSD series complete with actuator, linkages, and fusible link. For round duct provide FSDR series dampers.
5. Dampers shall be wired to smoke detection system. Dampers shall close in the event of smoke detector activation, building life safety system activation or loss of power.
6. Damper shall be furnished with a damper position indicating package for remote status annunciation. Ruskin SP-100 or equivalent.
7. Status of motorized dampers shall be monitored at a central panel.

2.07 VAV boxes

A. Provide and install complete VAV system including boxes, actuators, thermostats and controls in accordance with building standard.

B. VAV boxes shall have appropriate controllers, per building standard, and be furnished with hot water re-heat coils where specified on the drawings.

B. VAV control system shall be installed by a controls contractor pre- approved by Building Management. Contactor shall confirm the exact type of system provided for in the shell building, and shall include all costs necessary to interface with this system for a fully operating system, which communicates with the available base building system. If per building standard, include a full graphical interface and representation of the main hair handler and all of the zones in the space.

C. Provide and install access panels, as required to service, repair or replace each damper.

D. Coordinate location of panels and control features with the Architect.

2.11 IDENTIFICATION

A. Pipe Identification

1. Install plastic snap on pipe identification markers indicating contents of pipe and direction of flow. Space a maximum of 30 ft apart. Minimum one per floor.
2. Seton Co.

B. VALVE TAGS:

1. Install 2" diameter brass tags on all valves. Tags shall be stamped with 1" number and letters.
2. Provide schematic drawing of each piping system indicating location of each tagged valve.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

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

3.02 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision of the work of those trades for interface with the work of this section.

3.03 PREPARATION

A. Holes in concrete:

1. Provide sleeves, accurately dimensioned and shaped to permit passage of items of this section.
2. Deliver all such sleeves, with accurate setting drawings and setting information, to the trades providing the surfaces through which such items must penetrate and in a timely manner to assure inclusion in the work.

B. Flashing:

1. Where items of this section penetrate the roof, outer walls, or waterproofing of any kind, provide under this section all base flashing and counter flashing required at such penetration. Coordinate such requirements with Architect and Roofing Contractor.

3.04 EQUIPMENT INTERFACE

A. Provide all required shutoff valves, unions, and final connections of piping to the work of this section.

B. For electrically operated equipment, verify the electrical characteristics actually available for the work of this section and provide equipment meeting those characteristics.

C. For roof mounted equipment, provide factory prefinish on all exposed surfaces.

D. Touch up scratches and abrasions to be invisible to the unaided eye from a distance of 5'-0".

3.05 INSULATION

A. Install interior insulation as specified in Section 2.03 Insulation.

B. Where exterior insulation is permitted, wrap insulation firmly around ductwork, covering all surfaces including standing seams, and with all joints lapped at least 2".

1. Securely fasten the insulation in place with 16 gauge soft annealed black or galvanized wire spaced approximately 12" on centers for straight runs and 3" on center for elbows and fittings.
2. Take special care to avoid excessive stretching and compressing and to achieve securing at lapped sections where possible.
3. Hot iron all seams airtight.

3.06 INSTRUCTIONS

A. Upon completion of this portion of the work, and prior to its acceptance by the Owner, provide a qualified engineer to fully instruct the Owner's maintenance personnel in the proper operation and maintenance of items provided under this section.

B. Demonstrate the contents of the approved operation and maintenance manual.

3.07 TESTING AND ADJUSTING

A. Test and adjust each piece of equipment and each system as required to assure proper balance and operation.

1. Test and regulate ventilation and air conditioning system to conform to the air volumes shown on the approved design drawings, and water flows as required to deliver the necessary heating.
2. Make tests and adjustments in apparatus and ducts for securing the proper volume and face distribution of air for each grille and ceiling outlet.
3. For each system, take the following data in tabulated form:

a. Air volumes at all supply, return, and exhaust outlets.
b. Total cfm supplied.
c. Total cfm returned.
d. Total static pressure at each fan and at each system.
e. Motor speed, fan speed, and input ampere rating for each fan.
f. Water flows to each reheat coil.

B. Submit two sets of test and balance reports to the Architect for approval.

C. Eliminate noise and vibration and assure proper function of all controls, maintenance of temperature and operation in accordance with the approved design.

D. Secure required approval from governmental agencies having jurisdiction.

3.08 PROJECT FINALIZATION AND START-UP

A. Upon completion of the entire mechanical system, each component and system shall be checked and tested with the Owner's field representative.

B. The heating, air conditioning, and ventilation systems shall be operated for a period of two (2) days prior to the final test. During this period of operation, each component shall be physically examined and tested for proper operation. The air flow shall be balanced, temperature controls adjusted, bearings tested and lubricated, motor loads taken, flow rated balanced, pressures checked, etc. The engineer shall be notified, in writing, at the beginning of the two (2) day period.

C. During the two (2) day period, the contractor shall acquaint the Owner's Representative with the operation and maintenance of each piece of equipment and the total system, explaining adjustments, tolerances, etc. to give him a complete understanding of the operation, as well as the shop drawing manual and how and where parts can be obtained.

D. Before acceptance, it shall be demonstrated that all equipment is functioning properly and efficiently. Sheave changes and air quantities shall be balanced by a certified balancing contractor (AABC) for even temperatures throughout, controls adjusted, and in general the system placed into operation. Contractor shall provide four (4) reports verifying actual vs. design CFM's.

END OF SECTION

SECTION 16000

ELECTRICAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Specifications are of simplified form and include incomplete sentences. Words or phrases such as “The Contractor shall,” “shall be,” “furnish,” “provide,” “a,” “an,” “the,” and “all” have been omitted for brevity.

B. Drawings are diagrammatic and indicate general arrangement of systems and work. Following drawings in laying out work and check drawings of other trades to verify space conditions.

C. Definitions:

1. “Furnish” or “Provide”: To supply, install and connect up complete and ready for safe and regular operation of particular work referred to unless specifically otherwise noted.
2. “Install”: To erect, mount and connect complete with related accessories.
3. “Supply”: To purchase, procure, acquire and deliver complete with related accessories.
4. “Work”: Labor, materials, equipment, apparatus, controls, accessories and other items required for proper and complete installation.
5. “Wiring”: Raceway, fittings, wire, boxes and related items.
6. “Concealed”: Embedded in masonry or other construction, installed in furred spaces, within double partitions or hung ceilings, in trenches, in crawl spaces or in enclosures.
7. “Exposed”: Not installed underground or “Concealed” as defined above.
8. “Equal”: Equal in materials, weight, size, design and efficiency of specified product.

D. Scope of Work: Labor, materials, equipment, services and fees necessary for complete safe installation in conformity with applicable codes and authorities having jurisdiction; as indicated on drawings and herein specified.

Refer to Drawings for all fixtures and finishes. Products listed in the drawings supersede the general standards listed within this specification section.

E. The Contractor shall secure all approvals and pay all fees for all work installed. Certificates shall be delivered to the owner before final payment will be made.

1.02 JOB CONDITIONS

A. Connections to Existing Work:

1. Install new work and connect to existing work with minimal interference to existing facilities.
2. Temporary shutdowns of existing services:
   a. At no additional charge.
   b. At times not to interfere with normal operations of existing facilities.

c. Only with written consent of the University.

3. Alarm and emergency systems: Not to be interrupted.
4. Maintain continuous operation of existing facilities as required with necessary temporary connections between new and existing work.
5. Connect new work to existing work in neat and acceptable manner. Restore existing disturbed work to original condition including maintenance of wiring continuity as required.
6. Provide complete electrical separation from adjoining suite (normal power).

B. Removal and Relocation of Existing Work:

1. Safe-off, disconnect, remove and relocate electrical material, equipment and other work noted and required by removal or changes in existing construction. Verify operational status of existing material and equipment with building engineer and data representative to avoid interruption of potential current usage.
2. Provide new material and equipment required for relocated equipment.
3. Disconnect load and line end of conductors feeding existing equipment.
4. Remove conductors from existing raceways to be rewired.
5. Remove abandoned conductors, raceways, conduit, boxes and cap abandoned
6. Cut and cap abandoned floor raceways flush with concrete floor or behind walls and ceilings.
7. Dispose of removed raceways and wire.
8. Dispose of removed electrical equipment as directed.

1.03 QUALITY ASSURANCE

A. Quality and Gauges of Materials:

1. Quality of materials:

a. New, best of their respective kinds, free from defects and listed by Underwriters Laboratories, Inc., or bearing their label.
b. Materials and equipment of similar application: Same manufacture, except as noted.

B. Current Characteristics:

1. Distribution.

a. 480Y/277 Volts, 60 Hertz with grounded neutral.
b. 208Y/120 Volts, 60 Hertz with grounded neutral.

C. Heights of Outlets:

1. From finished floor to centerline of outlets for:

a. Receptacles and telephones:
(Unless indicated on drawings)

i. Generally: 15 in to bottom of cover plate.
ii. Over workbenches: 42 in.

b. Wall switches: minimum 36 in, maximum 48 in.
c. Motor controllers: 48 in.

2. Exceptions:

   a. At junction of different wall finish materials.
   b. On molding or break in wall surface.

   c. In violation of code.
   d. As noted or directed coordinate with Architectural drawings.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Moving of Equipment:

Where necessary, ship in crated sections of size to permit passing through available spaces.

B. Accessibility:

1. For operation, maintenance and repair.
2. Minor deviations: Permissible.
3. Changes of magnitude or involving extra cost: Not permissible without review. Group concealed electrical equipment requiring access with equipment freely accessible through access doors.

1.05 SUBMITTALS

A. Submit shop drawings and product data in Refer to Section 01340 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings:

1. Submit prior to installation per Section 01010.
2. Wall switches.
3. Insertion receptacles.
4. Device plates.
5. Poke-throughs.
6. Lighting fixtures.
7. Life safety system.

   a. Descriptive data for all products and materials.
   b. Recommended application and installation methods, including area coverage for smoke detectors.
   c. Information and data, such as drawings showing device locations and types, riser diagrams, wiring diagrams, approvals, test data, etc. required by local Authorities.
   d. Complete shop drawings of all custom-fabricated or assembled products, including wiring diagrams.
   e. Drawings identifying all terminals and illustrating all device wiring connections.

9. One set of as-built mylar drawings.

PART 2 - PRODUCTS

2.01 GENERAL

A. Nameplates:

1. Fastened with epoxy cement, engraved white Lamicoid sheet with 3/4 in. black lettering.
2. Inscription: Subject to review, indicating equipment and voltage.
3. Provide for:

a. Disconnect switches.
b. Circuit breakers.
c. Cabinets.

B. Supports:

1. Supports from building construction: Beam clamps, steel fishplates (in concrete fill only) or cantilever brackets.
2. Grouped lines and services: Trapeze hangers of bolted angles or channels.
3. Where building construction is inadequate: Provide additional framing.

2.02 MATERIALS

A. Raceways:

1. Rigid steel conduit (RGS): Full-weight pipe, galvanized, threaded.
2. Intermediate metal conduit (IMC): Lightweight steel pipe, galvanized, threaded.
3. Electro-metallic tubing (EMT): Thin wall pipe, galvanized, threadless.
4. Flexible steel conduit: Continuous single strip, galvanized.

B. Fittings and Accessories:

1. Raceway fittings:

a. Rigid steel: Nonsplit, threaded, steel or malleable iron. Zinc die cast not permitted.
b. Rigid aluminum conduit: Nonsplit, threaded copperfree aluminum alloy or hot-dipped galvanized.
c. Electro-metallic tubing: Compression or double set screw type. Galvanized rigid steel elbows, 2 in. or larger.
d. Flexible metallic conduit: Angle wedge type with insulated throat.
e. Bushings: Metallic insulated type.

C. Boxes:

1. Outlet boxes: Except as otherwise required by construction, device or wiring.

a. Stamped or welded steel, 4 in. square or octagon for:

i. Lighting fixtures: 1-1/2 in. deep above ceiling, 2-1/8 in. deep in wall.
ii. In wall for receptacles and switches: 1-1/2 in. deep.
iii. In wall for telephone and data: 2-1/8 in. deep.
iv. With raised covers and fixtures studs where required.
v. Through-the-wall type, not permitted.
vi. Without fixture or device: Blank cover.
vii. Offset back-to-back outlets: Minimum 6 in. separation.

b. Galvanized cast iron or aluminum with threaded hubs: 4 inch round, 2 inch deep on ceiling, and 4 inch square, 2 inch deep on wall.
c. Boxes for outdoors and damp locations: Weatherproof, cast metal.
d. In hazardous locations: Cast, copper-free aluminum.
e. Boxes without fixture or device: Provide with blank cover.

2. Junction and pull boxes:

a. Galvanized sheet steel.
b. Covers: Screw-on, except as noted.
c. With insulated supports and cables.
d. Location: As noted or required and accessible.
e. Provide barriers:

i. 480Y/277 volt wiring energized from separate services.
ii. 208Y/120 volt and 480Y/277 volt wiring.
iii. Emergency and normal wiring.

f. Provide barriers in existing boxes between:

i. 480/277 volt wiring energized from separate services.
ii. 208/120 volt and 480Y/277 volt wiring.
iii. Emergency and normal wiring.

3. Floor boxes: galvanized cast iron with brass covers and flanges, suitabl for conduit and devices indicated.

D. Wire and Cable:

1. Conductors:

a. ASTM Standard Solid No. 12 and smaller, Stranded No. 10 and larger.

i. Type: Copper.
ii. Size:

a) General use:

(i) No. 12 minimum
(ii) At 120 volts and over 100 ft. circuit length: No. 10 minimum.
(iii) At 277 volts and over 200 ft. circuit length: No. 10 minimum.

b) Control and alarm, except as noted:

(i) No. 14 minimum.
(ii) At 120 volts and over 200 ft. circuit length: No. 12 minimum.

c) Other voltages and phases: As required to maintain voltage drop.

d) Increase raceway sizes for larger wire as required.

2. Insulation:

a. THWN/THHN: Feeders and branch circuits except as noted.

b. Color coding: As per Code. Where color-coding is unavailable, certify in writing and request permission to overlap color-taping conductors (minimum length 6 in.) in accessible locations.

3. Accessories:

a. Tags:

i. Flameproof linen or fiber in accessible locations.
ii. Feeders: Indicate feeder number, size, phase and points of origin and terminations.
ii. Control and alarm wiring: Indicate type (Control or alarm), size of wire, and points of origin and terminations.

b. Terminations, splices and taps under 600 volts:

i. Copper conductors No. 10 and smaller: With compression-type of twist-on spring-loaded connectors and clear nylon-insulated covering.
ii. Copper conductors No. 8 and larger: Mechanical bolted pressure or hydraulic compression type using manufacturer's recommended tooling.
ii. Cable lugs and connectors: Compression type of same metal as conductor. Provide to match cable, with marking indicating size and type.

E. Devices:

1. Local wall switches: Match building standard. (Equal to HUBBELL RDV103PW)
2. Dimmer switches: Match building standards. Incandescent slider type, size as indicated. (Equal to HUBBELL, 800W)
3. Insertion receptacles: Match building standards. (Equal to HUBBELL RR15EW)
4. Fire rated poke-throughs: Match building standards. (Equal to WalkerTap 1570-CA)
5. Device plates: Match building standards. (Equal to HUBBEL)

a. See Architect for type.
b. For receptacles with other than 120 volt, inscribed voltage available.

6. Occupancy sensor: Match building standards. (Equal to Dual Technology)

7. GFCI Receptacle: Match building standards. (Equal to HUBBEL GF20WL)

F. Low Voltage Distribution Equipment:

1. Disconnect switches:

a. Fused or nonfused as noted.
b. Voltage as required.
c. Heavy duty, except as noted.
d. Horsepower rated for motor loads.
e. Toggle type:

i. Non-fused, load breaks.
ii. Maximum ratings:

a) 20 amp at 600 volts.
b) 30 amp at 250 volts.

ii. 2 pole: Equal to Arrow-Hart, No. 6808F. Square D Class 2510
iv. 3 pole: Equal to Arrow-Hart, No. 7810F. Square D Class 2510

2. Circuit breakers:
a. Molded case:

i. Thermal-magnetic, quick-make-quick-break.
ii. Manually operated with insulated trip-free handle.
iii. Multi-pole types: With internal trip bar.
iv. Terminals: UL listed for 75 degree C and suitable for copper or aluminum cable.
v. Enclosures: Dead front, NEMA Type 1, except as noted.
vi. Frames, IC and interchangeable trips:

a) 120/240 volts, 100-amp frames.

(i) Interrupting capacity: 10,000 amps.
(ii) 1, 2 and 3 poles

b) 240 volts, 225-ampere frame:

(i) Interrupting capacity: 25,000 amps.
(ii) 3 poles.

c) 277 volts, 100-amp frame:

(i) Interrupting capacity: 14,000 amps.
(ii) 1 pole.

d) 480 volts, 100-amp frame:

(i) Interrupting capacity: 20,000 amps.
(ii) 2 and 3 poles.

e) 480 volts, 225-amp frame:

(i) Interrupting Capacity: 30,000 amps.

(ii) 2 and 3 poles.
(iii) Interchangeable Trip

G. Lighting Fixtures:

1. Provide fixtures, components and lamps.
2. Type of fixtures indicated per plan.
3. Incandescent: 120 volt, except as noted.
4. Fluorescent:
   a. 120 v or 277 volt, except as noted.
   b. Shall be certified by the manufacturer to comply with Title 24.

Office Area Specifications: REFER TO DRAWINGS FOR SPECIFICATIONS

5. Fixture catalog numbers used to illustrate equipment type do not necessarily denote required mounting equipment or accessories. Provide accessories to suit.
6. Ballasts: Electronic, Instant Start, 2 or 3 Lamp 277V (OR AS NOTED ON DRAWINGS)
7. Motion or Occupancy Sensors must be compatible in power and harmonics with specified building standard electronic ballasts.
8. Contractor's base bid is to include fixtures on schedule (SEE DRAWING).

H. Telephone/Data Control System:

1. Complete System of:

   a. Empty Conduit.
   b. Pull boxes.
   c. Outlets.
   d. Sleeves.
   e. Fishwires and pullcords.
   f. Terminal Boards.
   g. Terminal Strip Cabinets.

2. Outlets:

   a. Wall: 4 in. Square with bushed cover plate.
   b. Floor: Poke-through fittings.

3. Terminal Boards: Fireproof plywood, sizes as indicated.
4. Conduit: 3/4 in. minimum.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. Painting:

   a. Paint:

      i. Best grade for its purpose.
      ii. Deliver in original seal containers.

iii. Apply in accordance with manufacturer's instructions.
iv. Colors: As selected by Architect.

b. Galvanized iron primer: Panel and pull boxes, after fabrication.
c. Hot dipped galvanized or dipped in zinc chromate: Outlet boxes, junction boxes, conduit hangers, rods inserts and supports.
d. Zinc chromate with finish to match surroundings: Marred surfaces of steel equipment and raceways.

2. Cleaning:

a. Brush and clean work prior to concealing, painting or priming.
b. Painted exposed work soiled or damaged: Clean and repair to match adjoining work before final acceptance.
c. Remove debris from inside and outside of material and equipment.

3. Cutting and Patching: As required for new work.

B. Raceways:

1. Run concealed, except as noted.
2. Supports:

a. Ceiling trapeze, strap hangers or wall brackets.
b. U-bolts: At each floor level of riser raceways and connected to acceptable supports.
c. Riser clamps: At each floor level or riser raceways and resting on slab.
d. Secure raceways to support with pipe straps or u-bolts.
e. Spacing:

i. Minimum 10 ft. on centers for metallic raceway and as required for non-metallic raceway.
ii. 5 ft. on centers for wireways.
iii. Per code and as noted for others.

f. Mount supports to structure with:

i. Toggle bolts on hollow masonry.
ii. Expansion shields or inserts in concrete and brick.
iii. Machine screws on metal.
iv. Beam clamps on framework.
v. Wood screws on wood.
vi. Pan through straps in metal deck.
vii. Nails, rawl plugs or wood plugs not permitted.
viii. Where required by structure: Through bolts and fish plates.

3. Exposed: Run parallel with or at right angles to walls.
4. Clearance from water, steam or other piping: Minimum 3 in. separation from steam and hot water pipes, except 1 in. from pipe cover at crossings.
5. For hung ceiling outlets: Run in hung ceilings and connect to ceiling support channels.
6. In masonry: Run vertically only.
7. Maintain grounding continuity of interrupted metallic raceways with ground conductor, and in flexible conduit for feeders and motor terminal connections.

8. Empty raceways over 10 ft. long: Provide fish or pull wire, galvanized or nylon rope.
9. Rigid steel conduit:

    a. Permitted uses:

        i. Feeders.
        ii. Branch circuits.

    b. Paint male threads of field-threaded conduit with graphite-base pipe compound. Butt conduit ends.
    c. Touch up marred surfaces and field-out threads, CR.-cold galvanized.

10. Intermediate metallic conduit:

    a. Permitted uses: Same as rigid steel conduit.

11. EMT:

    a. Permitted uses:

        i. Feeders and branch circuits.
        ii. Dry locations, dry walls, hanging ceilings, hollow block walls and furred spaces.

12. Flexible steel conduit:

    a. Aluminum flex conduit is not acceptable. Flexible steel conduit may be used only where acceptable by code authorities and only as follows:

        i. Where indicated.
        ii. For final connection to motors, vibrating equipment or where required for equipment servicing.
        iii. For connections to recessed lighting fixtures from nearby accessible junction boxes, min. 4 ft., max. 6ft. length..
        iv. For concealed branch, horizontal circuit runs in stud walls and in dry locations where structural conditions prevent the use of other types of conduit.
        v. For sheet connections where rigid conduit is impractical.
        vi. In commercial kitchens, damp locations or areas exposed to the weather, use liquid tight type of flexible conduit provided the jacket temperature limitation will not be exceeded.
        vii. Provide separate green copper ground.
        viii. With written authorization.

13. Flexible aluminum conduit: (Not allowed)

14. Aluminum conduits:

    a. Permitted uses:

        i. Feeders.
        ii. Branch circuits.

    b. Through concrete and masonry walls and floors: Use metallic sleeve and

seal conduit in sleeve.

c. Maintain clearance between conduit and surfaces:

i. In moist locations.
ii. In interior spaces below exterior finished grade.

d. Connectors to steel surfaces: Maintain galvanized-to-aluminum contact or paint with asphalt-base paint.
e. Pull wire: Steel core nylon rope and terminal ball.
f. Use galvanized steel elbows for all bends.

15. Expansion fittings: At right angles with slip joint centered in expansion joint. Provide on length of runs in accordance with manufacturer's recommendations. Preset to allow for temperature variation.
16. Raceways passing through fire-rated construction. Seal opening with fire sealant.
17. Outlet boxes:

a. Set boxes square and true with building finish.
b. Secure to building structure by adjustable strap irons or grout in with masonry.
c. Verify outlet locations in finished spaces with architectural drawings of interior details and finishes.
d. Provide barriers between switches connected to different phases for voltages exceeding 150 volts to ground.

18. Junction and pull boxes:

a. Location:

i. Clear of other trades.
ii. Conceal junction and pull boxes in finished spaces.
iii. Accessible.

b. Support: From building structure, independent of conduit. Provide floor-to-ceiling channels for mounting on dry wall and lightweight construction.
c. Outlet boxes for fixtures recessed in hung ceilings: Accessible through opening created by removal of fixture. Secure to black iron ceiling support.
d. Motor terminal boxes: Coordinate with motor branch circuit conduit and wiring. Add box volume where required.

19. Fire sealants: Provide for raceways and wire passing through floor slots, sleeves and openings in fire-partitioned rooms.
20. Outdoor installation: Weatherproof except as noted; below grade, waterproof.
21. Tests:

a. Continuity:

i. Test resistance of feeder conduits from service to point of final distribution using 1 conductor return.
ii. Maximum: 25 OHMS Resistance

C. Wire and Cable:

1. 600 Volt Cable:

a. Not more than three (3) lighting or convenience outlet circuits in 1 conduit unless otherwise indicated.
b. Separate raceways for conductors of 208Y/120 and 480Y/277 volt systems, except 480 volt motor branch circuit wiring and related 120 volt control wiring.
c. No thermoplastic wires in computer area raised floors.

2. Tests:

a. Continuity and insulation tests:

i. 600 Volts: Megger, 50 MegOhms, minimum.
ii. 100 Percent of feeders.
iii. 10 percent of branch circuits.

b. Perform:

i. Prior to connecting equipment.
ii. In presence of authorized representative.

c. Submit written report of results.
d. Correct or replace cable resting below the above listed standard.

D. Distribution Panelboards:

1. Balance the load over phases when new circuits are added to existing panels.

a. Provide multi-cable lugs where required.

2. Place all existing circuits and update directories on existing panelboards where circuiting is changed.
3. Tests: Open and close load break switching devices under load.

E. Life Safety System:

1. Installation shall be supervised and tested by the Manufacturer of the system equipment. The work shall be performed by skilled technicians under the direction of experienced engineers, all of whom shall be properly trained and qualified for this work.
2. System shall be installed with all conduit, conductors, outlet boxes, fittings, connectors and accessories necessary to ensure a complete, operable system in compliance with all applicable Codes and regulations.

a. Conduit: All conduit and its installation shall be in accordance with this Specification.
b. Wire and cable: All wiring shall be installed in metal conduit or within equipment. Conductors shall be installed in accord with this Specification. Conductors within equipment enclosures shall be carefully cabled and laced. They shall be color-coded and individual conductors shall be tagged with E-Z code markers indicating circuit number and type. Markers shall be used on all conductors at each outlet or pull box and at each equipment enclosure.

c. Outlet pull and junction boxes shall be painted red on the exterior and shall be installed in accord with this Specification.
d. End-of-line resistors for speaker circuits shall be installed in floor terminal cabinets.
e. Pigtail and/or tapped connection will not be allowed on supervised circuit. Connections shall be made directly to and from device terminal screws.

F. Telephone/Data Circuit System:

1. Fishwire or pullcords, in raceway over 10 ft. long.
2. Power supply for telephone equipment rooms.
3. Run empty conduit from outlet into accessible hung ceiling.
4. Provide dedicated ground wire from building steel to telephone system isolation transformer.

END OF SECTION

LIST OF DRAWINGS

SHEET NO.	TITLE	SHEET DATE
TBD	TBD	TBD

END OF LIST OF DRAWINGS

GENERAL

G001 PROJECT INFORMATION, SHEET INDEX, SYMBOL LEGEND, ABBREVIATIONS
G002 GENERAL NOTES, ACCESSIBILITY NOTES, ENERGY NOTES

BP-1 UCLA BUILDING PERMIT

ARCHITECTURAL

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A202 REFLECTED CEILING DEMOLITION PLAN
A211 FLOOR PLAN
A212 FINISH PLAN
A213 REFLECTED CEILING PLAN

A411 CASEWORK PLANS AND ELEVATIONS
A412 CASEWORK PLANS AND ELEVATIONS

A511 FINISH AND DOOR SCHEDULES, MATERIAL LEGEND

A611 WALL TYPES AND FRAMING DETAILS
A621 CEILING TYPES AND DETAILS
A631 CASEWORK DETAILS
A632 CASEWORK DETAILS

MECHANICAL

M1.0 HVAC SYMBOLS, ABBREVIATIONS AND SPECIFICATIONS
M2.0 HVAC SCHEDULES AND DETAILS
M3.0 HVAC FLOOR PLAN

PLUMBING

P1.0 PLUMBING SYMBOLS, SCHEDULES, ABBREVIATIONS AND SPECIFICATIONS
P2.0 PLUMBING FLOOR PLAN

ELECTRICAL

E1.11 SINGLE LINE DIAGRAM, FIXTURE SCHEDULE AND SYMBOLOGY
E2.11 LIGHTING PLAN
E2.12 POWER PLAN
E3.11 PANEL SCHEDULES
E4.11 TITLE 24