TENANT IMPROVEMENT

PROJECT MANUAL
& SPECIFICATIONS

ISSUED FOR CONSTRUCTION

22 May 2013

SECTION 00 0110
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SECTION 01 1000
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name:

B. Owner's Name:

C. Architect's Name:

1.02 WORK SEQUENCE

A. Construct Work in stages during the construction period:

B. Coordinate construction schedule and operations with Owner.

C. Coordinate construction schedule and operations with Architect.

1.03 SPECIFICATION SECTIONS APPLICABLE TO ALL CONTRACTS

A. Unless otherwise noted, all provisions of the sections listed below apply to all contracts. Specific items of work listed under individual contract descriptions constitute exceptions.

B. Section 01 2100 - Allowances.

C. Section 01 2200 - Unit Prices.

D. Section 01 2300 - Alternates.

E. Section 01 3000 - Administrative Requirements.

F. Section 01 4000 - Quality Requirements.

G. Section 01 6000 - Product Requirements.

H. Section 01 7000 - Execution and Closeout Requirements.

I. Section 01 7800 - Closeout Submittals.

1.04 CONTRACT NO. ____ - GENERAL CONSTRUCTION

A. Division 01 - General Requirements:
   1. Specification sections listed above.
   2. Section 01 7000 - Execution and Closeout Requirements: Basic project engineering and layout.
   3. Section 01 7000 - Execution and Closeout Requirements: Final cleaning.

B. Provide all Work except Work specifically assigned to other contractors in this Section.

1.05 CONTRACT NO. ____ - PLUMBING

A. Specification sections listed above as applicable to all contracts.

1.06 CONTRACT NO. ____ - HEATING, VENTILATING, AND AIR CONDITIONING

A. Specification sections listed above as applicable to all contracts.
   1. Section 01 3114 - Mechanical and Electrical Coordinator: Mechanical and electrical coordinator.

1.07 CONTRACT NO. ____ - ELECTRICAL

A. Specification sections listed above as applicable to all contracts.
   1. Section 01 5000: Temporary electricity installation.
   2. Section 01 5000: Temporary lighting.

B. Perform Work specified in Volume 1 of the project manual.

C. Division 07 - Thermal and Moisture Protection:
   1. Section 07 8400 - Firestopping: Firestopping of wire and conduit penetrations.

D. Division 26 - Electrical: All sections identified.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electronic document submittal service.

B. Construction progress schedule.

C. Progress photographs.

D. Coordination drawings.

E. Submittals for review, information, and project closeout.

F. Number of copies of submittals.

G. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

B. Section 01 7800 - Closeout Submittals: Project record documents.

C. Section 01 9113 - General Commissioning Requirements: Additional procedures for submittals relating to commissioning.

1. Where submittals are indicated for review by both Architect and the Commissioning Authority, submit one extra and route to Architect first, for forwarding to the Commissioning Authority.
2. Where submittals are not indicated to be reviewed by Architect, submit directly to the Commissioning Authority; otherwise, the procedures specified in this section apply to commissioning submittals.

1.03 PROJECT COORDINATION

A. Make the following types of submittals to Architect.

1. Requests for interpretation.
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports.
5. Manufacturer's instructions and field reports.
6. Applications for payment and change order requests.
7. Progress schedules.
8. Coordination drawings.
9. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.

1. Besides submittals for review, information, and closeout, this procedure applies to requests for information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, and any other document any participant wishes to make part of the project record.
2. Contractor and Architect are required to use this service.
3. It is Contractor's responsibility to submit documents in PDF format.

4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
5. Users of the service need an email address, Internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
6. Paper document transmittals will not be reviewed; emailed PDF documents will not be reviewed.
7. All other specified submittal and document transmission procedures apply, except that electronic document requirements to not apply to samples or color selection charts.

B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the contract sum.

C. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.

D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum weekly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Maintenance of quality and work standards.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to Work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

3.04 PROGRESS PHOTOGRAPHS

A. Submit new photographs at least once a month, within 3 days after exposure.

B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.

C. Photography Type: Digital; electronic files.

D. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Architect.

E. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Final completion, minimum of ten (10) photos.

F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.05 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed only for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below .

3.06 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. LEED submittals and reports.
   3. Certificates.
   4. Test reports.
   5. Inspection reports.
   6. Manufacturer's instructions.
   7. Manufacturer's field reports.
   8. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.07 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

B. Submit for Owner's benefit during and after project completion.

3.08 NUMBER OF COPIES OF SUBMITTALS

A. Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Extra Copies at Project Closeout: See Section 01 7800.

C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

3.09 SUBMITTAL PROCEDURES

A. Transmit each submittal with approved form.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

E. Schedule submittals to expedite the Project, and coordinate submission of related items.

F. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.

G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

H. Provide space for Contractor and Architect review stamps.

I. When revised for resubmission, identify all changes made since previous submission.

J. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01 3216
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, bar chart type.

1.02 RELATED SECTIONS

A. Section 01 1000 - Summary: Work sequence.

1.03 SUBMITTALS

A. Within 10 days after date established in Notice to Proceed, submit preliminary schedule .

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Identify work of separate stages and other logically grouped activities.

D. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

E. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, Products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.

F. Indicate delivery dates for owner-furnished products.

G. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first work day of each week.

3.04 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit reports required to support recommended changes.

3.05 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner .

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. References and standards.
B. Quality assurance submittals.
C. Mock-ups.
D. Control of installation.
E. Tolerances.
F. Testing and inspection services.
G. Manufacturers' field services.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittal procedures.

1.03 REFERENCE STANDARDS

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008.
B. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2011c.
C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2012.
D. ASTM E329 - Standard Specification for Agencies Engaged Construction Inspection and/or Testing; 2011.
E. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2009.
F. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2010.

1.04 SUBMITTALS

A. Testing Agency Qualifications:
   1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
   3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.

j. Conformance with Contract Documents.
k. When requested by Architect, provide interpretation of results.

2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.05 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING AND INSPECTION AGENCIES

A. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. Contractor Employed Agency:
1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, and ASTM C1093.

PART 3 EXECUTION

2.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

2.02 MOCK-UPS

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

2.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

2.04 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

C. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

2.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and _____ as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

2.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities.

B. Temporary telecommunications services.

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, enclosures, and fencing.

E. Security requirements.

F. Vehicular access and parking.

G. Project identification sign.

H. Field offices.

1.02 TEMPORARY UTILITIES - SEE SECTION 01 5100

A. Owner will provide the following:
   1. Electrical power and metering, consisting of connection to existing facilities.
   2. Water supply, consisting of connection to existing facilities.

B. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.

C. Existing facilities may not be used.

D. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:
   1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
   2. Telephone Land Lines: One line, minimum; one handset per line.
   3. Internet Connections: Minimum of one; DSL modem or faster.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

A. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.07 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.08 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

E. Existing parking areas located at adjacent unimproved lot may be used for construction parking.

1.09 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated on Drawings.

B. Erect on site at location indicated.

C. No other signs are allowed without Owner permission except those required by law.

1.10 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

C. Provide separate work station similarly equipped and furnished, for use of Architect and Owner.

D. Locate offices a minimum distance of 30 feet from existing and new structures.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations and procedures.

F. Procedures for Owner-supplied products.

G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Lists of products to be removed from existing building.

B. Section 01 4000 - Quality Requirements: Product quality monitoring.

1.03 REFERENCE STANDARDS

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

B. CAN/CSA Z809 - National Standard for Sustainable Forest Management; CSA International Inc.; 2008.

C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

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

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

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

D. LEED Submittals: Use forms provided in Section 01 3516.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

B. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.
   1. Wood fabricated from timber abandoned in transit after harvesting is considered reused, not recycled.

2.02 NEW PRODUCTS

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

2.03 PRODUCT OPTIONS

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

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

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

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

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

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

D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

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

3.02 OWNER-SUPPLIED PRODUCTS

A. Owner's Responsibilities:
   1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
   2. Arrange and pay for product delivery to site.
   3. On delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
   1. Review Owner reviewed shop drawings, product data, and samples.
   2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.

3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

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

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

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

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

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

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

3.04 STORAGE AND PROTECTION

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

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

C. Store with seals and labels intact and legible.

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

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

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

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

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

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

END OF SECTION

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Cutting and patching.

C. Surveying for laying out the work.

D. Cleaning and protection.

E. Starting of systems and equipment.

F. Closeout procedures, except payment procedures.

G. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 3000 - Administrative Requirements: Submittals procedures.

C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.

D. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

E. Section 01 9113 - General Commissioning Requirements: Contractor's responsibilities in regard to commissioning.

F. Section 07 8400 - Firestopping.

1.03 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2009.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 PROJECT CONDITIONS

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Periodically verify layouts by same means.

D. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.08 SYSTEM STARTUP

A. Coordinate with requirements of Section 01 9113 - General Commissioning Requirements.

B. Coordinate schedule for start-up of various equipment and systems.

C. Notify Architect and owner seven days prior to start-up of each item.

D. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

E. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

F. Verify that wiring and support components for equipment are complete and tested.

G. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

H. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

I. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

B. Testing, adjusting, and balancing HVAC systems: See Section 23 0593.

3.10 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

B. Use cleaning materials that are nonhazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean debris from roofs, gutters, downspouts, and drainage systems.

H. Clean site; sweep paved areas, rake clean landscaped surfaces.

I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.11 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Owner.

B. Notify Architect when work is considered ready for Substantial Completion.

C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.

D. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

E. Notify Architect when work is considered finally complete.

F. Complete items of work determined by Architect's final inspection.

3.12 MAINTENANCE

A. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

B. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 3 EXECUTION

2.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Field changes of dimension and detail.
2. Details not on original Contract drawings.

2.02 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

2.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Additional information as specified in individual product specification sections.

D. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

2.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
1. Description of unit or system, and component parts.
2. Identify function, normal operating characteristics, and limiting conditions.
3. Include performance curves, with engineering data and tests.
4. Complete nomenclature and model number of replaceable parts.

B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

D. Provide servicing and lubrication schedule, and list of lubricants required.

E. Include manufacturer's printed operation and maintenance instructions.

F. Include sequence of operation by controls manufacturer.

G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

H. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

I. Include test and balancing reports.

J. Additional Requirements: As specified in individual product specification sections.

2.05 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Certificates.
      d. Photocopies of warranties and bonds.

J. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

2.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 01 7900
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. HVAC systems and equipment.
   3. Plumbing equipment.
   4. Electrical systems and equipment.
   5. Landscape irrigation.
   6. Items specified in individual product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
   1. Finishes, including flooring, wall finishes, ceiling finishes.
   2. Items specified in individual product Sections.

1.02 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures; except:
   1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority.
   2. Submit one copy to the Commissioning Authority, not to be returned.
   3. Make commissioning submittals on time schedule specified by Commissioning Authority.
   4. Submittals indicated as "Draft" are intended for the use of the Commissioning Authority in preparation of overall Training Plan; submit in editable electronic format, Microsoft Word 2003 preferred.

B. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

C. Training Reports:
   1. Sign-in sheet showing names and job titles of attendees.
   2. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
   3. Include Commissioning Authority's formal acceptance of training session.

D. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
   1. Format: DVD Disc.
   2. Label each disc and container with session identification and date.

1.03 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Commissioning Authority will prepare the Training Plan based on draft plans submitted.

B. Conduct training on-site unless otherwise indicated.

C. Owner will provide classroom and seating at no cost to Contractor.

D. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.

E. Provide training in minimum two hour segments.

F. The Commissioning Authority is responsible for determining that the training was satisfactorily completed and will provide approval forms.

G. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

H. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.
   10. Review spare parts and tools required to be furnished by Contractor.
   11. Review spare parts suppliers and sources and procurement procedures.

I. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

SECTION 01 9113
GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:
   1. Verify that the work is installed in accordance with the Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.
   2. Verify and document that functional performance is in accordance with the Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Authority are utilized to achieve this.
   3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.
   4. Verify that the Owner's operating personnel are adequately trained: Formal training conducted by Contractor is utilized to achieve this.

B. Commissioning, including Functional Tests, O&M documentation review, and training, is to occur after startup and initial checkout and be completed before Substantial Completion

C. The Commissioning Authority directs and coordinates all commissioning activities; this section describes some but not all of the Commissioning Authority's responsibilities.

D. The Commissioning Authority is employed by Construction Manager on behalf of Owner.

1.02 RELATED REQUIREMENTS

A. Section 01 7000 - Execution and Closeout Requirements: General startup requirements.

B. Section 01 7800 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.

C. Section 01 7900 - Demonstration and Training: Scope and procedures for Owner personnel training.

D. Section 23 0800 - Commissioning of HVAC: HVAC control system testing; other requirements.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures; except:
   1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority, unless they require review by Architect; in that case, submit to Architect first.
   2. Submit one copy to the Commissioning Authority, not to be returned.
   3. Make commissioning submittals on time schedule specified by Commissioning Authority.
   4. As soon as possible after submittals made to Architect are approved, submit copy of approved submittal to the Commissioning Authority.

B. Manufacturers' Instructions: Submit copies of all manufacturer-provided instructions that are shipped with the equipment as soon as the equipment is delivered.

C. Product Data: If submittals to Architect do not include the following, submit copies as soon as possible:
   1. Manufacturer's product data, cut sheets, and shop drawings.
   2. Manufacturer's installation instructions.
   3. Startup, operating, and troubleshooting procedures.
   4. Fan and pump curves.
   5. Factory test reports.

6. Warranty information, including details of Owner's responsibilities in regard to keeping warranties in force.

D. Startup Plans and Reports.

E. Completed Prefunctional Checklists.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

B. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
   1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degree F and resolution of plus/minus 0.1 degree F.
   2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.
   3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.

C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

D. Dataloggers: Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment.
   1. Dataloggers required to for Functional Tests will be provided by the Commissioning Authority and will not become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING PLAN

A. Commissioning Authority has prepared the Commissioning Plan.
   1. Attend meetings called by the Commissioning Authority for purposes of completing the commissioning plan.
   2. Require attendance and participation of relevant subcontractors, installers, suppliers, and manufacturer representatives.

B. Contractor is responsible for compliance with the Commissioning Plan.

C. Commissioning Plan: The commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.

D. Commissioning Schedule:
   1. Submit anticipated dates of startup of each item of equipment and system to Commissioning Authority within 60 days after award of Contract.
   2. Re-submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.
   3. Prefunctional Checklists and Functional Tests are to be performed in sequence from components, to subsystems, to systems.
   4. Provide sufficient notice to Commissioning Authority for delivery of relevant Checklists and Functional Test procedures, to avoid delay.

3.02 STARTUP PLANS AND REPORTS

A. Startup Plans: For each item of equipment and system for which the manufacturer provides a startup plan, submit the plan not less than 8 weeks prior to startup.

B. Startup Reports: For each item of equipment and system for which the manufacturer provides a startup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.

C. Submit directly to the Commissioning Authority.

3.03 FUNCTIONAL TESTS

A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.

B. Contractor is responsible for execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.

C. Commissioning Authority is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.

D. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Owner; if a deficiency is not corrected and re-tested immediately, the Commissioning Authority will document the deficiency and the Contractor's stated intentions regarding correction.
   1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents or does not perform properly.
   2. When the deficiency has been corrected, the Contractor completes the form certifying that the item is ready to be re-tested and returns the form to the Commissioning Authority; the Commissioning Authority will reschedule the test and the Contractor shall re-test.
   3. Identical or Near-Identical Items: If 10 percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
   4. Contractor shall bear the cost of Owner and Commissioning Authority personnel time witnessing re-testing.
   5. Contractor shall bear the cost of Owner and Commissioning Authority personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re-tests.

E. Functional Test Procedures:
   1. Some test procedures are included in the Contract Documents; where Functional Test procedures are not included in the Contract Documents, test procedures will be determined by the Commissioning Authority with input by and coordination with Contractor.
   2. Examples of Functional Testing:
      a. Test the dynamic function and operation of equipment and systems (rather than just components) using manual (direct observation) or monitoring methods under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint).
      b. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.
      c. Systems are run through all the HVAC control system’s sequences of operation and components are verified to be responding as the sequence's state.
      d. Traditional air or water test and balancing (TAB) is not Functional Testing; spot checking of TAB by demonstration to the Commissioning Authority is Functional Testing.

F. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site

conditions; performance of these tests remains the Contractor's responsibility regardless of timing.

3.04 SENSOR AND ACTUATOR CALIBRATION

A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gages, and all actuators (dampers and valves) on this piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

B. Calibrate using the methods described below; alternate methods may be used, if approved by Owner beforehand. See PART 2 for test instrument requirements. Record methods used on the relevant Prefunctional Checklist or other suitable forms, documenting initial, intermediate and final results.

C. All Sensors:
   1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
   2. Verify that sensors with shielded cable are grounded only at one end.
   3. For sensor pairs that are used to determine a temperature or pressure difference, for temperature make sure they are reading within 0.2 degree F of each other, and for pressure, within tolerance equal to 2 percent of the reading, of each other.
   4. Tolerances for critical applications may be tighter.

D. Sensors Without Transmitters - Standard Application:
   1. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
   2. Verify that the sensor reading, via the permanent thermostat, gage or building automation system, is within the tolerances in the table below of the instrument-measured value.
   3. If not, install offset, calibrate or replace sensor.

E. Sensors With Transmitters - Standard Application.
   1. Disconnect sensor.
   2. Connect a signal generator in place of sensor.
   3. Connect ammeter in series between transmitter and building automation system control panel.
   4. Using manufacturer’s resistance-temperature data, simulate minimum desired temperature.
   5. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter.
   6. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the building automation system.
   7. Record all values and recalibrate controller as necessary to conform with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction.
   8. Reconnect sensor.
   9. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
   10. Verify that the sensor reading, via the permanent thermostat, gage or building automation system, is within the tolerances in the table below of the instrument-measured value.
   11. If not, replace sensor and repeat.
   12. For pressure sensors, perform a similar process with a suitable signal generator.

F. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:
   1. Watthour, Voltage, Amperage: 1 percent of design.
   2. Pressure, Air, Water, Gas: 3 percent of design.
   3. Air Temperatures (Outside Air, Space Air, Duct Air): 0.4 degrees F.
   4. Relative Humidity: 4 percent of design.
   5. Barometric Pressure: 0.1 inch of Hg.
   6. Flow Rate, Air: 10 percent of design.
   7. Flow Rate, Water: 4 percent of design.
   8. Flow Rate, Steam: 3 percent of design.
   9. AHU Wet Bulb and Dew Point: 2.0 degrees F.
   10. Hot Water Coil and Boiler Water Temperature: 1.5 degrees F.

11. Cooling Coil, Chilled and Condenser Water Temperatures: 0.4 degrees F.
12. Oxygen and CO2 Monitors: 0.1 percentage points.

G. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.

H. Valve/Damper Stroke Setup and Check:
1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
2. Set pump/fan to normal operating mode.
3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
4. Command valve/damper to open; verify position is full open and adjust output signal as required.
5. Command valve/damper to a few intermediate positions.
6. If actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).

I. Isolation Valve or System Valve Leak Check: For valves not associated with coils.
1. With full pressure in the system, command valve closed.
2. Use an ultra-sonic flow meter to detect flow or leakage.

3.05 TEST PROCEDURES - GENERAL

A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.

B. Provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pre-test condition.

C. Sampling: Where Functional Testing of fewer than the total number of multiple identical or near-identical items is explicitly permitted, perform sampling as follows:
1. Identical Units: Defined as units with same application and sequence of operation; only minor size or capacity difference.
2. Sampling is not allowed for:
a. Major equipment.
b. Life-safety-critical equipment.
c. Prefunctional Checklist execution.
3. XX = the percent of the group of identical equipment to be included in each sample; defined for specific type of equipment.
4. YY = the percent of the sample that if failed will require another sample to be tested; defined for specific type of equipment.
5. Randomly test at least XX percent of each group of identical equipment, but not less than three units. This constitutes the "first sample."
6. If YY percent of the units in the first sample fail, test another XX percent of the remaining identical units.
7. If YY percent of the units in the second sample fail, test all remaining identical units.
8. If frequent failures occur, resulting in more troubleshooting than testing, the Commissioning Authority may stop the testing and require Contractor to perform and document a checkout of the remaining units prior to continuing testing.

D. Manual Testing: Use hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the “observation”).

E. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.

F. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.

G. Over-Writing Values: Change the sensor value known to the control system in the control system to see the response of the system; for example, change the outside air temperature value from 50 degrees F to 75 degrees F to verify economizer operation.

H. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.

I. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of the relevant control systems; where monitoring of specific points is called for in Functional Test Procedures:
   1. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Authority's request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
   2. Other points will be monitored by the Commissioning Authority using dataloggers.
   3. At the option of the Commissioning Authority, some control system monitoring may be replaced with datalogger monitoring.
   4. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
   5. Graphical output is desirable and is required for all output if the system can produce it.
   6. Monitoring may be used to augment manual testing.

3.06 OPERATION AND MAINTENANCE MANUALS

A. See Section 01 7800 for additional requirements.

B. Add design intent documentation furnished by Architect to manuals prior to submission to Owner.

C. Submit manuals related to items that were commissioned to Commissioning Authority for review; make changes recommended by Commissioning Authority.

D. Commissioning Authority will add commissioning records to manuals after submission to Owner.

END OF SECTION

SECTION 03 5400
CAST UNDERLAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Liquid-applied self-leveling floor underlayment.
   1. Use cementitious type at all areas as indicated..

1.02 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2011b.

B. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2008.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.

C. Certificate: Certify that products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.06 FIELD CONDITIONS

A. Do not install underlayment until floor penetrations and peripheral work are complete.

B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.

C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cementitious Underlayment:
   1. ARDEX Engineered Cements; ARDEX K 15 with ARDEX MC ULTRA: www.ardexamericas.com.
   2. ProSpec, an Oldcastle brand; Level Set Wear Topping: www.prospec.com.
   3. LATICRETE SUPERCAP, LLC; LATICRETE SUPERCAP: www.laticretesupercap.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
   1. Compressive Strength: Minimum 4000 psi after 28 days, tested per ASTM C109/C109M.
   2. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
   3. Density: 125 lb/cu ft, nominal.
   4. Final Set Time: 1-1/2 to 2 hours, maximum.

5. Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch.
6. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.

B. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.

C. Water: Potable and not detrimental to underlayment mix materials.

D. Primer: Manufacturer's recommended type.

E. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

2.03 MIXING

A. Site mix materials in accordance with manufacturer's instructions.

B. Add aggregate for areas where thickness will exceed 1/2 inch. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.

C. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum bi-products, or other compounds detrimental to underlayment material bond to substrate.

3.02 PREPARATION

A. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.

B. Vacuum clean surfaces.

C. Prime substrate in accordance with manufacturer's instructions. Allow to dry.

D. Close floor openings.

3.03 APPLICATION

A. Install underlayment in accordance with manufacturer's instructions.

B. Pump or pour material onto substrate. Do not retemper or add water.
1. Pump, move, and screed while the material is still highly flowable.
2. Be careful not to create cold joints.
3. Wear spiked shoes while working in the wet material to avoid leaving marks.

C. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.

D. For final thickness over 1-1/2 inches, place underlayment in layers. Allow initial layer to harden to the point where the material has lost its evaporative moisture. Immediately prime and begin application of the subsequent layer within 24 hours.

E. Place before partition installation.

F. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.

G. If a fine, feathered edge is desired, steel trowel the edge after initial set, but before it is completely hard.

3.04 CURING

A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.

B. Air cure in accordance with manufacturer's instructions.

3.05 FIELD QUALITY CONTROL

A. An independent testing agency will perform field inspection and testing, as specified in Section 01 4000.

B. Placed Material: Agency will inspect and test for conformance to specification requirements.

3.06 PROTECTION

A. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel, aluminum, and _____ items.

1.02 RELATED REQUIREMENTS

A. Section 09 9000 - Painting and Coating: Paint finish.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2008.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.

D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2010a.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2012.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2012.

G. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.

H. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; American Welding Society; 2008.

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

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

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

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A500, Grade B cold-formed structural tubing.

C. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

D. Slotted Channel Framing: ASTM A653, Grade 33.

E. Slotted Channel Fittings: ASTM A1011/A1011M.

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

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

2.02 MATERIALS - ALUMINUM

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

2.03 FABRICATION

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

B. Fabricate items with joints tightly fitted and secured.

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

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

2.04 FABRICATED ITEMS

A. Bumper Posts and Guard Rails: As detailed; prime paint finish.

B. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

C. Sill Angles for Tempered Glass Railing Assemblies: ASTM A36/A36M steel angles with anchoring devices and sizes as indicated in shop drawings for railing assembly, drilled and tapped for fastener types, sizes, and spacing indicated, prime paint finish.

D. Toilet Partition Suspension Members: Steel channel sections; prime paint finish.

E. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

2.05 FINISHES - STEEL

A. Prime paint all steel items.

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

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

D. Prime Painting: One coat.

E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.06 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

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

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

3.03 INSTALLATION

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

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

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

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

3.04 TOLERANCES

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

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

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

END OF SECTION

SECTION 05 7000
DECORATIVE METAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stainlerss Steel trim, closures and paneling.

1.02 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.

1.03 REFERENCE STANDARDS

A. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes; 2010.

B. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength; 2010.

C. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing; 2011.

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's product data including description of materials, components, finishes, fabrication details, glass, anchors, and accessories.

C. Shop Drawings: Indicate railing system elevations and sections, details of profile, dimensions, sizes, connection attachments, anchorage, size and type of fasteners, and accessories. Indicate anchor and joint locations, brazed connections, transitions, and terminations.

D. Samples: Submit one (1) of each item below for each type and condition shown.
   1. Cladding: 6 inch by 6 inch sample of each type of cladding, illustrating finish.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Installation by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in factory provided protective coverings and packaging.

B. Protect materials against damage during transit, delivery, storage, and installation at site.

C. Inspect materials upon delivery for damage. Repair damage to be indistinguishable from undamaged areas; if damage cannot be repaired to be indistinguishable from undamaged parts and finishes, replace damaged items.

D. Prior to installation, store materials and components under cover, in a dry location.

PART 2 PRODUCTS

2.01 MATERIALS

A. Stainless Steel Components:
   1. ASTM A666, Type 316.
   2. Stainless Steel Tubing: ASTM A554, Type 204, 16 gage (0.0625 inch), 1-1/2 inch diameter.
   3. Stainless Steel Bars, Shapes and Moldings: ASTM A276, Type 304.
   4. Stainless Steel Finish: No. 4 Satin.

2.02 ACCESSORIES

A. Anchors and Fasteners: Provide anchors and other materials as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1. For anchorage to concrete, provide inserts to be cast into concrete for bolting anchors.

2. For anchorage to masonry, provide brackets to be embedded in masonry for bolting anchors.
3. For anchorage to stud walls, provide backing plates for bolting anchors.
4. Exposed Fasteners: No exposed bolts or screws.

B. Carbon Steel Bolts and Nuts: ASTM A307.

2.03 FABRICATION

A. A. Fabricate items with joints neatly fitted and properly secured.

B. Grind exposed welds continuous, smooth and flush with adjacent finished surfaces, and ease exposed edges to approximate 1/32" uniform radius.

C. Exposed Mechanical Fastenings: Flush countersunk fasteners unobtrusively located, consistent with design of structure.

D. Fit and shop assemble in largest practical sections for delivery.

E. Make exposed joints flush butt type, hairline joints where mechanically fastened.

F. F. Supply components required for proper anchorage of metal fabrications; fabricate anchorage and related components of same material and finish as metal fabrication.

G. G. Stainless Steel Grating: Comply with requirements of NAAMM "Heavy Duty Metal Bar Grating Manual"; work to dimensions accepted on shop drawings, using proven details of fabrication and support.
1. Type: Welded with a plain traffic surface.
2. Loads: Design for minimum 100 psf

H. H. Stainless Steel Trim, Closures, and Paneling: Provide configurations indicated and as required for applications indicated; sheet materials as indicated, not less than 24 gage at trim, 20 gage at closures, and 16 gage at paneling where not otherwise indicated.

I. Pre-Engineered Ceiling Hung Utility Support Systems: Provide manufactured pre-engineered support system consisting of minimum 12 gage ”C” channel supports (Unistrut 5001) with anchors, attachments, and accessories as required for complete installation.
1. Manufacturers:
a. Unistrut Inc./Unistrut.
b. Grinnell Corp./PowerStrut.
c. Thomas & Betts, Inc./Superstrut.
d. Substitutions: Refer to Section 01630.
2. Finish: Manufacturer’s standard prime paint finish for channel supports; galvanized or similar plated anchors and fasteners for at job finish painting.

J. Finishes: Prime paint and finish paint unless otherwise noted; comply with requirements of Section 09900 - Paints and Coatings for preparation and priming.
1. Thoroughly clean surfaces of rust, scale, grease and foreign matter prior to applying finish. Do not shop prime surfaces in contact with concrete or requiring field welding; shop prime in one coat.

K.

PART 3 EXECUTION

3.01 EXAMINATION

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

B. Verify field dimensions of locations and areas to receive work.

C. Notify Architect immediately of conditions that would prevent satisfactory installation.

D. Do not proceed with work until detrimental conditions have been corrected.

E. Furnish components to be installed in other work to installer of that other work, including but not limited to blocking, sleeves, inserts, anchor bolts, embedded plates and supports for attachment of anchors.

3.02 INSTALLATION

A. Comply with manufacturer's drawings and written instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects and with tight joints, except where necessary for expansion.

C. Anchor securely to structure.

D. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

E. Isolate dissimilar materials with bituminous coating, bushings, grommets or washers to prevent electrolytic corrosion.

3.03 TOLERANCES

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

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

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

3.04 CLEANING

A. Remove protective film from exposed metal surfaces.

B. Metal: Clean exposed metal finishes with potable water and mild detergent, in accordance with manufacturer recommendations; do not use abrasive materials or chemicals, detergents or other substances that may damage the material or finish.

3.05 PROTECTION

A. Protect installed components and finishes from damage after installation.

B. Repair damage to exposed finishes to be indistinguishable from undamaged areas.

1. If damage to finishes and components cannot be repaired to be indistinguishable from undamaged finishes and components, replace damaged items.

END OF SECTION

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.
B. Rough opening framing for doors, windows, and roof openings.
C. Subflooring.
D. Roof-mounted curbs.
E. Preservative treated wood materials.
F. Fire retardant treated wood materials.
G. Miscellaneous framing and sheathing.
H. Communications and electrical room mounting boards.
I. Concealed wood blocking, nailers, and supports.
J. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

A. Section 03 5400 - Cast Underlayment.
B. Section 05 5000 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
C. Section 06 1500 - Wood Decking.
D. Section 06 1733 - Wood I-Joists.
E. Section 06 1800 - Glued-Laminated Construction.
F. Section 06 2000 - Finish Carpentry
G. Section 06 4000 - Architectural woodwork.
H. Section 09 2116 - Gypsum Board Assemblies: Gypsum-based sheathing.
I. Section 09 6400 - Underlayment for wood flooring.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2011be1.
C. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2011.
D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.
E. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2010.
F. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.
G. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association; 2011.

1.04 SUBMITTALS

A. Submit wood treatment certifications and instructions for proper use of each type of treated material.
B. See Section 01 3000 - Administrative Requirements, for submittal procedures.
C. Samples: For rough carpentry members that will be exposed to view, submit two samples, ____x____ inch in size illustrating wood grain, color, and general appearance.

D. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

C. Lumber salvaged from deconstruction or demolition of existing buildings or structures is permitted in lieu of sustainably harvested lumber provided it is clean, denailed, and free of paint and finish materials, and other contamination; identify source; see Section 01 6000 for requirements for reused products.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 EXPOSED BOARDS, RECLAIMED

A. WOOD (RECLAIMED)

B. WD1: ENGINEERED SANDED BARN SIDING (PLANK)
   OAK
   COLOR: BROWN
   2' - 8' LENGTH, RANDOM WIDTH
   THICKNESS: TBD (VENEER OVER PLY SUBSTRATE)
   PROVIDE 10% MIN WASTE FACTOR
   $15/BOARD FOOT BUDGET, LIGHTLY SANDED, PRIMED & SEALED
   CARMEN URSINO
   951.695.1003

C. WD2: VINTAGE TIMBERWORKS
   ENGINEERED SANDED BARN SIDING (FLOORING)
   OAK
   COLOR: BROWN
   2' - 8' LENGTH, RANDOM WIDTH. $15/ BOARD FOOT BUDGET, TONGUE & GROOVE, BACK RELIEF, LIGHTLY SANDED, PRIMED & SEALED. PROVIDE 10% MIN WASTE FACTOR
   3/8" / 1/8" VENEER OVER PLY SUBSTRATE
   Location: "ELLIPSE" AT 1ST & 2ND FLOOR

D. WD3: VINTAGE TIMBERWORKS
SANDED BARN SIDING, SEMI SURFACED PLANK
OAK
BROWN
THICKNESS: 3/4"
$7.75/SQUARE FOOT BUDGET, PROVIDE 10% MIN WASTE FACTOR
@ LOBBY ACCENT WALL, BREAK ROOM, OPEN OFFICE COLUMN WRAPS, BOARD ROOM WALL/SOFFIT
CARMEN URSINO
951.695.1003

2.04 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
3. Anchors: Toggle bolt type for anchorage to hollow masonry.

B. Sill Flashing: As specified in Section 07 6200.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
1. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
b. Treat rough carpentry items as indicated .
c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:
1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
b. Treat lumber in contact with roofing, flashing, or waterproofing.
c. Treat lumber in contact with masonry or concrete.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

B. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.

3.05 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.06 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01 7419.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 2000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Provide interior wood trim.

C. Provide Janitor closet mop holder.

D. Provide wood fabrications.

E. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 06 4100 - Architectural Wood Casework: Shop fabricated custom cabinet work.

C. Section 06 4216 - Wood-Veneer Paneling: Shop fabricated custom paneling.

1.03 REFERENCE STANDARDS

A. AWI (QCP) - Quality Certification Program, www.awiqcp.org; current edition at www.awiqcp.org.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

C. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.9).

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

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on fire retardant treatment materials and application instructions.

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.
   2. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.
   3. Include certification program label.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification: Provide AWI Quality Certification Program inspection report and quality certification of completed work.
   1. Provide labels or certificates indicating that the work complies with requirements of AWS Grade or Grades specified.
   2. This project has been registered as AWI/QCP project number _____.
   3. Prior to delivery to the site provide shop drawings with certification labels.
   4. Provide labels on each product when required by certification program.
   5. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.
   6. Arrange and pay for inspections required for certification.
   7. Replace, repair, or rework all work for which certification is refused.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Grades as indicated.

B. Quality: Quality of all finished woodwork within the following areas to receive AWS Premium Grade level:
   1. Entrance Lobby
   2. Executive Boardroom
   3. Lobby Stairs
   4. Lobby Reception Desk
   5. Column Wraps
   6. Premium Wood Flooring

C. Opaque Painted Interior Wood Trim:
   1. Quality: AWS/Custom Grade.
   2. Wood: Refer to Finish Schedule

D. Stained Interior Wood Trim:
   1. Quality: AWS/Premium Grade.
   2. Wood: Refer to Finish Schedule.

E. Janitor Closet Mop Holders: Spring loaded anti-slip mop holders with rubber cam, with three mop holders on stainless steel.
   1. Bobrick/Model B-223
   2. Bradley/Model 9953
   3. American Specialties/Model 0796A

F. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

2.02 WOOD-BASED COMPONENTS

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

B. **EXPOSED BOARDS, RECLAIMED**
   1. WD1: ENGINEERED SANDED BARN SIDING (PLANK)
      OAK
      COLOR: BROWN
      2' - 8' LENGTH, RANDOM WIDTH
      THICKNESS: TBD (VENEER OVER PLY SUBSTRATE)
      PROVIDE 10% MIN WASTE FACTOR
      $15/BOARD FOOT BUDGET, LIGHTLY SANDED, PRIMED & SEALED
      CARMEN URSINO
      951.695.1003
   2. WD2: VINTAGE TIMBERWORKS
      ENGINEERED SANDED BARN SIDING (FLOORING)
      OAK
      COLOR: BROWN
      2' - 8' LENGTH, RANDOM WIDTH. $15/ BOARD FOOT BUDGET, TONGUE & GROOVE, BACK RELIEF, LIGHTLY SANDED, PRIMED & SEALED. PROVIDE 10% MIN WASTE FACTOR
      3/8" / 1/8" VENEER OVER PLY SUBSTRATE
      Location: "ELLIPSE" AT 1ST & 2ND FLOOR
   3. WD3: VINTAGE TIMBERWORKS
      SANDED BARN SIDING, SEMI SURFACED PLANK

OAK
BROWN
THICKNESS: 3/4"
$7.75/SQUARE FOOT BUDGET, PROVIDE 10% MIN WASTE FACTOR
@ LOBBY ACCENT WALL, BREAK ROOM, OPEN OFFICE COLUMN WRAPS, BOARD ROOM WALL/SOFFIT
CARMEN URSINO
951.695.1003

C.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible; do not delay job progress, allow for trimming and fitting.

C. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

D. Inspect each piece of finish carpentry and discard damaged and defective pieces.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

D. Secure work to blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.

E. Sand wood smooth and set exposed nails and screws.

F. Apply wood filler in exposed nail and screw indentations and leave readt to receive site-applied finishes.

G. Seal concealed and semi-concealed surfaces; brush apply only, using primer consistant with finish coats specified under Section 09 9000 Paints and Coatings.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

SECTION 06 4100
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Cabinet hardware.

C. Provide transparent/stained finished wood and plastic laminate cabinetwork.

D. Provide plastic laminate and solid polymer countertops.

E. Provide wood wallcovering.

F. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

C. Section 06 2000 - Finish Carpentry

D. Section 09 7250 - Wall coverings

E. Section 08 8000 - Glazing: Glass for casework.

F. Section 09 9000 - Painting and Coating: Site finishing of cabinet exterior.

1.03 REFERENCE STANDARDS

A. AWI (QCP) - Quality Certification Program, www.awiqcp.org; current edition at www.awiqcp.org.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

C. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.9).

D. PS 1 - Structural Plywood; 2009.

1.04 ADMINISTRATIVE REQUIREMENTS

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

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.
   2. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.
   3. Include certification program label.

C. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish and including the following:
   1. Plastic laminates.
   2. Wood veneer.
   3. Door and drawer front.
   4. Exposed casework hardware.
   5. Each type of countertop indicating exposed edges, front apron and splash.
   6. Wood wallcovering

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification: Provide AWI Quality Certification Program inspection report and quality certification of completed work.
1. Provide labels or certificates indicating that the work complies with requirements of AWS Grade or Grades specified.
2. This project has been registered as AWI/QCP project number _____.
3. Prior to delivery to the site provide shop drawings with certification labels.
4. Provide labels on each product when required by certification program.
5. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.
6. Arrange and pay for inspections required for certification.
7. Replace, repair, or rework all work for which certification is refused.

1.07 MOCK-UP

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

B. Locate where directed.

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

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

B. Do not deliver architectural woodwork until site conditions are adequate to receive work; protect items from weather while in transit.
1. Allow architectural woodwork shop finish to completely dry prior to delivery to site; allow materials to off-gas volatile organic compound (VOC) emissions off site.

C. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and maximum relative humidity of 25% to 55%.

D. Do not begin installation of architectural woodwork until space is fully enclosed and mechanical systems are fully operational.
1. Maintain interior installation areas at 70 degrees F and 50% to 55% relative humidity.

E. Immediately remove from site materials with visible mold and materials with mildew.

PART 2 PRODUCTS

2.01 GENERAL

A. Quality: Quality of all finished woodwork within the following areas to receive AWS/Premium Grade level:
1. Executive Boardroom
2. Entrance Lobby
3. Lobby Stairs (by Shell)
4. Lobby Reception Desk

B. This quality level overrides the quality levels established through other criteria.

2.02 MATERIALS

A. Transparent/Stained Finished Wood Casework:
1. Quality: AWS/Premium Grade, Type A frameless, Style 1 - Overlay, flush overlay type.
a. Special: Provide each single length section of casework in largest such sections as access and openings allow, formerly WI Type II.
1) Multiple self-supporting units fastened together to form larger unit allowed only where access and openings do not allow single length sections.

2) Veneers: As indicated on Finish Schedule and as approved by Architect; a uniform appearance shall be required.
   (a) Exposed Exterior and Exposed Interior Veneer Thickness: Minimum 0.036" thick.
   (b) Semi-Exposed Surfaces: White Birch stained to match exterior veneers; melamine interiors is not acceptable.
3) Particleboard Core: Provide Medite Corp. (Sierrapine)Medite II or Rodman Industries/Resincore I formaldehyde-free medium density fiberboard (MDF) or particleboard made from recycled wood products.
4) Exposed Edges: Wood matching veneer.

B. Plastic Laminate Finished Casework and Countertops:
1. Quality: AWS/Custom Grade, Type II, Style A, flush overlay type.
   a. Special: Provide each single length section of casework in largest such sections as access and openings allow, formerly WI Type II.
      1) Multiple self-supporting units fastened together to form larger unit allowed only where access and openings do not allow single length sections.
2. Plastic Laminates:
   a. Types: NEMA LD-3.1 high pressure laminates.
      1) Horizontal Surfaces: General Purpose Type, nominal 0.050".
      2) Vertical Surfaces: Vertical Surface Type, nominal 0.032".
      3) Unexposed Surfaces: Balanced with 0.030" melamine backing sheet.
   b. Manufacturers:
      1) Formica Corp.
      2) Micarta Div., Westinghouse Electric Co.
      3) Nevamar Corp.
      4) Pioneer Plastics Corp./Pionite.
      5) Wilsonart, Ralph Wilson Plastics.
      6) Abet Laminati, Co.
      7) Substitutions: Refer to Section 01630.
   c. Colors: As indicated on Finish Schedule.
3. Particleboard Core: Provide Medite Corp. (Sierrapine)Medite II or Rodman Industries/Resincore I formaldehyde-free medium density fiberboard (MDF) or particleboard made from recycled wood products.

C. Transparent/Stained Finished Wood Paneling:
1. Quality: AWS/Premium Grade, type as indicated.
2. Veneer: As indicated on Finish Schedule and as approved by Architect; a uniform appearance shall be required.
   a. Thickness: Minimum 0.036" thick.
3. Paneling Wood Core: Medite Corp./Medite FR fire rated medium density fiberboard (MDF); type passing ASTM E84, with maximum flame spread of 200 and maximum smoke developed of 450.
   a. Fire Retardant Treatment: Type which does not bleed through and which does not adversely affect finishes.
4. Exposed Edges: Hardwood matching veneer.

D. Solid Polymer Countertop Systems: Types as indicated on Finish Schedule; manufacturer's standard polymer system with color throughout thickness; provide manufacturer recommended joint adhesive; exposed surfaces finished to match top.
1. Quality: Comparable to AWS/Premium Grade.
2. Type: Not less than 1/2" thick sheet designed to accept bowls as indicated and as specified in Division 15.
3. Color: As indicated on Finish Schedule.
4. Manufacturers:
   a. Caesarstone
   b. LG Viatera

c. Substitutions: Refer to Section 01630.

E. Casework Hardware: Provide casework hardware items as indicated and as required for complete installation as indicated; provide types as listed in Architectural Woodwork Standards for Grade 1, but no less than following types.
1. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, satin chrome finish, for nominal 1 inch spacing adjustments.
2. Cabinet Pulls: Mesa Cabinet Pull, 3.5" center-to-center #HC423, satin clear finish.
3. Provide recessed self pulls at Kinon finish locations, refer to elevations.
4. Grommets: Stainless steel per plans and elevations

F. Drawer Slides:
1. Type: Full extension.
2. Static Load Capacity: Heavy Duty grade.
3. Mounting: Side mounted.
4. Stops: Integral type.
5. Features: Provide self closing/stay closed type.
6. Manufacturers:
a. Accuride International, Inc: www.accuride.com.
b. Grass America Inc: www.grassusa.com.
c. Knape & Vogt Manufacturing Company: www.kv.com.
d. Substitutions: See Section 01600 - Product Requirements.

G. Hinges: European style concealed self-closing type, steel with satin finish with spring closer.
1. Manufacturers:
a. Grass America Inc: www.grassusa.com.
b. Hardware Resources: www.hardwareresources.com.
c. Julius Blum, Inc: www.blum.com.
d. Substitutions: See Section 01600 - Product Requirements.

H. Cabinet Locks: Pin and tumbler slide bolt lock, two keys each at all lower cabinets.
1. Manufacturers:
a. MaSchlage Lock Co./46-002 Cabinet Locks.nufacturers:
b. Best Access Systems/5L Series.
c. CompX International/Timberline Locks.
d. Substitutions: Refer to Section 01630.

I. Anchors, Nails and Screws: Select material, type, size and finish required by each substrate for secure anchorage; provide toothed steel or lead expansion bolt screws for drilled-in-place anchors.

J. Wood Filler: Color to match wood being filled.

2.03 CABINETS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI Architectural Woodwork Standards for Premium Grade.

2.04 WOOD-BASED COMPONENTS

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

2.05 LAMINATE MATERIALS

A. Manufacturers:
1. Formica Corporation; Product ____: www.formica.com.
2. Panolam Industries International, Inc\Nevamar; Product ____: www.nevamar.com.
3. Wilsonart International, Inc; Product ____: www.wilsonart.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ACCESSORIES

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

B. Vinyl Countertop Edge: PVC anchor type tee-molding edging in width to match thickness of countertop, color as scheduled, used at locations as indicated.

C. Glass: Type A as specified in Section 08 8000.

D. Fasteners: Size and type to suit application.

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

2.07 HARDWARE

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

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

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

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

E. Catches: Touch type.

F. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Heavy Duty grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.
   6. Products:
      a. Accuride International, Inc; Product ____: www.accuride.com.
      b. Grass America Inc; Product ____: www.grassusa.com.
      c. Knape & Vogt Manufacturing Company; Product _____: www.knapeandvogt.com.
      d. _____; Product ____.
      e. Substitutions: See Section 01 6000 - Product Requirements.

G. Hinges: European style concealed self-closing type, BHMA No. _____, steel with satin finish.
   1. Products:
      a. Grass America Inc; Product ____: www.grassusa.com.
      b. Hardware Resources; Product _____: www.hardwareresources.com.
      c. Julius Blum, Inc; Product _____: www.blum.com.
      d. _____; Product ____.
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.08 SITE FINISHING MATERIALS

A. Stain, Shellac, Varnish and Finishing Materials: As specified in Section 09 9000.

2.09 FABRICATION

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

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

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

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

E. Matching Wood Grain: Comply with requirements of quality standard for specified Grade and as follows:
   1. Provide center matched panels at each elevation.
   2. Provide sequence matching across each elevation.
   3. Carry figure of cabinet fronts to toe kicks.

F. Mechanically fasten back splash to countertops as recommended by laminate manufacturer at 16 inches on center.

G. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

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

3.02 INSTALLATION

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

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.

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

E. Secure cabinets to floor using appropriate angles and anchorages.

F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

G. Site glaze glass materials using the Interior Dry method specified in Section 08 8000.

3.03 ADJUSTING

A. Adjust installed work.

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

3.04 CLEANING

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

END OF SECTION

SECTION 07 2100
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation and integral vapor retarder at cavity wall construction, perimeter foundation wall, and exterior wall behind gypsum board wall finish.

B. Batt insulation and vapor retarder in exterior wall, ceiling, and roof construction.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 1000 - Rough Carpentry: Supporting construction for batt insulation.

C. Section 07 2500 - Weather Barriers: Separate air barrier and vapor retarder materials.

D. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.

E. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

1.03 REFERENCE STANDARDS

A. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2010.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation; 2012.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 APPLICATIONS

A. Insulation on Inside of Concrete and Masonry Exterior Walls: Batt Insulation.

B. Insulation in Metal Framed Walls: Batt insulation with separate vapor retarder.

C. Insulation Above Lay-In Acoustical Ceilings: Batt insulation with no vapor retarder.

2.03 FIBER BOARD INSULATION MATERIALS

A. Where fiber board insulation is indicated, either glass fiber or mineral fiber board insulation may be used, at Contractor's option.

B. Glass Fiber Board Insulation: Rigid glass fiber, ASTM C612.
   1. Facing: None, unfaced.
   2. Flame Spread Index: 25 or less, when tested with facing, if any, in accordance with ASTM E84 .
   3. Smoke Developed Index: 50 or less, when tested with facing, if any, in accordance with ASTM E84.

C. Mineral Fiber Board Insulation: Rigid mineral fiber, ASTM C612; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
   1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.

2.04 BATT INSULATION MATERIALS

A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.

B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Formaldehyde Content: Zero.
   5. Thermal Resistance: R of 8.
   6. Facing: Unfaced.
   7. Facing: Aluminum foil, one side.
   8. Manufacturers:
      a. CertainTeed Corporation: www.certainteed.com.
      b. Johns Manville Corporation: www.jm.com.
      c. Owens Corning Corp: www.owenscorning.com.

C. Mineral Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
   1. Where indicated, provide foil facing on one side; with flame spread index of 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
   3. Thermal Resistance: R of 8.
   4. Manufacturers:
      a. Thermafiber, Inc: www.thermafiber.com.

2.05 ACCESSORIES

A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.

B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

C. Wire Mesh: Galvanized steel, hexagonal wire mesh.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Install boards horizontally on foundation perimeter.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION AT EXTERIOR WALLS

A. Install boards horizontally on walls.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BOARD INSTALLATION AT CAVITY WALLS

A. Install boards to fit snugly between wall ties.

B. Install boards horizontally on walls.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.05 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall and ceiling spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

F. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap and seal sheet retarder joints over member face.

G. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over member face.

H. Tape seal tears or cuts in vapor retarder.

I. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

3.06 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 8400
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2012.

B. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; 2011a.

C. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

D. FM 4991 - Approval of Firestop Contractors; Factory Mutual Research Corporation; 2001.

E. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.

F. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

G. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Certificate from authority having jurisdiction indicating approval of materials used.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.

B. A. Regulatory Requirements: Comply with California Building Code, Chapter 7 requirements for firestopping, including both F Ratings and T Ratings as applicable.

1.06 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 FIRESTOPPING - GENERAL REQUIREMENTS

A. Manufacturers:
   1. A/D Fire Protection Systems Inc: www.adfire.com.
   2. 3M Fire Protection Products: www.3m.com/firestop.
   3. Hilti, Inc: www.us.hilti.com.
   4. Nelson FireStop Products: www.nelsonfirestop.com.

5. Specified Technologies, Inc: www.stifirestop.com.
6. Substitutions: See Section 01 6000 - Product Requirements.

B. Firestopping: Any material meeting requirements.

C. Materials: Use any material meeting requirements.

D. Firestopping Materials with Volatile Content: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

E. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

F. Fire Ratings: See Drawings for required systems and ratings.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use any system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of the floor assembly.
1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.

B. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.

C. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.

2.03 FIRESTOPPING FOR FLOOR-TO-FLOOR, WALL-TO-FLOOR, AND WALL-TO-WALL JOINTS

A. Gypsum Board Walls:
1. Wall to Wall Joints:
   a. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
   b. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
2. Top of Wall Joints at Underside of Steel Beam and Concrete Over Metal Deck Floor with Sprayed On Fireproofing:
   a. 1 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
3. Top of Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
   a. 2 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   d. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
4. Top of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:
   a. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   b. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
5. Top of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Not Cut to Fit:
   a. 2 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   d. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

2.04 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

A. Blank Openings:
   1. In Floors:
      a. 2 Hour Construction: UL System C-AJ-0090; Hilti FS-ONE Intumescent Firestop Sealant.

B. Penetrations Through Floors By:
   1. Multiple Penetrations in Large Openings:
      a. 2 Hour Construction: UL System F-A-8012; Hilti CP 604 Self-Leveling Firestop Sealant.
   2. Uninsulated Metallic Pipe, Conduit, and Tubing:
      a. 2 Hour Construction: UL System F-A-1016; Hilti CP 680-P/M Cast-In Device.
   3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
      a. 2 Hour Construction: UL System F-A-2015; Hilti CP 643N Firestop Collar.
      b. 2 Hour Construction: UL System F-A-2053; Hilti CP 680-P Cast-In Device.
      c. 2 Hour Construction: UL System F-A-2058; Hilti FS-ONE Intumescent Firestop Sealant.
   4. Electrical Cables Not In Conduit:
      a. 2 Hour Construction: UL System F-A-3033; Hilti CP 680-P/M Cast-In Device.
   5. Insulated Pipes:
      a. 2 Hour Construction: UL System F-A-5015; Hilti CP 680-P/M Cast-In Device.
      b. 2 Hour Construction: UL System F-A-5017; Hilti CP 680-P/M Cast-In Device.

2.05 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

A. Blank Openings:
   1. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
   2. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.

B. Penetrations By:
   1. Multiple Penetrations in Large Openings:
      a. 2 Hour Construction: UL System W-L-1389; Hilti FS-ONE Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-1408; Hilti FS-ONE Intumescent Firestop Sealant.
      c. 2 Hour Construction: UL System W-L-8071; Hilti FS-ONE Intumescent Firestop Sealant.
      d. 2 Hour Construction: UL System W-L-8079; Hilti FS-ONE Intumescent Firestop Sealant.
      e. 2 Hour Construction: UL System W-L-8087; Hilti FS 657 Fire Block.
      f. 1 Hour Construction: UL System W-L-1389; Hilti FS-ONE Intumescent Firestop Sealant.
      g. 1 Hour Construction: UL System W-L-1408; Hilti FS-ONE Intumescent Firestop Sealant.
      h. 1 Hour Construction: UL System W-L-8071; Hilti FS-ONE Intumescent Firestop Sealant.
      i. 1 Hour Construction: UL System W-L-8079; Hilti FS-ONE Intumescent Firestop Sealant.
      j. 1 Hour Construction: UL System W-L-8087; Hilti FS 657 Fire Block.
   2. Uninsulated Metallic Pipe, Conduit, and Tubing:
      a. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-1164; Hilti FS-ONE Intumescent Firestop Sealant.
      c. 2 Hour Construction: UL System W-L-1206; Hilti FS-ONE Intumescent Firestop Sealant.

d. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE Intumescent Firestop Sealant.
e. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE Intumescent Firestop Sealant.
f. 1 Hour Construction: UL System W-L-1206; Hilti FS-ONE Intumescent Firestop Sealant.

3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
   a. 2 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
   b. 2 Hour Construction: UL System W-L-2411; Hilti CP 648-E Firestop Wrap Strip.
   c. 2 Hour Construction: UL System W-L-2128; Hilti FS-ONE Intumescent Firestop Sealant.
   d. 1 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
   e. 1 Hour Construction: UL System W-L-2411; Hilti CP 648-E Firestop Wrap Strip.
   f. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE Intumescent Firestop Sealant.
4. Electrical Cables Not In Conduit:
   a. 2 Hour Construction: UL System W-L-3065; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
   b. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
   c. 1 Hour Construction: UL System W-L-3065; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
   d. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
5. Cable Trays with Electrical Cables:
   a. 1 Hour Construction: UL System W-L-4011; Hilti FS 657 Fire Block.
   b. 1 Hour Construction: UL System W-L-4060; Hilti FS-ONE Intumescent Firestop Sealant.
6. Insulated Pipes:
   a. 2 Hour Construction: UL System W-L-5028; Hilti FS-ONE Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System W-L-5096; Hilti FS-ONE Intumescent Firestop Sealant.
   d. 2 Hour Construction: UL System W-L-5257; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, or CP 601S Elastomeric Firestop Sealant.
   e. 2 Hour Construction: UL System W-L-5244; Hilti CP 648-E Firestop Wrap Strip.
   f. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE Intumescent Firestop Sealant.
   g. 1 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
   h. 1 Hour Construction: UL System W-L-5096; Hilti FS-ONE Intumescent Firestop Sealant.
   i. 1 Hour Construction: UL System W-L-5096; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, or CP 601S Elastomeric Firestop Sealant.
7. HVAC Ducts, Insulated:
   a. 2 Hour Construction: UL System W-L-7156; Hilti FS-ONE Intumescent Firestop Sealant.
   b. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE Intumescent Firestop Sealant.

2.06 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.

1. Fire Ratings: Use any system listed by UL or tested in accordance with ASTM E814 that has F Rating equal to fire rating of penetrated assembly and T Rating Equal to F Rating and that meets all other specified requirements.
2. Fire Ratings: See Drawings for required systems and ratings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

C. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authority having jurisdiction.

C. Install labeling required by code.

3.04 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 9005
JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 07 8400 - Firestopping: Firestopping sealants.

C. Section 08 8000 - Glazing: Glazing sealants and accessories.

D. Section 09 2116 - Gypsum Board Assemblies: Acoustic sealant.

E. Section 09 3000 - Tiling: Sealant used as tile grout.

1.03 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants; 2010.

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2011.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2011a.

E. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2005 (Reapproved 2010).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Samples: Submit two samples, 4x4 inch in size illustrating sealant colors for selection.

C. Manufacturer's Installation Instructions: Indicate special procedures.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years experience.

1.06 MOCK-UP

A. Provide mock-up of sealant joints in conjunction with window under provisions of Section 01 4000.

B. Construct mock-up with specified sealant types and with other components noted.

C. Locate where directed.

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

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gunnable and Pourable Sealants:
   1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   2. Bostik Inc: www.bostik-us.com.
   3. Dow Corning Corporation: www.dowcorning.com.
   4. Hilti, Inc: www.us.hilti.com.
   5. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
   6. Pecora Corporation: www.pecora.com.

7. Red Devil: www.reddevil.com.
8. Tremco Global Sealants: www.tremcosealants.com.
9. Sherwin-Williams Company: www.sherwin-williams.com.
10. W.R. Meadows, Inc: www.wrmeadows.com.

B. Preformed Compressible Foam Sealers:

2.02 SEALANTS

A. Sealants and Primers - General: Provide products having volatile organic compound (VOC) content as specified in Section 01 6116.

B. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
   1. Color: To be selected by Architect from manufacturer's standard range.
   2. Applications: Use for:
      a. Interior wall and ceiling control joints.
      b. Joints between door and window frames and wall surfaces.
      c. Other interior joints for which no other type of sealant is indicated.
   3. Products:
      a. Bostik Inc; ____: www.bostik-us.com.
      b. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com.
      c. BASF Construction Chemicals-Building Systems; ____: www.buildingsystems.basf.com.
      d. Sherwin-Williams Company; White Lightning 3006 Siliconized Acrylic Latex Caulk: www.sherwin-williams.com.
      e. Tremco Global Sealants; Ultrem 1500: www.tremcosealants.com.
      f. Substitutions: See Section 01 6000 - Product Requirements.

C. Elastomeric Sealants:
   1. Multi-Component Polyurethane Sealant: ASTM C920, Type M, Grade P, Class 25, self-leveling; minimum 25% expansion and compaction capability.
      a. Provide at traffic bearing (interior floor) locations.
      b. Manufacturers:
         1) Pecora Corp./NR-200 Urexpan.
         2) Tremco/Vulkem 245.
         3) Sonneborn Division of ChemRex /SL 2
         4) Substitutions: Refer to Section 01630.
   2. Mildew-Resistant Silicone Rubber Sealant: ASTM C920, Type S, Grade NS, Class 25, compounded with fungicide, specifically for mildew resistance and recommended for interior joints in wet areas.
      a. Provide at interior joints in wet areas.
      b. Manufacturers:
         1) General Electric Co./SCS 1702 Sanitary Sealant.
         2) Dow Corning Corp./786 Bathtub Caulk.
         3) Pecora Corp./898 Sanitary Mildew Resistant Sealant.
         4) Tremco/Tremsil 200.
         5) Substitutions: Refer to Section 01630.

D. Type ___ - Acoustical Sealant for Concealed Locations:
   1. Composition: Acrylic latex emulsion sealant.
   2. Applications: Use for concealed locations only:
      a. Sealant bead between top stud runner and structure and between bottom stud track and floor.
   3. Products:
      a. Bostik Inc; ____: www.bostik-us.com.
      b. Pecora Corporation; AIS-919 Acoustical and Insulation Latex Sealant: www.pecora.com.

c. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant: www.pecora.com.
d. BASF Construction Chemicals-Building Systems; ____: www.buildingsystems.basf.com.
e. Tremco Global Sealants; ____: www.tremcosealants.com.

E. Type ___ - Concrete Floor Joint Filler: Self-leveling, pourable, semi-rigid sealant intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
1. Composition: Polyurea or epoxy, single or multi-part,100 percent solids by weight.
2. Hardness: 75 to 80 after 7 days, when tested in accordance with ASTM D2240 Shore A.
3. Joint Width: 1/8 to 1/4 inch.
4. Applications: Use for:
a. Control joints in concrete slabs and floors not filled with filler placed in form.
b. joints in concrete slabs and floors.
5. Products:
a. ARDEX Americas; ARDISEAL RAPID PLUS: www.ardex.com.
b. W.R. Meadows, Inc; Rezi-Weld Flex: www.wrmeadows.com.
c. Substitutions: See Section 01 6000 - Product Requirements.

F. Type ___ - Interior Floor Joint Sealant: Polyurethane, self-leveling; ASTM C920, Grade P, Class 25, Uses T, M and A; single component.
1. Approved by manufacturer for wide joints up to 1-1/2 inches.
2. Color: To be selected by Architect from manufacturer's standard range.
3. Products:
a. Bostik Inc; ____: www.bostik-us.com.
b. Pecora Corporation; NR-201 Self-Leveling Traffic and Loop Sealant: www.pecora.com.
c. BASF Construction Chemicals-Building Systems; ____: www.buildingsystems.basf.com.
d. Sherwin-Williams Company; Stampede 1SL Polyurethane Sealant: www.sherwin-williams.com.
e. Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width; _____ manufactured by _____.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.02 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

3.03 CLEANING

A. Clean adjacent soiled surfaces.

3.04 PROTECTION

A. Protect sealants until cured.

END OF SECTION

SECTION 07 9513
EXPANSION JOINT COVER ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Expansion joint assemblies for floor, wall, ceiling and soffit surfaces.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Custom fabricated steel expansion and control joint devices.

B. Section 07 9005 - Joint Sealers: Expansion and control joint finishing utilizing a sealant and bond breaker.

C. Section 09 2116 - Gypsum Board Assemblies: Control joints in gypsum board walls and ceilings.

1.03 REFERENCE STANDARDS

A. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2012.

B. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2012.

C. ASTM B308/B308M - Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles; 2010.

D. ASTM B455 - Standard Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes; 2010.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide joint assembly profiles, profile dimensions, anchorage devices, available colors and finish.

C. Shop Drawings: Indicate joint and splice locations, miters, layout of the work, affected adjacent construction, anchorage locations.

D. Samples: Submit two samples 12 inch long, illustrating profile, dimension, color, and finish selected.

E. Manufacturer's Installation Instructions: Indicate rough-in sizes; provide templates for cast-in or placed frames or anchors; required tolerances for item placement.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Resilient Joint Filler: 10 ft length and any special tools required for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Expansion Joint Cover Assemblies:
   1. MM Systems Corp: www.mmsystemscorp.com.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 EXPANSION JOINT COVER ASSEMBLY APPLICATIONS

A. Interior Floor Joints Subject to Thermal Movement:
   1. Products:
      a. MM Systems, PDS-800-100-2.5H w/PF-2018F-SC-8-8 S.

B. Interior Floor Joints Subject to Seismic Movement:
   1. Products:
      a. MM Systems, PDS-800-100-2.5H w/PF-2018F-SC-8-8 S.

C. Interior Fire-Rated Wall/Ceiling Joints Subject to Seismic Movement:
   1. Products:
      a. MM Systems, FX-K-8-4 Stud..

2.03 EXPANSION JOINT COVER ASSEMBLIES

A. Expansion Joint Cover Assemblies - General: Factory-fabricated and assembled; designed to completely fill joint openings, sealed to prevent passage of air, dust, water, smoke; suitable for traffic expected.
   1. Joint Dimensions and Configurations: As indicated on drawings.
   2. Joint Cover Sizes: Selected to suit joint width and configuration, based on manufacturer's published recommendations and limitations.
   3. Joint Movement Capability: If not indicated, provide minimum plus/minus 25 percent joint movement capability.
   4. Lengths: Provide covers in full lengths required; avoid splicing wherever possible.
   5. Anchors, Fasteners, and Fittings: Provided by cover manufacturer.

B. Floor Joint Covers: Coordinate with indicated floor coverings.

C. Covers In Fire Rated Assemblies: Provide cover assembly having fire rating equivalent to that of assembly into which it is installed.

2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper; or ASTM B308/B308M, 6061 allow, T6 temper.

B. Resilient Seals:
   1. For Pedestrian Traffic Applications: EPDM rubber, Neoprene, or Santoprene; no PVC; Shore A hardness of 40 to 50 Durometer.

C. Anchors and Fasteners: As recommended by cover manufacturer.

D. Ferrous Metal Anchors: Galvanized where embedded in concrete or in contact with cementitious materials.

E. Threaded Fasteners: Aluminum.

F. Backing Paint for Aluminum Components in Contact with Cementitious Materials: Asphaltic type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joint preparation and dimensions are acceptable and in accordance with manufacturer's requirements.

3.02 INSTALLATION

A. Install components and accessories in accordance with manufacturer's instructions.

B. Align work plumb and level, flush with adjacent surfaces.

C. Rigidly anchor to substrate to prevent misalignment.

3.03 PROTECTION

A. Do not permit traffic over unprotected floor joint surfaces.

B. Provide strippable coating to protect finish surface.

END OF SECTION

SECTION 08 1116
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum door frames for doors specified in other section(s).

1.02 RELATED REQUIREMENTS

A. Section 08 1416 - Flush Wood Doors: Wood doors to be installed in aluminum frames specified in this section.

B. Section 08 7100 - Door Hardware: Hardware for aluminum doors.

C. Section 08 8000 - Glazing: Glazing materials for aluminum doors and frames.

1.03 REFERENCE STANDARDS

A. AAMA 609 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum; American Architectural Manufacturers Association; 2009.

B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 2012.

C. AAMA 701/702 - Voluntary Specifications for Pile Weatherstripping and Replaceable Fenestration Weatherseals; American Architectural Manufacturers Association; 2011.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.

E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2010.

F. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2010.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2012.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2012.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's descriptive literature for each type of door; include information on fabrication methods.

C. Shop Drawings: Include elevations of each opening type.
   1. Verify dimensions by field measurements before fabrication and indicate on shop drawings.

D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Not less than 5 years of experience in manufacturing components of the types specified.

B. Installer Qualifications: Firm with documented experience in installing components of the types specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver aluminum components in manufacturer's standard protective packaging, palleted, crated, or banded together.

B. Inspect delivered components for damage and replace. Repaired components will not be accepted.

C. Store components under cover in manufacturer's packaging until installation.

1.07 FIELD CONDITIONS

A. Do not begin installation of interior aluminum components until space has been enclosed and ambient thermal conditions are being maintained at levels consistent with final project requirements.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum Door Frames for Doors of Another Material:
   1. Western Integrated.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS AND FRAMES

A. Door, Sidelight, and Transom Frames: Extruded aluminum hollow or C-shaped sections; no steel components.
   1. Frame Depth: To fit wall thicknesses indicated.
   2. Finish: Natural anodized.
   3. Weatherstripping: Replaceable pile type; at jambs and head.
   4. Sidelight/Transom Glazing: As specified in Section 08 8000 - Glazing.

B. Dimensions and Shapes: As indicated on drawings; dimensions shown are nominal.
   1. Provide clearances as follows:
      a. Hinge and Lock Stiles: 0.125 inch.
      b. Between Meeting Stiles: 0.25 inch.
      c. At Top Rail and Bottom Rail: 0.125 inch.

2.03 COMPONENTS

A. Frames: Extruded aluminum shapes, not less than 0.062 inch thick, reinforced at hinge and strike locations.
   1. Corner Brackets: Extruded aluminum, fastened with stainless steel screws.
   2. Trim: Extruded aluminum, not less than 0.062 inch thick, removable snap-in type without exposed fasteners.

2.04 MATERIALS

A. Aluminum Sheet: ASTM B209 (ASTM B209M), alloy 5005-H14, stretcher leveled.

B. Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063-T5 or alloy 6463-T5.

C. Natural Anodized Finish: Clear anodic coating; AAMA 611 AA-M12C22A31 Class II, minimum thickness 0.4 mil.

2.05 ACCESSORIES

A. Replaceable Weatherstripping: AAMA 701/702 wool pile.

B. Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.

C. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, non-magnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A123/A123M.

D. Bituminous Coating: Cold-applied asphaltic mastic, compounded for 30-mil thickness per coat.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.

3.02 PREPARATION

A. Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions.

B. Replace components with damage to exposed finishes.

C. Separate dissimilar metals to prevent electrolytic action between metals.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and approved shop drawings.

B. Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations and within specified tolerances.

C. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.

D. Hang doors and adjust hardware to achieve specified clearances and proper door operation.

E. Install door hardware as specified in Section 08 7100.

F. Comply with glazing installation requirements of Section 08 8000.

3.04 CLEANING

A. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609.

B. Do not use abrasive, caustic, or acid cleaning agents.

3.05 PROTECTION

A. Protect products of this section from damage caused by subsequent construction until substantial completion.

B. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

END OF SECTION

SECTION 08 1433
STILE AND RAIL WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood doors, stile and rail design.

B. Panels of glass.

1.02 RELATED REQUIREMENTS

A. Section 06 2000 - Finish Carpentry: Wood door frames.

B. Section 08 7100 - Door Hardware.

C. Section 08 8000 - Glazing.

D. Section 09 9000 - Painting and Coating: Site finishing doors.

1.03 REFERENCE STANDARDS

A. AWI (QCP) - Quality Certification Program, www.awiqcp.org; current edition at www.awiqcp.org.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate stile and rail core materials and construction; veneer species, type and characteristics.

C. Specimen warranty.

D. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing, louvers, and _____.

E. Samples: Submit two samples of door veneer, ____x____ inch in size illustrating wood grain, stain color, and sheen.

F. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification: Provide AWI Quality Certification Program inspection report and quality certification of completed work.
   1. Provide labels or certificates indicating that the work complies with requirements of AWS Grade or Grades specified.
   2. This project has been registered as AWI/QCP project number _____.
   3. Prior to delivery to the site provide shop drawings with certification labels.
   4. Provide labels on each product when required by certification program.
   5. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.
   6. Arrange and pay for inspections required for certification.
   7. Replace, repair, or rework all work for which certification is refused.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver, and store doors in accordance with quality standard specified.

B. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction, and _____.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Stile and Rail Wood Doors:
   1. Eggers Industries; Product ____: www.eggersindustries.com.
   2. Maiman Company; Product ____: www.maiman.com.
   3. Marshfield DoorSystems, Inc; _____: www.marshfielddoors.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS

A. Quality Level: Premium Grade, in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; solid lumber construction; mortised and tenoned joints.

2.03 DOOR FACINGS

A. Interior Doors: Wood veneer, Oak species, plain sliced, with book matched grain, for transparent finish.

B. Adhesive: Type I - waterproof.

2.04 ACCESSORIES

2.05 DOOR CONSTRUCTION

A. Astragals for Double Doors: Aluminum, ____ shaped, overlapping and recessed at face edge, specifically for double doors.

B. Vertical Exposed Edge of Stiles: Of same species as veneer facing.

C. Fit door edge trim to edge of stiles after applying veneer facing.

2.06 FACTORY FINISHING

A. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 - Finishing for Grade specified and as follows:
   1. Transparent:
      a. System - 6, Oil, Synthetic Penetrating (transparent only).
      b. Stain: As selected by Architect.
      c. Sheen: Satin.

B. Factory finish doors in accordance with approved sample.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and AWI/AWMAC Quality Standards requirements.

B. Trim door width by cutting equally on both jamb edges.

C. Trim door height by cutting bottom edges to a maximum of 3/4 inch.

D. Machine cut for hardware.

E. Coordinate installation of doors with installation of frames and hardware.

F. Coordinate installation of glazing.

3.03 TOLERANCES

A. Conform to specified quality standard for fit, clearance, and joinery tolerances.

B. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 x 84 inch surface area.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION

SECTION 08 3513.23
FOLDING FIRE DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Horizontal sliding, accordion folding fire rated doors.

1.02 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2012.

B. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2013.

D. UL 10B - Standard for Fire Tests of Door Assemblies; Underwriters Laboratories; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's technical literature; include UL listing data.

C. Shop Drawings: Indicate construction and installation details and dimensions, including layout, electrical requirements, required stacking depth, height of header above finished floor; and requirements for anchorage and support of each door.

D. Selection Samples: Submit color charts for selection of finish color.

E. Operation and Maintenance Data: Operating procedures, troubleshooting and repair methods, wiring diagrams, parts lists, and identification of authorized maintenance firms located in vicinity of project.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the project site in manufacturer's original, unopened packaging, labeled to show name, brand and type.

B. Store products in a protected dry location, in manufacturer's original packaging, in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Accordion Folding Fire Doors:
   1. Won-Door Corporation: www.wondoor.com.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACCORDION FIRE DOORS - GENERAL

A. Provide self-closing fire doors of configurations indicated on the drawings.

B. Fire Rating: 1 hour; provide products listed and labeled by UL as a partition under ASTM E119.

C. Closing Operation: Automatic motor-operated closing upon activation by fire alarm system and by low battery charge.
   1. Obstruction Detection: Contact with an obstruction causes the door to stop and pause before attempting to re-close.
   2. Allow manual closing of door at any time.

D. Opening Operation: Provide exit hardware on both sides of door.
   1. When door has been manually closed, operation of exit hardware shall open door completely.

2. When door has been automatically closed, operation of exit hardware shall open door at least 32 inches, width programmable up to full opening width; pause for 3 seconds, then automatically close.

E. Configuration: Single; straight; recessed in pocket.
1. Striker Mounting: Recessed.

2.03 COMPONENTS

A. Door Construction: Two parallel, accordion-type walls of panels independently suspended, 6 to 8 inches apart, with no pantographs or interconnections except at the lead-post.
1. Panels: 24 gage steel, V-grooved; connected by full height 24 gage steel hinges.
2. Insulation: Ceramic liner, 8 lb/cu ft.
3. Lead Posts: 24 gage cold rolled steel; internally mounted stabilizer bar; spring-loaded cap with PVC seals at top and bottom to fit into striker wall cavity; positive latching at striker wall.
4. Smoke and Draft Seals: Continuous PVC sweeps attached at top and bottom.
5. Hanging Weight: 6.5 pounds per sq ft, maximum.
6. Finish: All steel parts factory-applied enamel.

B. Suspension System: Two tracks, on 8 inch centers, attached to overhead structural support.
1. Panel Hangers: Each panel individually suspended from a steel hanger pin and a 1/4 inch ball bearing roller.
2. Lead Post Hangers: 8 wheel ball bearing trolley.

C. Motor Operator Assembly: Chain drive attached to stabilizer bar trolley with DC gear-motor, drive sprocket and clutch.

D. Power Supply: 12-volt maintenance-free DC battery, automatically maintained at capacity by continuous charger, 120 V AC.

E. Controls: Microprocessor logic board, interconnect board, motor control relays, and limit switches; provide loud audible signal if sensors indicate high or low voltage, AC or DC; drive train, limit switch, or key switch malfunction; or ROM or RAM check-sum error.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that adjacent construction is suitable for installation of door.

B. Verify that electrical utilities have been installed and are accessible.

C. Verify access to, and proper clearance for, motor operators in wall cavity.

D. Verify that door opening is plumb and header is level and of correct dimensions.

E. Notify Architect of any unacceptable conditions or varying dimensions.

F. Commencement of work indicates acceptance of substrate and opening.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions, shop drawings, and NFPA 80.

B. Install fire doors plumb and level.

C. Install wiring in accordance with applicable codes and NFPA 70.

3.03 ADJUSTING

A. Adjust door installation to provide uniform clearances and smooth, quiet, non-binding operation.

B. Test door closing functions under all anticipated conditions.

C. Verify that all operations are functional and meet the requirements of the authorities having jurisdiction.

3.04 CLEANING

A. Clean surfaces using manufacturer's recommended means and methods.

3.05 PROTECTION

A. Protect installed work from damage.

B. Repair or replace defective work prior to Substantial Completion.

END OF SECTION

SECTION 08700

HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide hardware for hollow metal and wood doors.

1. Provide cylinders for doors fabricated with hardware.

B. Related Sections:

1. Section 06400: Cabinet hardware.
2. Section 08110: Steel door silencers.
3. Section 08125: Interior aluminum frame gaskets.
4. Section 08355: Folding type fire door assemblies including hardware.
5. Review other sections for doors fabricated with hardware.

1.2 REFERENCES

A. ANSI A115 and A115W Series: Door and Frame Preparation Standards.

B. ANSI A156.1 through A156.20: Standards for various hardware items.

C. National Fire Protection Association: NFPA 80, Fire Doors and Windows.

D. California Building Code: California Code of Regulations, Title 24, Part 2.

E. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

1.3 SYSTEM DESCRIPTION

A. Products: Provide each type of hardware (hinges, pivots, locksets, latchsets, closers, trim) from single manufacturer unless otherwise indicated in Hardware Schedule.

1. Provide products by manufacturers specified and manufacturers listed in Hardware Schedule, with references to catalog numbers and designations.

B. Fire Rated Doors: Comply with requirements of Uniform Building Code Standard 7-2, NFPA 80 and applicable codes for fire rated door hardware; provide hardware bearing Underwriters Laboratory (UL) labels.

1. Doors indicated in fire rated partitions and walls shall be positive latching and self closing, with smoke gaskets.

2. Smoke Control in Pressurized Areas: Provide automatic door bottoms in addition to standard smoke gaskets for fire and smoke rated doors in pressurized areas such as stair wells; comply with applicable code requirements.

C. Access for Persons with Disabilities: Comply with California Building Code and Americans with Disabilities Act Accessibility Guidelines (ADAAG).

1.4 SUBMITTALS

A. Product Data: Submit catalog cuts for each type of hardware.

B. Shop Drawings: Indicate locations and mounting heights of hardware.

1. Supply templates to door and frame manufacturers for proper and accurate sizing and locations of cut-outs for hardware.

C. Samples: Indicate required style and finish of exposed door hardware.

1.5 QUALITY ASSURANCE

A. Supplier Qualifications: Recognized builder’s hardware supplier with minimum five year’s successful experience in scheduling and furnishing hardware.

1. Provide services of architectural hardware consultant to supervise hardware supply.

B. Pre-Installation Meeting: Convene pre-installation meeting prior to commencing work of this section. Include persons involved with installation of doors, frames, and hardware.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver hardware in manufacturer's original packages, marked for intended opening and use.

B. Pack complete with necessary screws, bolts, keys, instructions, and installation template, if necessary, for spotting mortising tools.

C. Upon delivery, furnish complete list of hardware for checking, clearly marked to correspond with marking on each package.

1. Review list for completeness and accuracy.

1.7 MAINTENANCE

A. Provide manufacturer's parts list and maintenance instructions for each type of hardware supplied and necessary wrenches and tools required for proper maintenance of hardware.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Review Drawings for hardware group locations and door types; where not fully covered in Hardware Schedule, comply with following general requirements; inform Architect where conflicts occur.

1. Provide hardware items with accessories complete to function as intended.

2.2 MANUFACTURERS

Item	Manufacturer	Acceptable Substitutes

A.	Hinges	Ives	Hager, Stanley
B.	Locks, Latches & Cylinders	Schlage	None
C.	Exit Devices	Von Duprin	None
D.	Closers	LCN	Yale Security/Norton div.
E.	Automatic Flush Bolts & Dust Proof Strikes	Hager	Ives, Trimco
F.	Coordinators	Ives	Hager, Trimco, BBW
G.	Kick Plates	Ives	Trimco, BBW, Quality
H.	Wall Stops	Ives	Trimco, BBW, Quality
I.	Astragals	National Guard	Pemko, Zero
I.	Thresholds & Gasketing	National Guard	Pemko, Zero

A. Hinges and Butts: ANSI A156.1; comply with following unless otherwise indicated.

1. Manufacturers:

a. Hager Hinge Co.
b. Ives
c. Stanley Hardware Division of Stanley Works.
d. Substitutions: Refer to Section 01630.

2. Doors 1-3/4" Thick:

a. Height:

1) Doors up to 41" wide: 4-1/2" inches.

2) Doors 42" to 48" wide: 5 inches.

b. Provide widths sufficient to clear trim projection when door swings 180 degrees.

3. Provide minimum 3 hinges to 90" high, 4 hinges to 120" high for each door leaf, unless otherwise indicated.

4. Provide nonferrous butts with non-removable pins at exterior and locked out-swinging doors, non-rising at interior doors.

5. Provide ball bearing or oilite bearing hinges at doors with closers.

6. Tips: Flat button tips with matching plug.

B. Locking Devices: Provide of metal matching specified finish; interior parts of steel and zinc-dichromate plating, to resist rusting and corrosion; do not supply plastic, die-cast or aluminum mechanisms.

1. Manufacturers:

   a. Schlage Lock Co.
   b. Von Duprin, Inc.
   c. Substitutions: Refer to Section 01630.

2. Types, As Indicated on Hardware Schedule: Not less than following.

   a. Mortise Locksets: ANSI A156.13, Series 1000, Grade 1, Mortise Type with 6 pin tumbler cylinders, Schlage “L” Series with #93 handle except where otherwise indicated in Hardware Schedule.

   b. Cylindrical Locksets: ANSI A156.2, Series 4000, Grade 1, Bored Type (cylindrical) with 6 pin tumbler cylinders, Schlage “ND” Series with L Series #03 Tubular handle except where otherwise indicated in Hardware Schedule.

   c. Exit/Panic Devices: ANSI A156.3, Grade 1, with 6 pin tumbler cylinders, except where otherwise indicated in Hardware Schedule.

      1) Type: Mortise device with concealed vertical rods unless otherwise indicated.

      2) Style: Modern.

3. Lockset and Latchset Design: Solid lever with rose, as selected by Architect.

4. Backset: 2-3/4".

5. Strikes: Furnish standard strikes with extended lips where required to protect trim from being marred by latch bolt; verify type of cutouts provided in metal frames.

6. Furnish mechanical keys as follows:

   a. Furnish 2 cut change keys for each different change key code.

   b. Furnish 1 uncut key blank for each change key code.

   c. Furnish 6 cut masterkeys for each different masterkey set.

   d. Furnish 3 uncut key blanks for each masterkey set.

   e. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.

   f. Furnish 1 cut control key cut to each SKD combination.

7. Furnish Key System Management Software (SM01-287 Windows on CD)

8. Furnish Keying Transcript (50-123 in SM form) to owner for loading into key system software. End-user to provide letter of authorization to hardware dealer to allow Schlage to e-mail transcript (bitting list) to the end-user.

9. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.

    a. Furnish KS43D2200 padlock for use with non-I/C Schlage cylinders. Furnish 47-413 (conventional) or 47-743-XP (PrimusXP) with above.

    b. Furnish KS43G3200 padlock for use with FSIC Schlage cylinders. Furnish 23-030 (Classic / Everest) or 20-740 (PrimusXP) with above.

    c. Furnish KS41D1200 padlock for use with SFIC Schlage cylinders. Furnish 80-037 (Everest-B) with above.

10. Furnish one Schlage cabinet lock for each cabinet door or drawer so designated on the drawings or keying schedule to match the masterkey system.

    a. Furnish CL100PB for use with non-I/C Schlage cylinders.

    b. Furnish CL77R for use with FSIC Schlage cylinders.

    c. Furnish CL721G for use with SFIC Schlage cylinders.

11. Exit devices: Von Duprin as scheduled.

    a. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 2001 standards.

    b. All internal parts shall be of cold-rolled steel with zinc dichromate coating.

    c. Mechanism case shall have an average thickness of .140".

    d. Compression spring engineering.

    e. Non-handed basic device design with center case interchangeable with all functions.

    f. All devices shall have quiet return fluid dampeners.

    g. All latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.

    h. Device shall bear UL label for fire and or panic as may be required

    i. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.

    j. Furnish glass bead kits for vision lites where required.

    k. All Exit Devices to be sex-bolted to the doors.

l. Panic Hardware shall comply with UBC Standard 10-4 and shall be mounted between 30" and 44" above the finished floor surface. The unlatching force shall not exceed 15 lbs. applied in the direction of travel. Panic hardware shall comply with CBC Section 1003.3.1.9.

C. Cylinders, Keys, and Keying: Hardware manufacturers shall provide for grand master, master key alike or key different keying as directed by Owner.

1. Manufacturer: Provide cylinders by lockset manufacturer unless otherwise indicated.

2. Provide cylinders of extruded brass bar material.

3. Provide construction cylinders for doors requiring locking during construction; construction cylinders shall be removed and replaced just prior to Owner occupancy.

4. Submit keys for final use to Owner; provide not less than two keys for each lockset, six of each type and level of masterkey, two grand master keys, and 5% extra blanks.

5. Hardware manufacturers shall key and register lock cylinders.

6. Key Control System: Provide complete key control system with identification and storage capacity suitable for Project to be located in Facilities Tool Room #014.

D. Closers: ANSI A156.4, furnish products of one manufacturer; full rack and pinion type with steel spring and non-freezing hydraulic fluid.

1. Manufacturers:

a. LCN Closers Division Schlage Lock Co./4000 Series.
b. Norton Division, Yale Security, Inc./7500 Series.
c. Substitutions: Refer to Section 01630.

2. Provide controls for regulating closing, latching, speeds and back check.

3. Arm types shall suit individual conditions, as approved; supply parallel-arm closers at reverse bevel doors and where doors swing full 180 degrees.

4. Mount closers on room side or pull side unless otherwise indicated.

5. Sizes: Adjustable to following maximum door operating pressures:

a. Typical Doors: 5 pounds.
b. Fire Rated Doors: 15 pounds.
c. Make labeled doors self-closing.
d. Closers shall be adjusted by factory representative.

6. Design: ANSI Modern Type with Cover, unless otherwise indicated.

E. Thresholds, Stops, Trim, and Miscellaneous Hardware: Provide as indicated, as specified, as included in Hardware Schedule, and as required for complete installation.

1. Manufacturers:

a. Builders Brass Works Corp.
b. Glynn-Johnson Co.
c. H.B. Ives.
d. National Guard Products.
e. Pemko Mfg. Co.
f. Quality Hardware Mfg. Co., Inc.
g. Richard Wilcox.
h. Rixson-Firemark Sub., Yale Security, Inc.
i. Trimco, Triangle Brass Mfg. Co.
j. Zero International, Inc.
k. Substitutions: Refer to Section 01630.

2. Weather-Stripping: Provide continuous weather-stripping at top and sides of exterior doors.

3. Fire Rated Gaskets: Provide continuous fire rated gaskets at top and sides of fire rated doors.

4. Kick Plates: Height indicated by 1" less than door width; minimum 0.050" thick.

5. Pulls: Provide with bolts to secure from opposite door face; provide with pull plates unless otherwise indicated.

6. Door Stops:

a. Unless otherwise noted in Hardware Sets, provide floor dome type or wall round button with appropriate fasteners.

b. Do not install floor stops more than four (4) inches from the face of the wall or partition (Title 24, 1133B.8.6).

c. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

2.3 ACCESSORIES

A. General: Provide complete hardware with accessories as required for doors and applications indicated.

B. Templates: Furnish templates or physical hardware items to manufacturers concerned sufficiently in advance to avoid delay in Work.

C. Reinforcing Units: Furnished by door manufacturer, coordinated by hardware manufacturer.

D. Fasteners: Furnish as recommended by manufacturer and as required to install secure hardware.

1. Finish: Match hardware.

2. Furnish screws for items applied on gypsum board sufficiently long to provide solid connection to framing or backing

E. Through Bolts: Through bolts and grommet nuts shall be avoided on door faces in highly visible areas, unless no alternative is possible, as directed and approved, and shall not be used for solid wood core doors.

F. Electrical and Mechanical: Make provisions and coordinate requirements for mechanical and electrical devices in connection with hardware.

G. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.

H. Thresholds: As Scheduled and per details.

1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.

2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 “Thermal and Moisture Protection”.

3. Use ¼” fasteners, red-head flat-head sleeve anchors (SS/FHSL).

4. Thresholds shall comply with CBC Section 1133B.2.4.1.

I. Seals: Provide silicone gasket at all rated and exterior doors.

1. Fire-rated Doors, Resilient Seals: UL10C Classified, Category “J” listed seals complying with NFPA 80 & NFPA 252 Standards. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.

2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Category “G” furnish fire-labeled opening assembly complete and in full compliance with NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.

3. Smoke & Draft Control Doors, Provide Category “H” listed seals complying with NFPA or UL 1784 105 for use on “S” labeled Positive Pressure door assemblies.

E. Door Shoes & Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.

F. Silencers: Furnish silencers for all interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.4 FINISHES

A. General: Provide following finishes except where otherwise indicated.

B. Typical: US 26D Satin, Chromium Plated or US32D, satin finished stainless steel.

C. Closers:

1. Transparent/Stained Wood Doors: Metal cover finished to match door operating hardware.

2. Opaque Painted Metal Doors and Wood Doors: BHMA 600 (USP), primed.

D. Thresholds: BHMA 628 (US28), satin aluminum, clear anodized.

E. Other Items: Provide manufacturer's standard finishes matching similar hardware types on same door, and maintain acceptable finish considering anticipated use.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install finish hardware specified under this section; coordinate with manufacturer and installation of doors and frames.

B. Fit hardware prior to painting. Remove for painting of doors and frames before final installation of hardware.

C. Install hardware in accordance with manufacturer's instructions.

D. No extra cost will be allowed because of changes or corrections necessary to facilitate installation of hardware.

3.2 MOUNTING POSITIONS

A. Heights given are center line heights from finished floor, unless otherwise shown in drawings:

1. Locks and Latches: 38" to center of lever.

2. Door Pulls: 42" to center of grip.

3. Push Plate: 42"; coordinate with pull location.

4. Push-Pull Bar: 42" to center of bar.

5. Top Hinge: To jamb manufacturer's standard, but not greater than 10" from head of frame to center line of hinge.

6. Bottom Hinge: To jamb manufacturer's standard, but not greater than 12-1/2" from floor to center line of hinge.

7. Intermediate Hinges: Equally spaced between top and bottom hinges and from each other.

8. Hinge Mortise on Door Leaf: 1/4" to 5/16" from stop side of door.

9. Dead Bolt: Not more than 44" from floor to operating lever.

B. Comply with recommendations of Builders Hardware Manufacturers Association, subject to approval, for heights of items not indicated.

3.3 ADJUSTING

A. Qualified hardware supplier's or manufacturer's representatives shall inspect installation and make adjustments.

1. Adjust closers, locks, and critical operational hardware.

2. Deliver instructions for maintenance and future adjustments to Owner's Representative.

3.4 HARDWARE SCHEDULE

A. The Hardware Schedule establishes a type and standard of quality.

B. Examine Drawings and Specifications and furnish proper hardware for door openings, whether listed or not.

C. Bring omissions to attention of Architect prior to bid opening for instructions; otherwise, list will be considered complete; no extras will be allowed.

D. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

BLU	=	Blumcraft	Exit Devices
DRM	=	Dorma	Floor Closers, sliding tracks
GLY	=	Glynn-Johnson Corporation	Overhead Door Stops, Push/Pull Latches
IVE	=	Ives	Hinges, Bolts, Coordinators, Dust Proof Strikes, Push / Pull & Kick Plates, Coat Hooks & Door Stops & Silencers
LCN	=	LCN	Door Closers
NGP	=	National Guard	Thresholds, Gasketing, Weather-stripping & Astragals
PEM	=	Pemko	Thresholds, Gasketing, & Weather-stripping
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders
VON	=	Von Duprin	Exit Devices & Power Supplies

NOTE: Stops for all swing doors shall be floor mounted. Ives 626 FS1326D.

Hardware Set: 01

Provide each PR door(s) with the following:

LOCKING/LATCHING HARDWARE TO BE DETERMINED

Hardware Set: 02

1 EA FLOOR STOP FS1326D 626 IVE

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
2	EA	FLOOR CLOSER	28 x 554 ARM	630	DRM
2	EA	BOTTOM RAIL	7422 X 227.002	630	DRM
2	EA	TOP RAIL	355 X 904.610	630	DRM
2	EA	SMART TOUCH BARS	CCS TO PROVIDE	630	CHMI
2	EA	MORTISE SHEAR LOCK	GF3000 DPS/MBS	N/A	SCE
4	EA	MORTISE CYLINDER	26-064	626	SCH
4	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	THRESHOLD	2748A MSES10	AL	PEM
1	EA	THRESHOLD SEAL	290AS	AL	PEM

DORMA UNIVERSAL DRS STAINLESS STEEL TOP RAIL WITH BOTTOM PATCH AND LOCKING BOTTOM PATCH BY DOOR MANUFACTURER

BTS DOOR SPRING, CHMI CUSTOM STAINLESS STEEL TOUCH SENSE BARS - INCLUDES BTB MOUNTED EXTERIOR PULLS (BY CCS), INCLUDE IN SYSTEM; ELECTROMAGNETIC SHEAR LOCKS W/DPS, ALARM, POWER SUPPLY, POWER OFF PUSH BUTTON, INSTALLATION AND INTEGRATION INTO SECURITY SYSTEM BY CCS.

CCS TO CONFIRM OPENING CONFIGURATION IS ACCEPTABLE WITH THE CITY OF SAN DIEGO.

Hardware Set: 03

Provide each RU door(s) with the following:

PROVIDE PADLOCK IF REQUIRED

Hardware Set: 04

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	35A-L-360-17	626	VON
1	EA	CYLINDER	20-001 X B502-191 X VTQP (SDG&E)	626	SCH
1	EA	CONCEALED CLOSER	2035 HO	689	LCN
1	EA	FLOOR STOP	FS18L	BLK	IVE
1	EA	THRESHOLD	272A MSES10	AL	PEM

PERIMETER DOOR SEALS/BOTTOMS SUPPLIED BY THE DOOR/FRAME MANUFACTURER.

Hardware Set: 05

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	ARMOR PLATE	8400 16" X 2" LDW	630	IVE
1	EA	FLOOR STOP	FS1326D	626	IVE
1	EA	DOOR BOTTOM	321AA	AL	ZER
1	EA	THRESHOLD	272A MSES10	AL	PEM

DOOR PROTECTIVE PLATES ON FIRE RATED DOORS ARE LIMITED TO A 16" HEIGHT TO COMPLY WITH NFPA 80.

Hardware Set: 06

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE

1	EA	STOREROOM LOCK	L9080J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	ARMOR PLATE	8400 16" X 2" LDW	630	IVE
1	EA	DOOR BOTTOM	321AA	AL	ZER
1	EA	THRESHOLD	272A MSES10	AL	PEM

DOOR PROTECTIVE PLATES ON FIRE RATED DOORS ARE LIMITED TO A 16" HEIGHT TO COMPLY WITH NFPA 80.

Hardware Set: 07

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5 NRP	630	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	630	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	630	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP SHCUSH	689	LCN
1	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	SET	SEALS	297AS	AL	PEM
1	EA	DOOR SWEEP	3452CNB	AL	PEM
1	EA	THRESHOLD	272A MSES10	AL	PEM
1	EA	FLOOR STOP	FS1326D		

CCS (SECURITY SYSTEM CONTRACTOR) IS FURNISHING AND INSTALLING THE ABOVE ELECTRIFIED HARDWARE. IT IS THE RESPONSIBILITY OF CCS TO PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE SECURITY SYSTEM ASSEMBLY, INCLUDING INSTALLATION AND INTEGRATION INTO THE SECURITY SYSTEM. FACTORY PROVIDED RACEWAYS ON THE DOORS/FRAMES.

Hardware Set: 08

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD TW8 (BY CCS)	628	IVE
1	EA	PANIC HARDWARE	35A-NL-OP-388 (BY CCS)	626	VON
1	EA	EL RETRO-FIT KIT	LR100VDK (BY CCS)	N/A	SDC
1	EA	RX RETRO-FIT KIT	LRVDR1 (BT CCS)	N/A	SDC
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	LONG DOOR PULL	TG 9377-45	630	DRM
1	EA	CONCEALED CLOSER	2035 BUMP	689	LCN
1	EA	THRESHOLD	158A MSES10	AL	PEM

PERIMETER DOOR SEALS/BOTTOMS SUPPLIED BY THE DOOR/FRAME MANUFACTURER.

CCS (SECURITY SYSTEM CONTRACTOR) IS FURNISHING AND INSTALLING THE ABOVE ELECTRIFIED HARDWARE. IT IS THE RESPONSIBILITY OF CCS TO PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE SECURITY SYSTEM ASSEMBLY, INCLUDING INSTALLATION AND INTEGRATION INTO THE SECURITY SYSTEM. FACTORY PROVIDED RACEWAYS ON THE DOORS/FRAMES.

THE GLAZING CONTRACTOR TO COORDINATE INSTALLATION OF THE DOOR AND FRAME WITH CCS.

Hardware Set: 09

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HW HINGE	3CB1HW 4.5 X 4.5 TW8 (BY CCS)	652	IVE
1	EA	FIRE EXIT HARDWARE	98-L-NL-F-996-17-SS-US32D-SNB (CCS)	630	VON
1	EA	EL RETRO-FIT KIT	LR100VDK (BY CCS)	N/A	SDC
1	EA	RX RETRO-FIT KIT	LRVDR1 (BT CCS)	N/A	SDC
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	THRESHOLD	272A MSES10	AL	PEM

CCS (SECURITY SYSTEM CONTRACTOR) IS FURNISHING AND INSTALLING THE ABOVE ELECTRIFIED HARDWARE. IT IS THE RESPONSIBILITY OF CCS TO PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE SECURITY SYSTEM ASSEMBLY, INCLUDING INSTALLATION AND INTEGRATION INTO THE SECURITY SYSTEM. FACTORY PROVIDED RACEWAYS ON THE DOORS/FRAMES.

Hardware Set: 10

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	98-L-BE-F-996-17-SS-US32D-SNB	630	VON
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	THRESHOLD	272A MSES10	AL	PEM

Hardware Set: 11

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	STOREROOM LOCK	ND80JD SPA EE	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH

ALL REMAINING HARDWARE TO BE PROVIDED BY GATE MANUFACTURER.

Hardware Set: 12

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	FLOOR CLOSER	BTS80	630	DRM
1	EA	BOTTOM PATCH	PT10	630	DRM
1	EA	TOP PATCH	PT20	630	DRM
2	EA	LONG DOOR PULL	9267F 48" L X 30" CTC P (CUSTOM)	630	IVE
1	EA	DOOR STOP	248F	626	HAG

DORMA UNIVERSAL PATCH FITTING SYSTEM BY DOOR MANUFACTURER
BTS DOOR SPRING, FITTINGS - PT 10 & 20.

Hardware Set: 13

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
2	EA	DA HINGE	812.520	113	DRM
2	EA	LONG DOOR PULL	9266F 24" L X 14" CTC P (CUSTOM)	630	IVE

DORMA TENSOR HINGE SYSTEM (WALL MOUNT) BY DOOR MANUFACTURER
TENSOR HINGE 812.520 (113 FINISH).

Hardware Set: 14

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	FLOOR CLOSER	BTS80	630	DRM
1	EA	BOTTOM PATCH	PT10	630	DRM
1	EA	TOP PATCH	PT40 W/STOP	630	DRM
2	EA	LONG DOOR PULL	9267F 48" L X 30" CTC P (CUSTOM)	630	IVE
1	EA	DOOR STOP	248F	626	HAG

DORMA UNIVERSAL PATCH FITTING SYSTEM BY DOOR MANUFACTURER
BTS DOOR SPRING, FITTINGS - PT 10 & 40.

Hardware Set: 15

Provide each SL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	SLIDING DR SYS	AGILE 150 COMPLETE (CEILING MNT)	113	DRM
2	EA	LONG DOOR PULL	9267F 48" L X 30" CTC P (CUSTOM)	630	IVE

DORMA SLIDING DOOR SYSTEM - AGILE 150 W/SIDELITE (207.311 X 207.399)
AGILE 150 TRACK & CARRIERS, INCLUDE FLOOR GUIDE, STOP, VIEW PROTECTION, BRUSH PROFILE, TRACK BRUSH.

Hardware Set: 16

Provide each SL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	SLIDING DR SYS	AGILE 150 COMPLETE (CEILING MNT)	113	DRM
1	EA	LOCKING PULL	HANDLE, LOCKING LADDER 90”	113	DRM
1	EA	RIM HOUSING	20-079	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH

DORMA SLIDING DOOR SYSTEM - AGILE 150 W/SIDELITE (207.311 X 207.399)
AGILE 150 TRACK & CARRIERS, LOCKING LADDER PULL X 90" X 1-1/4" X BTB MOUNTING (630 FINISH), INCLUDE FLOOR GUIDE, STOP, VIEW PROTECTION, BRUSH PROFILE, TRACK BRUSH.

Hardware Set: 17

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	OFFICE/ENTRY LOCK	L9050J 17A L583-363	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	WALL STOP	WS402CVX	626	IVE

Hardware Set: 18

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
2	EA	DOOR PULL	9267 48" OA X 30" CTC BTB	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE

Hardware Set: 19

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	WOMEN RESTROOM SIGN	SB443-W	BLK	SBH
1	EA	WOMEN RESTROOM SIGN	SBH12W-1	BLK	SBH

Hardware Set: 20

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	MEN RESTROOM SIGN	SB445-M	BLK	SBH
1	EA	MEN RESTROOM SIGN	SBH12M-1	BLK	SBH

Hardware Set: 21

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE

Hardware Set: 22

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	OH STOP & HOLDER	90H	630	GLY
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	COAT AND HAT HOOK	582	626	IVE

Hardware Set: 23

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE

Hardware Set: 24

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	STOREROOM LOCK	L9080J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	DOOR SWEEP	315CN	AL	PEM
1	EA	THRESHOLD	272A MSES10	AL	PEM

Hardware Set: 25

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	PRIVACY W/DB & IND	L9496J OCCUPIED/VACANT 17A L583-363	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	WALL STOP	WS402CVX	626	IVE

Hardware Set: 26

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	PASSAGE SET	L9010 17A	626	SCH
1	EA	SURFACE CLOSER	4040XPT HBMP	689	LCN
1	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE
1	SET	SEALS	S88BL	BLK	PEM

Hardware Set: 27

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE
1	SET	SEALS	S88BL	BLK	PEM

Hardware Set: 28

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	OFFICE/ENTRY LOCK	L9050J 17A L583-363	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XPT HBMP	689	LCN
1	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	SET	SEALS	S88BL	BLK	PEM

Hardware Set: 29

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XPT HBMP	689	LCN
1	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE

Hardware Set: 30

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	DOOR SWEEP	315CN	AL	PEM
1	EA	THRESHOLD	272A MSES10	AL	PEM

Hardware Set: 31

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	THRESHOLD	272A MSES10	AL	PEM

Hardware Set: 32

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	626	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE

CCS (SECURITY SYSTEM CONTRACTOR) IS FURNISHING AND INSTALLING THE ABOVE ELECTRIFIED HARDWARE. IT IS THE RESPONSIBILITY OF CCS TO PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE SECURITY SYSTEM ASSEMBLY, INCLUDING INSTALLATION AND INTEGRATION INTO THE SECURITY SYSTEM. FACTORY PROVIDED RACEWAYS ON THE DOORS/FRAMES.

Hardware Set: 33

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	626	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE

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Hardware Set: 34

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	626	IVE

1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	DOOR BOTTOM	321AA	AL	ZER
1	EA	THRESHOLD	272A MSES10	AL	PEM

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Hardware Set: 35

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	652	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	ARMOR PLATE	8400 16" X 2" LDW	630	IVE
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	THRESHOLD	272A MSES10	AL	PEM

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DOOR PROTECTIVE PLATES ON FIRE RATED DOORS ARE LIMITED TO A 16" HEIGHT TO COMPLY WITH NFPA 80.

Hardware Set: 36

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	652	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	THRESHOLD	272A MSES10	AL	PEM

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Hardware Set: 37

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HW HINGE	3CB1HW 4.5 X 4.5 TW8 (BY CCS)	652	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS402CVX	626	IVE
1	EA	DOOR BOTTOM	321AA	AL	ZER
1	EA	THRESHOLD	272A MSES10	AL	PEM

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Hardware Set: 38

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HW HINGE	3CB1HW 4.5 X 4.5	626	IVE
1	EA	AUTO FLUSH BOLT	FB31T	630	IVE
1	EA	PASSAGE SET	L9010 17A	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP HEDA	689	LCN
2	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	352CR	AL	PEM

Hardware Set: 39

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HW HINGE	3CB1HW 4.5 X 4.5	626	IVE
1	EA	AUTO FLUSH BOLT	FB31T	630	IVE
1	EA	PASSAGE SET	L9010 17A	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP HEDA	689	LCN
2	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM

Hardware Set: 40

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	AUTO FLUSH BOLT	FB41T	630	IVE
1	EA	PASSAGE SET	L9010 17A	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XPT HBMP	689	LCN
2	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	EA	ASTRAGAL	352CR	AL	PEM

Hardware Set: 41

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HW HINGE	3CB1HW 4.5 X 4.5	626	IVE

1	EA	AUTO FLUSH BOLT	FB31T	630	IVE
1	EA	PASSAGE SET	L9010 17A	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP HEDA	689	LCN
2	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
2	EA	WALL STOP	WS402CVX	626	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM

Hardware Set: 42

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HW HINGE	3CB1HW 4.5 X 4.5	626	IVE
1	EA	AUTO FLUSH BOLT	FB31T	630	IVE
1	EA	CLASSROOM LOCK	L9070J 17A	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP HEDA	689	LCN
2	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM

Hardware Set: 43

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
7	EA	HINGE	3CB1 4.5 X 4.5	626	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	626	IVE
1	EA	AUTO FLUSH BOLT	FB41T	630	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP	689	LCN
2	EA	WALL STOP	WS402CVX	626	IVE
1	EA	ASTRAGAL	355CS	AL	PEM

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USE ALUMINUM FRAME MANUFACTURERS FULL WIDTH COORDINATOR MOUNTING BRACKET.

Hardware Set: 44

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
7	EA	HW HINGE	3CB1HW 4.5 X 4.5	626	IVE
1	EA	ELECTRIC HW HINGE	3CB1HW 4.5 X 4.5 TW8 (BY CCS)	626	IVE
1	EA	AUTO FLUSH BOLT	FB41T	630	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP HEDA	689	LCN
2	EA	ARMOR PLATE	8400 36" X 2" LDW	630	IVE
2	EA	WALL STOP	WS402CVX	626	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM
2	EA	DOOR BOTTOM	321AA	AL	ZER

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Hardware Set: 45

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
7	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HW HINGE	3CB1HW 4.5 X 4.5 TW8 (BY CCS)	652	IVE
1	SET	AUTO FLUSH BOLT	FB42	630	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM
2	EA	DOOR BOTTOM	321AA	AL	ZER

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Hardware Set: 46

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	SET	AUTO FLUSH BOLT	FB32	630	IVE
1	EA	PASSAGE SET	L9010 17A	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP	689	LCN
2	EA	ARMOR PLATE	8400 16" X 2" LDW	630	IVE
2	EA	FIRE/LIFE WALL MAG	SEM7850	689	LCN
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM
2	EA	DOOR BOTTOM	321AA	AL	ZER

DOOR PROTECTIVE PLATES ON FIRE RATED DOORS ARE LIMITED TO A 16" HEIGHT TO COMPLY WITH NFPA 80.

Hardware Set: 47

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
7	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HW HINGE	3CB1HW 4.5 X 4.5 TW8 (BY CCS)	652	IVE
1	SET	AUTO FLUSH BOLT	FB32	630	IVE
1	EA	EU STOREROOM LOCK	RX-L9080JEU 17A (BY CCS)	626	SCH
1	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	FLOOR STOP	FS1326D	626	IVE
2	EA	WALL STOP	WS402CVX	626	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM
2	EA	DOOR BOTTOM	321AA	AL	ZER

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DOOR PROTECTIVE PLATES ON FIRE RATED DOORS ARE LIMITED TO A 16" HEIGHT TO COMPLY WITH NFPA 80.

Hardware Set: 48

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HW HINGE	3CB1HW 4.5 X 4.5	652	IVE
1	SET	AUTO FLUSH BOLT	FB32	630	IVE
1	EA	PASSAGE SET	L9010 17A	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	FIRE/LIFE CLOSER	4040SE	689	LCN
2	EA	ARMOR PLATE	8400 16" X 2" LDW	630	IVE
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM

DOOR PROTECTIVE PLATES ON FIRE RATED DOORS ARE LIMITED TO A 16" HEIGHT TO COMPLY WITH NFPA 80.

Hardware Set: 49

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
7	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	3CB1 4.5 X 4.5 TW8 (BY CCS)	652	IVE
1	SET	AUTO FLUSH BOLT	FB42	630	IVE
1	EA	EU INSTITUTION LOCK	L9082JEU 17A (BY CCS)	626	SCH
2	EA	FSIC CONST. CORE	23-030-ICX		SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	FLOOR STOP	FS1326D	626	IVE
2	EA	WALL STOP	WS402CVX	626	IVE
1	EA	ASTRAGAL	352CR	AL	PEM
2	EA	DOOR BOTTOM	321AA	AL	ZER

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USE ALUMINUM FRAME MANUFACTURERS FULL WIDTH COORDINATOR MOUNTING BRACKET.

Hardware Set: 50

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CONST LATCHING BOLT	FB51T 24"	630	IVE
1	EA	PASSAGE SET	L9010 LLL 17A L283-150	626	SCH
1	SET	SEALS	S88BL	BLK	PEM
1	EA	ASTRAGAL	355CS	AL	PEM
2	EA	DOOR BOTTOM	420APKL	AL	PEM

Hardware Set: 51

Provide each SL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	SLIDING DOOR TRACK	9101-144	MIL	HAG
4	EA	TWO WHEEL HANGER	9102	MIL	HAG
2	EA	STOP	9113	MIL	HAG
4	EA	BOTTOM DOOR GUIDE	9121	MIL	HAG
1	EA	BOTTOM TRACK	9122-144	MIL	HAG
2	EA	LONG DOOR PULL	9266F 24" L X 14" CTC L (CUSTOM)	630	IVE

Hardware Set: 52

Provide each PD door(s) with the following:

ALL/ANY NEEDED HARDWARE TO BE PROVIDED BY DOOR/FRAME MANUFACTURER

Miscellaneous:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	KEY CABINET	KEKAB-120	GREY	HPC

END OF SECTION

SECTION 08 8000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass.

B. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 2000 - Finish Carpentry: _____ components with requirement for glass.

B. Section 06 4100 - Architectural Wood Casework: Cabinets with requirements for glass shelves and _____.

C. Section 07 9005 - Joint Sealers: Sealant and back-up material.

D. Section 08 1433 - Stile and Rail Wood Doors: Glazed lites in doors.

E. Section 08 3200 - Sliding Glass Doors: Glazing furnished by door manufacturer.

F. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Mirrors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2011.

D. ASTM C1036 - Standard Specification for Flat Glass; 2011e1.

E. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass; 2012.

F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2011a.

G. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2009.

H. GANA (SM) - GANA Sealant Manual; Glass Association of North America; 2008.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual and GANA Sealant Manual for glazing installation methods.

1.07 MOCK-UP

A. Provide mockup of min. 2 panels including glass, u-channel, and clear silicone sealant.

B. Locate where directed.

C. Mockup may remain as part of the Work.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 GLAZING TYPES

A. Type S-1 - Single Vision Glazing:
   1. Applications: All vision glazing at butt-joint locations with clear silicone sealant.
   2. Type: Annealed float glass.
   3. Tint: Clear.
   4. Thickness: 3/8" inch.

B. Type S-3 - Single Safety Glazing: Non-fire-rated.
   1. Applications: Provide this type of glazing in the following locations:
      a. Glazed lites in doors, except fire doors.
      b. Sliding glass doors.
      c. Shower and bathtub enclosures and doors.
      d. Glazed sidelights to doors, except in fire-rated walls and partitions.
      e. Other locations required by applicable federal, state, and local codes and regulations.
   2. Type: Fully tempered float glass as specified.
   3. Tint: Clear.
   4. Thickness: 1/4 inch.

2.02 GLASS MATERIALS

A. Float Glass Manufacturers:
   1. AGC Flat Glass North America, Inc: www.na.agc-flatglass.com.
   2. Pilkington North America Inc: www.pilkington.com/na.
   3. PPG Industries, Inc: www.ppgideascapes.com.
   4. Substitutions: Refer to Section 01 6000 - Product Requirements.

B. Float Glass: All glazing is to be float glass unless otherwise indicated.
   1. Annealed Type: ASTM C1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
   2. Heat-Strengthened and Fully Tempered Types: ASTM C1048.
   3. Tinted Types: Color and performance characteristics as indicated.
   4. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.

2.03 PLASTIC FILMS

A. Manufacturers:
   1. 3M Window Film: www.3m.com/US/arch_construct/scpd/windowfilm.
   2. Substitutions: Refer to Section 01 6000 - Product Requirements.

2.04 GLAZING COMPOUNDS

A. Silicone Sealant (Type ___): Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; _____ color.

2.05 GLAZING ACCESSORIES

A. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; ____x____ inch size; black color.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

A. Prime surfaces scheduled to receive sealant.

B. Install sealants in accordance with ASTM C1193 and GANA Sealant Manual.

C. Install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

D. Place glazing tape on free perimeter of glazing in same manner described above.

E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

F. Knife trim protruding tape.

3.04 INSTALLATION - PLASTIC FILM

A. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

B. Place without air bubbles, creases or visible distortion.

C. Fit tight to glass perimeter with razor cut edge.

3.05 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

3.06 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION

SECTION 09 0561
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to all floors identified in the contract documents as to receive the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Carpet tile.
   3. Thin-set ceramic tile and stone tile.

B. Preparation of new and existing concrete floor slabs for installation of floor coverings.

C. Testing of concrete floor slabs for moisture and pH.

D. Remediation of concrete floor slabs due to unsatisfactory moisture or pH conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

1.02 RELATED REQUIREMENTS

A. Section 01 4000 - Quality Requirements: Additional requirements relating to testing agencies and testing.

B. Section 03 3000 - Cast-In-Place Concrete: Limitations on curing requirements for new concrete floor slabs.

C. Section 03 5400 - Cast Underlayment: Self-leveling underlayment applied as remediation treatment.

1.03 REFERENCES

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2011b.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 1999 (Reapproved 2009).

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2011.

1.04 SUBMITTALS

A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and pH limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

B. Testing Agency's Report: Include:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and pH test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Submit report to Architect.
   7. Submit report not more than two business days after conclusion of testing.

C. Adhesive Bond and Compatibility Test Report.

1.05 QUALITY ASSURANCE

A. Moisture and pH testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Contractor may perform adhesive and bond test with his own personnel or hire a testing agency.

C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

D. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.
   5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer’s instructions and recommendations.

B. Deliver materials in manufacturer’s packaging; include installation instructions.

C. Keep materials from freezing.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of pH found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: 1/8 inch, maximum.
   2. If testing agency recommends any particular products, use one of those.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
   2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
   3. Preliminary cleaning.
   4. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
   5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   6. pH tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   7. Specified remediation, if required.
   8. Patching, smoothing, and leveling, as required.
   9. Other preparation specified.
   10. Adhesive bond and compatibility test.
   11. Protection.

B. Remediations:
   1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
   2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating over entire suspect floor area.
   3. Excessive pH: If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.03 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.04 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.05 PH TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Note: This procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

C. Use a wide range pH paper, its associated chart, and distilled or deionized water.

D. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the pH paper into the water, remove it, and compare immediately to chart to determine pH reading.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value is over 10.

3.06 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.07 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.08 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.09 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 2116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.
B. Metal stud wall framing.
C. Metal channel ceiling framing.
D. Gypsum sheathing.
E. Cementitious backing board.
F. Gypsum wallboard.
G. Joint treatment and accessories.
H. Water-resistive barrier over exterior wall sheathing.
I. Acoustic (sound-dampening) wall and ceiling board.
J. Shaft wall system.

1.02 RELATED REQUIREMENTS

A. Section 05 4000 - Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing.
B. Section 07 2100 - Thermal Insulation: Acoustic insulation.
C. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire rated walls.
D. Section 07 9005 - Joint Sealers: Acoustic sealant.
E. Section 09 3000 - Tiling: Tile backing board.

1.03 REFERENCE STANDARDS

A. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 2012.1.
B. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2011a.
D. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
E. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2011.
F. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2011.
G. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.
H. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing; 2012.
I. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2011.
J. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.
K. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
L. ASTM E413 - Classification for Rating Sound Insulation; 2010.
M. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2010.

N. Performance Requirements: Perform gypsum board systems work in accordance with recommendations of ASTM C754 and ASTM C840 unless otherwise specified.
   1. Loads: Comply with California Building Code requirements for design of metal framing for gypsum board systems.
      a. Deflection: Maximum L/240 typical, L/360 where lime wash finish is indicated and where tile is indicated.
   2. Seismic Requirements: Comply with code requirements for seismic bracing.

O. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

E. Test Reports: For all stud framing products that do not comply with ASTM C645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.
   1. See PART 3 for finishing requirements.

B. Interior Partitions Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
   1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
   2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

D. Fire Rated Assemblies: Provide completed assemblies with the following characteristics:
   1. Fire Rated Partitions: UL listed assembly No. _____; 1 or 2 hour rating.
   2. Fire Rated Area Separation Walls: UL listed assembly No. _____; 1 or 2 hour rating.
   3. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL Fire Resistance Directory.

2.02 METAL FRAMING MATERIALS

A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
   1. Studs: "C" shaped with flat or formed webs with knurled faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C shaped.
   4. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
   5. Resilient Furring Channels: 1/2 inch depth, for attachment to substrate through one leg only.

B. Shaft Wall Studs and Accessories: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.

C. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.

D. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum: www.americangypsum.com.
   2. CertainTeed Corporation: www.certainteed.com.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com.
   4. Lafarge North America Inc: www.lafargenorthamerica.com.
   5. National Gypsum Company: www.nationalgypsum.com.
   6. PABCO Gypsum: www.pabcogypsum.com.
   7. Temple-Inland Inc: www.templeinland.com.
   8. USG Corporation: www.usg.com.
   9. Substitutions: See Section 01 6000 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
   3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 5/8 inch.
      c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
   5. Mold-Resistant Paper-Faced Products:
      a. American Gypsum; M-Bloc.
      b. American Gypsum; M-Bloc AR Type X.
      c. American Gypsum; M-Bloc IR Type X.
      d. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
      e. Georgia-Pacific Gypsum; ToughRock Mold-Guard and ToughRock Mold-Guard Type X Gypsum Wallboard.
      f. Lafarge North America Inc; Mold Defense Drywall.
      g. Lafarge North America Inc; Protecta AR 100 Type X with Mold Defense.
      h. National Gypsum Company; Gold Bond Brand XP Gypsum Board.
      i. National Gypsum Company; Gold Bond Hi-Abuse Brand XP Wallboard.
      j. Pacific Coast Building Products, Inc; PABCO Mold Curb Gypsum Wallboard.
      k. Temple-Inland Inc; ComfortGuard Mold Resistant Gypsum Board.
      l. Temple-Inland Inc; ComfortGuard AR Abuse Resistant.
      m. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
      n. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels AR.
   6. Glass-Mat-Faced Products:
      a. Georgia-Pacific Gypsum; DensArmor Plus.
      b. Georgia-Pacific Gypsum; DensArmor Plus Abuse-Resistant.
      c. Georgia-Pacific Gypsum; DensArmor Plus Impact-Resistant Interior Panels.
      d. Temple-Inland Inc; GreenGlass Interior Gypsum Board.
      e. National Gypsum Company; Gold Bond e2XP Interior Extreme.

C. Backing Board For Wet Areas: One of the following products:
   1. Application: Surfaces behind tile in wet areas including tub and shower surrounds, shower ceilings, and _____.
   2. Glass-Mat-Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178.

a. Standard Type: Thickness 1/2 inch.
b. Fire-Resistant Type: Type X core, thickness 5/8 inch.
c. Products:
1) Georgia-Pacific Gypsum; DensShield Tile Backer.
2) National Gypsum Company; Gold Bond e2XP Tile Backer.
3) Temple-Inland Inc; GreenGlass Tile Backer.

D. Ceiling Board: Special sag-resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
2. Thickness: 5/8 inch.
3. Edges: Tapered.
4. Products:
a. American Gypsum; Interior Ceiling Board.
b. CertainTeed Corporation; ProRoc Interior Ceiling.
c. Georgia-Pacific Gypsum; ToughRock CD Ceiling Board.
d. Lafarge North America Inc; Sagcheck.
e. National Gypsum Company; High Strength Brand Ceiling Board.
f. Pacific Coast Building Products, Inc; PABCO Ceiling Board.
g. Temple-Inland Inc; Span24 Ceiling Board.
h. USG Corporation; Sheetrock Brand Sag-Resistant Interior Gypsum Ceiling Board.

E. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
2. Edges: Square, for vertical application.

F. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
1. Products:
a. American Gypsum; Shaft Liner.
b. American Gypsum; M-Bloc Shaft Liner.
c. CertainTeed Corporation; ProRoc Brand Shaftliner Type X.
d. Georgia-Pacific Gypsum; DensGlass Shaftliner (mold-resistant).
e. National Gypsum Company; Gold Bond Brand 1" Fire-Shield Shaftliner.
f. National Gypsum Company; Gold Bond Brand 1" Fire-Shield Shaftliner XP (mold-resistant).
g. National Gypsum Company; Gold Bond Brand e2XP Extended Exposure Shaftliner.
h. Pacific Coast Building Products, Inc; PABCORE Gypsum Shaftliner Board type X.
i. Temple-Inland Inc; GreenGlass Liner Panel.
j. Temple-Inland Inc; SilentGuard Gypsum Shaftliner.
k. USG Corporation; Sheetrock Gypsum Liner Panels.
l. USG Corporation; Sheetrock Gypsum Liner Panels--Enhanced (mold-resistant).

2.04 ACCESSORIES

A. Acoustic Insulation: As specified in Section 07 2100.

B. Acoustic Sealant: As specified in Section 07 9005.

C. Water-Resistive Barrier: No. 15 asphalt felt.

D. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.

E. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

F. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.

G. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
   1. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.

3.03 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

C. Studs: Space studs as permitted by standard.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
   3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.05 BOARD INSTALLATION

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
   1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.

D. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.07 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   3. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

C. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.08 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 2400
PORTLAND CEMENT PLASTERING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Portland cement plaster for installation over gypsum drywall solid surfaces.

1.02 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Metal stud framing and furring for plaster.

1.03 REFERENCE STANDARDS

A. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.

B. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.

C. ASTM C206 - Standard Specification for Finishing Hydrated Lime; 2003 (Reapproved 2009).

D. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).

E. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster; 2012a.

F. PCA EB049 - Portland Cement Plaster/Stucco Manual; Portland Cement Association; 2003.

G. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittals procedures.

B. Product Data: Provide data on plaster materials, characteristics and limitations of products specified.

C. Samples: Submit four samples, 12x12 inch in size illustrating finish color and texture.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years of experience.

B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.06 MOCK-UP

A. Construct mock-up of interior wall, 10 feet long by 20 feet wide, illustrating venetian plaster finish and supporting materials shown in the drawings.

B. Locate where directed.

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

1.07 FIELD CONDITIONS

A. Do not apply plaster when substrate or ambient air temperature is under 50 degrees F or over 80 degrees F.

B. Maintain minimum ambient temperature of 50 degrees F during installation of plaster and until cured.

PART 2 PRODUCTS

2.01 PLASTER MATERIALS

A. Portland Cement, Aggregates, and Other Materials: In accordance with ASTM C926.

B. Premixed Textured Coating: Polymer modified acrylic coating, integrally colored, trowel applied to substrates prepared in accordance with manufacturer's recommendations.
   1. Color: As indicated on drawings.
   2. Products:
      a. Texston - Terra Green VPC 4840A-122812. Contact No. 818.227.4812.

C. Portland Cement: ASTM C150, Type I.

D. Masonry Cement: ASTM C91 Type N.

E. Lime: ASTM C206, Type S.

F. Aggregate: Natural sand, within the following sieve sizes and percentage retained limits:
   1. No. 100: 90 to 100.

G. Water: Clean, fresh, potable and free of mineral or organic matter that could adversely affect plaster.

H. Color Pigment: Mineral oxide type, Terra Green color; _____ manufactured by _____.

I. Finish Aggregate: Marble, color to be selected by Architect, chip size of 100 percent passing 1/8 inch but retained on 1/16 inch screen.

2.02 PLASTER MIXES

A. Over Solid Bases: Two-coat application, mixed and proportioned in accordance with ASTM C926.

B. Mix only as much plaster as can be used prior to initial set.

C. Add color pigments to finish coat in accordance with manufacturer's instructions.

D. Mix materials dry, to uniform color and consistency, before adding water.

E. Protect mixtures from freezing, frost, contamination, and excessive evaporation.

F. Do not retemper mixes after initial set has occurred.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify the suitability of existing conditions before starting work.

B. Mechanical and Electrical: Verify services within walls have been tested and approved.

3.02 PREPARATION

A. Gypsum Drywall (Interiors Only): Drywall shall be taped and then sanded or floated. Provide Level Five surface in accordance with Gypsum Association's GA-214 - Recommended Levels of Gypsum Board Finish.

3.03 PLASTERING

A. Apply plaster in accordance with ASTM C926.

B. Two-Coat Application:
   1. Apply first coat to nominal thickness of 3/8 inch.
   2. Apply finish coat to nominal thickness of 1/8 inch.

C. Moist cure base coats.

D. Apply second coat immediately following initial set of first coat.

E. After curing, dampen previous coat prior to applying finish coat.

F. Finish Texture: Float to a consistent and smooth finish.

G. Avoid excessive working of surface. Delay troweling as long as possible to avoid drawing excess fines to surface.

H. Aggregate Surfacing: Hand apply to full surface coverage.

I. Moist cure finish coat for minimum period of 48 hours.

3.04 TOLERANCES

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

END OF SECTION

SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 07 2100 - Thermal Insulation: Acoustical insulation.

B. Section 07 9005 - Joint Sealers: Acoustical sealant.

C. Section 28 3100 - Fire Detection and Alarm: Fire alarm components in ceiling system.

D. Section 21 1300 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.

E. Section 23 3700 - Air Outlets and Inlets: Air diffusion devices in ceiling.

F. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.

G. Section 27 5117 - Public Address Systems: Speakers in ceiling system.

1.03 REFERENCE STANDARDS

A. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2007.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2008.

C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2011.

D. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2011.

E. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

F. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

G. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

H. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

I. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.

J. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.

K. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.

L. ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

M. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

N. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

O. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

P. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Product Data: Provide data on suspension system components.

D. Samples: Submit two samples 8x8 inch in size illustrating material and finish of acoustical units.

E. Samples: Submit two samples each, 12 inches long, of suspension system main runner.

F. Manufacturer's Installation Instructions: Indicate special procedures.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.06 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

A. Manufacturers:
   1. Armstrong World Industries, Inc; Product ____: www.armstrong.com.
   2. USG; Product ____: www.usg.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

B. Acoustical Panels Type ACT-1 Pilot Plant Ceilings:
   1. Surface Texture: Stipple-textured
   2. Composition: 2 mil. vinyl laminate
   3. Color: White
   4. Size: 48in X 24in X 1/2in
   5. Edge Profile: Exposed edges sealed 2 mil vinyl laminate over ½” gypsum board construction
   6. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton,
   7. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
   8. Flame Spread: ASTM E 1264; Class A (UL)
   9. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: LR 1 (75% or greater).
   10. Acceptable Product: Gridstone Cleanroom Gypsum Ceiling Panels, as manufactured by Gold Bond Inc.
   11. ACT-1 Suspension System

a. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
   1) Structural Classification: ASTM C 635 HD.
   2) Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
   3) Acceptable Product: Prelude Steel Heavy Duty Clean Room Prelude 15/16" Exposed Tee Grid System with Alum. Cap on exposed face as manufactured by Armstrong World Industries, Inc.

b. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

c. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.

d. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

C. Acoustical Panels Type ACT-2 Laboratory Ceilings:
1. Surface Finish: DuraBright
2. Composition: Mineral Fiber
3. Color: White
4. Size: 48in X 24in X 3/4in
5. Edge Profile: Square Lay-In for interface with Prelude 15/16” suspension system.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.70.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35
8. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
9. Flame Spread: ASTM E 1264; Class A (UL)
10. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.86.
11. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
12. Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
13. Acceptable Product: Health Zone Ultima Square Lay-in #1938, as manufactured by Armstrong World Industries.
14. ACT-2 Suspension System
    a. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
       1) Structural Classification: ASTM C 635 HD.
       2) Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
       3) Acceptable Product: Suprafine XL 9/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.

b. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
c. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.
d. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

D. Acoustical Panels Type ACT-3 Open Office High NRC:
1. Surface Texture: Fine
2. Composition: Fiberglass
3. Color: White
4. Size: 24in X 24in X 1in
5. Edge Profile: Square Tegular for interface with Suprafine XL 9/16" Exposed Tee.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.90.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 26
8. Articulation Class (AC): ASTM E 1111; Classified with UL label on product carton 200.
9. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
10. Flame Spread: ASTM E 1264; Class A (UL)
11. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.90.
12. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
13. Antimicrobial Protection: Inherent - Resists the growth of mold/mildew and bacterial growth.
14. Acceptable Product: Optima Open Plan, 3355 as manufactured by Armstrong World Industries.
15. ACT-3 Suspension System
    a. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
        1) Structural Classification: ASTM C 635 HD.
        2) Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
        3) Acceptable Product: Suprafine XL 9/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.
    b. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
    c. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.
    d. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

E. Acoustical Panels Type ACT-4 Private Office High CAC:
1. Surface Texture: Fine

2. Composition: Mineral Fiber
3. Color: White
4. Size: 24in X 24in X 3/4in
5. Edge Profile: Beveled Tegular for interface with Suprafine XL 9/16" Exposed Tee.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.60.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 40
8. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
9. Flame Spread: ASTM E 1264; Class A (UL)
10. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.90.
11. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
12. Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
13. Acceptable Product: Ultima High CAC, 1952 as manufactured by Armstrong World Industries.
14. ACT-4 Suspension System
    a. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
        1) Structural Classification: ASTM C 635 HD.
        2) Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
        3) Acceptable Product: Suprafine XL 9/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.
    b. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
    c. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.
    d. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

F. Acoustical Panels Type ACT-5 Work Areas:
1. Surface Texture: Fine Fissured
2. Composition: Mineral Fiber
3. Color: White
4. Size: 24in X 48in X 5/8in
5. Edge Profile: Square Lay-In for interface with Prelude XL 15/16" Exposed Tee.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.55.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35
8. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
9. Flame Spread: ASTM E 1264; Class A (UL)

10. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.85.
11. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
12. Antimicrobial Protection:
13. Acceptable Product: Fine Fissured, 1729 as manufactured by Armstrong World Industries.
14. ACT-5 Suspension Syatem
    a. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
       1) Structural Classification: ASTM C 635 HD.
       2) Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
       3) Acceptable Product: Prelude XL 15/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.
    b. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
    c. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.
    d. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

G. Acoustical Panels Type ACT-6 Server Room:
1. Surface Texture: Fine Fissured
2. Composition: Mineral Fiber
3. Color: Black
4. Size: 24in X 24in X 5/8in
5. Edge Profile: Square Lay-In for interface with Prelude XL 15/16" Exposed Tee.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.55.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35
8. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
9. Flame Spread: ASTM E 1264; Class A (UL)
10. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.85.
11. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
12. Antimicrobial Protection:
13. Acceptable Product: Fine Fissured, 1728 as manufactured by Armstrong World Industries.
14. ACT-6 Suspension System
    a. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
       1) Structural Classification: ASTM C 635 HD.

2) Color: Black to match the actual color of the selected ceiling tile, unless noted otherwise.
3) Acceptable Product: Prelude XL 15/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.

b. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
c. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.
d. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

H. Acoustical Panels Type ACT-7 Corridor:
1. Surface Texture: Fine
2. Composition: Fiberglass
3. Color: White
4. Size: 48in X 48in X 1in
5. Edge Profile: Square Tegular for interface with Prelude XL 15/16" Exposed Tee.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.95.
7. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
8. Flame Spread: ASTM E 1264; Class A (UL)
9. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.90.
10. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
11. Antimicrobial Protection:
12. Acceptable Product: Optima Tegular, 3255 as manufactured by Armstrong World Industries.
13. ACT-7 suspension System
    a. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
        1) Structural Classification: ASTM C 635 HD.
        2) Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
        3) Acceptable Product: Prelude XL 15/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.
    b. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
    c. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.
    d. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

2.02 SUSPENSION SYSTEM(S)

A. Manufacturers:
   1. Same as for acoustical units.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Suspension Systems - General: ASTM C635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

2.03 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.
   1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
   2. At Concealed Grid: Provide exposed L-shaped molding.

C. Acoustical Insulation: Specified in Section 07 2100.

D. Acoustical Sealant For Perimeter Moldings: Specified in Section 07 9005.

E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

D. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

E. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

G. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

H. Do not eccentrically load system or induce rotation of runners.

I. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.
   2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.
   2. Double cut and field paint exposed reveal edges.

G. Where round obstructions occur, provide preformed closures to match perimeter molding.

H. Lay acoustical insulation for a distance of 48 inches either side of acoustical partitions as indicated.

I. Install hold-down clips on panels within 20 ft of an exterior door.

3.04 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09 6500
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient sheet flooring.

B. Resilient tile flooring.

C. Resilient base.

D. Resilient stair accessories.

E. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

C. Section 03 5400 - Cast Underlayment.

D. Section 09 0561 - Common Work Results for Flooring Preparation: Independent agency testing of concrete slabs, removal of existing floor coverings, cleaning, and preparation.

1.03 REFERENCE STANDARDS

A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2010e1.

B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

C. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2010)e1.

D. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing; 2004 (Reapproved 2009).

E. ASTM F1344 - Standard Specification for Rubber Floor Tile; 2012.

F. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2004 (reapproved 2010).

G. ASTM F1861 - Standard Specification for Resilient Wall Base; 2008.

H. ASTM F1913 - Standard Specification for Vinyl Sheet Floor Covering Without Backing; 2004 (Reapproved 2010).

I. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant; Federal Specifications and Standards; Revision E, 1994.

J. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2011.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate seaming plan.

C. Verification Samples: Submit four samples, 4"x4" inch in size illustrating color and pattern for each resilient flooring product specified.

D. Concrete Testing Standard: Submit a copy of ASTM F710.

E. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of sub-floor is acceptable.

F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Flooring Material: 50 square feet of each type and color.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect roll materials from damage by storing on end.

1.06 FIELD CONDITIONS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 SHEET FLOORING

A. Vinyl Sheet Flooring Type SV-2: Homogeneous without backing, with color and pattern throughout full thickness, and:
   1. Minimum Requirements: Comply with ASTM F1303, Type II, without backing, or ASTM F1913.
   2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
   3. VOC Content: As specified in Section 01 6116.
   4. VOC Content: Certified as Low Emission by one of the following :
   5. Total Thickness and Wear Layer Thickness: 0.080 inch nominal.
   6. Sheet Width: 72 inch minimum.
   7. Heat welded seams.
   8. Integral coved base with cap strip.
   9. Manufacturers:
      a. Armstrong; Product Medintone.
      b. Substitutions: See Section 01 6000 - Product Requirements.

B. Vinyl Welding Rod: Solid vinyl bead produced by manufacturer of vinyl flooring for heat welding seams, in color matching field color.

2.02 TILE FLOORING

A. Vinyl Composition Tile: Homogeneous, with color extending throughout thickness, and:
   1. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
   2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
   3. Size: 18x18 inch.
   4. Thickness: 0.125 inch.
   5. Pattern: Marbleized.
   6. Manufacturers:
      a. To Market; Product Formis Gesso.

B. Static Dissipative Tile:
   1. Minimum Requirements: Comply withASTM F1700, of Class corresponding to type specified.
   2. Size: 12 x 12 inch.
   3. Total Thickness: 0.125 inch.
   4. Manufacturers:
      a. Armstrong; Product SDT

C. Rubber Tile: Homogeneous color and pattern throughout thickness, and:
   1. Minimum Requirements: Comply with ASTM F1344, of Class corresponding to type specified.
   2. Design: Molded, in square pattern.

3. Size: 12 x 12 inch.
4. Overall Thickness: 0.125 inch.
5. Pattern: Solid color.
6. Manufacturers:
   a. Flexco, Inc; Product Heavy Duty Square: www.flexcofloors.com.
   b. Substitutions: See Section 01 6000 - Product Requirements.

D. Feature Strips: Of same material as tile, ____ inch wide.

2.03 STAIR COVERING

A. Stair Treads: Rubber; full width and depth of stair tread in one piece; tapered thickness; nosing not less than 1-5/8 inch deep.
1. Minimum Requirements: Comply with FS RR-T-650 requirements corresponding to type specified.
2. Nominal Thickness: 0.1875 inch.
3. Nosing: Square.
4. Style: Contrasting color abrasive grit strips full width.
5. Color: Solid.
6. Manufacturers:
   a. Flexco; Product Heavy Duty Square.
   b. Substitutions: See Section 01 6000 - Product Requirements.

B. Stair Risers: Full height and width of tread in one piece, matching treads in material and color:
1. Thickness: 0.080 inch.

2.04 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove, and as follows:
1. Height: 4 inch.
2. Thickness: 0.125 inch thick.
3. Finish: Satin.
4. Length: Roll.
5. Color: Color as selected from manufacturer's standards.
6. Manufacturers:
   a. Flexco; Product ____.

2.05 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.

C. Filler for Coved Base: Plastic.

D. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
1. Test in accordance with ASTM F710.
2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is cured.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install in accordance with manufacturer's instructions.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Fit joints tightly.

E. Set flooring in place, press with heavy roller to attain full adhesion.

F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Resilient Strips: Attach to substrate using adhesive.

H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

I. Install flooring in recessed floor access covers, maintaining floor pattern.

J. Install feature strips where indicated.

3.04 SHEET FLOORING

A. Lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns carefully at seams.

B. Double cut sheet at seams.

C. Finish seams in sheet vinyl Type ____ by heat welding.

D. Double cut sheet; provide heat welded seams.

E. Coved Base: Install as detailed on drawings, using coved base filler as backing at floor to wall junction. Extend sheet flooring vertically to height indicated, and cover top edge with metal cap strip.

3.05 TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless manufacturer's instructions say otherwise.

3.06 RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.07 STAIR COVERINGS

A. Install stair coverings in one piece for full width and depth of tread.

B. Adhere over entire surface. Fit accurately and securely.

3.08 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean, seal, and wax in accordance with manufacturer's instructions.

3.09 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 6813
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

B. Matching roll carpet for direct glue installation on base.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

C. Section 03 5400 - Cast Underlayment.

1.03 REFERENCE STANDARDS

A. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2006 (Reapproved 2011).

B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2010e1.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

D. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2009.

E. CRI (GLA) - Green Label Testing Program - Approved Adhesive Products; Carpet and Rug Institute; Current Edition.

F. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2011.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

D. Submit two, 8 inch long samples of edge strip.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet with minimum 3 years experience.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tandus Flooring; Product Landform 03297.

2.02 MATERIALS

A. Carpet Tile Type C-1: Tufted, manufactured in one color dye lot.
   1. Product: Landform 03297 manufactured by Tandus.
   2. Tile Size: 24x24 inch, nominal.
   3. Thickness: ____ inch.
   4. Color: _____.
   5. Pattern: _____.
   6. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
   7. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
   8. Static Control Fiber: _____.
   9. Max. Electrostatic Charge: 3 Kv. at 20 percent relative humidity.
   10. Rows: ____ per inch.
   11. Gage: ____ inch.
   12. Stitches: ____ per inch.
   13. Yarn Size: _____ denier.
   14. Pile Weight: ____ oz/sq yd.
   15. Density Factor: ____ kilotex.
   16. Light Fastness: ____.
   17. Primary Backing Material: Polypropylene.
   18. Primary Backing Weight: ____ oz/sq yd.
   19. Laminate: ____.
   20. Laminate Weight: ____ oz/sq yd.
   21. Secondary Backing Material: Jute.
   22. Secondary Backing Weight: ____ oz/sq yd.
   23. Total Weight: ____ oz/sq yd.

B. Roll Carpet: Same manufacturer, type, color and pattern, and face fiber characteristics as carpet tile, ____ feet wide, manufactured in same color dye lot as tile.

2.03 ACCESSORIES

A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Vinyl, _____ color.

C. Adhesives: Acceptable to carpet tile manufacturer, compatible with materials being adhered; maximum VOC content as specified in Section 01 6116.

D. Adhesives: Acceptable to carpet tile manufacturer, compatible with materials being adhered; maximum VOC of 50 g/L; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet tile.

C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.

D. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH.

1. Test in accordance with ASTM F710.
2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install carpet tile in accordance with manufacturer's instructions and CRI Carpet Installation Standard.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Locate change of color or pattern between rooms under door centerline.

G. Fully adhere carpet tile to substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 7200
WALL COVERINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation and prime painting.

B. Wall covering and borders.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

B. ASTM D1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes; 2002 (Reapproved 2007).

C. ASTM F793 - Standard Classification of Wallcovering by Use Characteristics; 2010a.

D. FS L-P-1040 - Plastic Sheets and Strips (Polyvinyl Fluoride); Federal Specifications and Standards; Revision B, 1977.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on wall covering and adhesive.

C. Shop Drawings: Indicate wall elevations with seaming layout.

D. Samples: Submit two samples of wall covering, 12x12 inch in size illustrating color, finish, and texture.

E. Test Reports: Indicate verification of flame and smoke ratings, when tested by UL.

F. Manufacturer's Installation Instructions: Indicate special procedures.

G. Maintenance Data: Submit data on cleaning, touch-up, and repair of covered surfaces.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Wall Covering Materials: 25 linear feet of each color and pattern of wall covering; store where directed.
   3. Package and label each roll by manufacturer, color and pattern, and destination room number.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Inspect roll materials at arrival on site, to verify acceptability.

B. Protect packaged adhesive from temperature cycling and cold temperatures.

C. Do not store roll goods on end.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the adhesive or wall covering product manufacturer.

B. Maintain these conditions 24 hours before, during, and after installation of adhesive and wall covering.

PART 2 PRODUCTS

2.01 MATERIALS

A. Requirements for All Wall Coverings:
   1. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84.
   2. Chemical and Stain Resistance: No visible staining or discoloration and no damage to surface texture when tested in accordance with ASTM D1308.

B. Wall Covering - Type [WC-3]: Vinyl coated fabric roll stock, conforming to the following:
   1. Roll Width: 66 inches.
   2. Color: EWT-2303 Glint.
   3. Pattern: Twilight.

C. Wall Covering - Type WC-3: Vinyl coated fabric roll stock, conforming to the following:
   1. Roll Width: 54 inches.
   2. Color: 6118-301P Persimmon.
   3. Pattern: Clarity 6118.

D. Wall Covering - Type WC-4: Vinyl coated fabric roll stock, conforming to the following::
   1. Roll width: 54 inches
   2. Color: 015 Violet.
   3. Pattern: Sari 399426.

E. Adhesive: Type recommended by wall covering manufacturer to suit application to substrate.

F. Termination Trim: Extruded plastic, clear.

G. Substrate Filler: As recommended by adhesive and wall covering manufacturers; compatible with substrate.

H. Substrate Primer and Sealer: Alkyd enamel type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are prime painted and ready to receive work, and conform to requirements of the wall covering manufacturer.

B. Measure moisture content of surfaces using an electronic moisture meter. Do not apply wall coverings if moisture content of substrate exceeds level recommended by wall covering manufacturer.

C. Verify flatness tolerance of surfaces does not vary more than 1/8 inch in 10 feet nor vary at a rate greater than 1/16 inch/ft.

3.02 PREPARATION

A. Fill cracks in substrate and smooth irregularities with filler; sand smooth.

B. Wash impervious surfaces with tetra-sodium phosphate, rinse and neutralize; wipe dry.

C. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

D. Apply one coat of primer sealer to substrate surfaces. Allow to dry. Lightly sand smooth.

E. Vacuum clean surfaces free of loose particles.

3.03 INSTALLATION

A. Apply adhesive and wall covering in accordance with manufacturer's instructions.

B. Horizontal seams are not acceptable.

C. Do not seam within 2 inches of internal corners or within 6 inches of external corners.

D. Install termination trim.

E. Remove excess adhesive while wet from seam before proceeding to next wall covering sheet. Wipe clean with dry cloth.

3.04 CLEANING

A. Clean wall coverings of excess adhesive, dust, dirt, and other contaminants.

B. Reinstall wall plates and accessories removed prior to work of this section.

3.05 PROTECTION

A. Do not permit construction activities at or near finished wall covering areas.

END OF SECTION

SECTION 09 8311
ACOUSTICAL WALL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Site fabricated, fabric-covered acoustical wall system.

B. Accessories as required for complete installation.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09 7200 - Wall Coverings: Fabric wall coverings for adhesive application to solid wall surfaces.

1.03 REFERENCE STANDARDS

A. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.

B. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2009a.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

D. ASTM E2573 - Standard Practice for Specimen Preparations and Mounting of Site-Fabricated Stretch Systems to Assess Surface Burning Characteristics; 2012.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Test Reports: Certified test data from an independent test agency verifying that wall systems meet specified requirements for acoustical and fire performance.

C. Shop Drawings: Elevations indicating proposed locations of fabric seams and details indicating typical transitions to other finish surfaces.

D. Verification Samples:
   1. For each fabric specified, minimum size 8 inches square, representing actual product in color, texture, and pattern.
   2. Acoustical backing material, minimum 12 inches square.

E. Maintenance Contract.

F. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Supply an additional 5 percent of fabric installed for Owner's use in maintenance of project.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Firm specializing in site-fabricated wall systems, with not less than 5 years of documented experience in installing wall systems of the type specified, and approved by the manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect fabric, acoustical backing, and track from excessive moisture in shipment, storage, and handling. Do not deliver materials to project until wet work such as concrete and plaster has been completed.

B. Store products in manufacturer's unopened packaging until ready for installation.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Do not begin installation until interior conditions have reached temperature and humidity that will be maintained during occupancy. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a 5-year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustical Wall Systems:
   1. Fabricmate Systems: www.fabricmate.com.
   2. FabriTRAK Systems, Inc; _____: www.fabritrak.com.
   3. Fabric Wall _____: www.fabric-wall.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACOUSTICAL WALL SYSTEM

A. Acoustical Wall System: Site-installed stretched fabric over acoustical core and continuous perimeter and intermediate mounting frames applied directly to wall surface; designed to permit removal and replacement of fabric in individual panels without affecting adjacent panels.
   1. Surface Burning Characteristics: Flame Spread Index of 25, maximum; Smoke Developed Index of 450, maximum; when whole system is tested in accordance with ASTM E84 using mounting specified in ASTM E2573.
   2. Noise Reduction Coefficient (NRC): 0.80, minimum, when tested in accordance with ASTM C423 Type A mounting.
   3. Prefabricated framed panels are not acceptable.
   4. Fabric must be installed over acoustical substrate without adhesives, tapes, or fasteners.
   5. Seams in fabric are not permitted; layout dimensions assume use of fabric at least 66 inches wide.

2.03 MATERIALS

A. Frame: Extruded polymer track system with serrated jaws of sufficient strength to hold fabric in place after repeated applications.
   1. Track Size: 3/8 inch protrusion from wall with minimum 1 inch base leg.
   2. Wall Thickness of Track: Minimum 0.062 inch.
   3. Color: As selected from manufacturer's standards.

B. Acoustical Core:
   1. Type and thickness as required to achieve specified noise reduction coefficient, sufficient to fill depth of track without blocking behind, and one of the the following:
   2. Material: Multi-density fiberglass board, consisting of a facing sheet of 12 pounds per cubic foot density board laminated over 3 pounds per cubic foot density board.
   3. Material: Recycled organic material, 3 pounds per cubic foot density.
   4. Material: Semi-rigid polyester fiber board, 3 pounds per cubic foot density.
   5. Material: Fiberglass board, 6 pounds per cubic foot density.

C. Rigid Blocking: Fire-retardant treated medium density fiberboard complying with ANSI A208.2.

D. Fabric: Luna Textiles WC-2.

E. Fasteners: As recommended by manufacturer of acoustical wall system for project conditions.

F. Adhesives: Low VOC or water-based, approved by wall system manufacturer, and complying with requirements of Section 01 6116.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that all casework, markerboards, door and window jambs, finished ceiling, and other finished items abutting acoustical wall systems have been installed.

3.02 PREPARATION

A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

B. Remove wall plates and other obstacles, and prepare substrates to receive core material in accordance with manufacturer's instructions.

3.03 INSTALLATION

A. Install acoustical wall systems at locations indicated , complying with manufacturer's instructions.

B. Track: Install perimeter and intermediate track using fasteners appropriate to substrate, securing firmly to prevent track separation from substrate.

C. Acoustical Core Material: Cut core material to fit snugly within frame perimeter. Apply adhesive and press core material into place, maintaining constant plane. Staple core material to prevent air gaps and to maintain secure contact for full adhesion.
   1. At fixtures mounted within area of acoustical wall system, install rigid blocking for backing and to maintain fixture surface flush with acoustical panels.

D. Fabric: Stretch fabric over acoustical core material, locking fabric edges into track's serrated jaws using manufacturer's recommended tool. Keep fabric weave plumb, level, and true, in proper relation to building lines, without ripples, waviness, hourglass, or other deleterious effects.
   1. Seams are not permitted.
   2. In installing fabric, do not employ adhesives or mechanical fasteners of any type, assuring that the fabric is free-floating and in firm contact with core material.
   3. Tension fabric sufficiently to prevent sagging under anticipated changes in temperature and humidity.

3.04 CLEANING

A. Clean exposed surfaces of acoustical wall system, complying with manufacturer's instructions for cleaning and repair of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.05 PROTECTION

A. Protect installed products until completion of project, using methods that will ensure that the finished work will be without damage or deterioration at Date of Substantial Completion.

END OF SECTION

SECTION 09 9000
PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Paint all fire sprinkler piping risers, drops and other components exposed to view in final construction.
   3. Mechanical and Electrical:
      a. In finished areas, paint shop-primed items.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne, and lead items.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically so indicated.
   8. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
   9. Glass.
   10. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Shop-primed items.

B. Section 09 9600 - High-Performance Coatings.

1.03 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2012.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.

D. SSPC (PM1) - Good Painting Practice: SSPC Painting Manual, Vol. 1; Society for Protective Coatings; Fourth Edition.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).

3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
4. Manufacturer's installation instructions.

C. Samples: Submit four painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on paper cardstock, 8x10 inch in size.

D. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.

E. Manufacturer's Instructions: Indicate special surface preparation procedures.

F. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Paint and Coatings: 1 gallon of each color; store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience.

1.07 MOCK-UP

A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.

B. Provide panel, 10 feet long by 20 feet wide, illustrating special coating color, texture, and finish.

C. Locate where directed.

D. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products from the same manufacturer to the greatest extent possible.

1. In the event that a single manufacturer cannot provide all specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:
1. Base Manufacturer: Dunn-Edwards Corp:www.dunnedwards.com.
2. Comex Group (Color Wheel, Frazee, General Paint, Kwal, or Parker): www.thecomexgroup.com.
3. Dunn-Edwards Corp: www.dunnedwards.com
4. Glidden Professional: www.gliddenprofessional.com.
5. Benjamin Moore & Co: www.benjaminmoore.com.
6. PPG Architectural Finishes, Inc: www.ppgaf.com.
7. Pratt & Lambert Paints: www.prattandlambert.com.
8. Sherwin-Williams Company: www.sherwin-williams.com.

C. Transparent Finishes:
1. Same as for Paints.

D. Stains:
1. Same as for Paints.

E. Primer Sealers: Same manufacturer as top coats.

F. Block Fillers: Same manufacturer as top coats.

G. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each coating material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
b. Architectural coatings VOC limits of California..
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: As indicated on drawings
1. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
2. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.
3. Refer to RCP for areas to be painted black.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint ME-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:

1. One coat of latex primer.
2. Semi-gloss: Two coats of latex enamel; Permasheen W 901.

B. Paint ME-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
2. Semi-gloss: Two coats of latex enamel; Permasheen W 901.

C. Paint MgE-OP-3L - Galvanized Metals, Latex, 3 Coat:
1. One coat galvanize primer.
2. Semi-gloss: Two coats of latex enamel; Permasheen W 901.

2.04 PAINT SYSTEMS - INTERIOR

A. Paint WI-OP-3L - Wood, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Semi-gloss: Two coats of latex enamel; Permasheen W 901V.
3. Eggshell: Two coats of latex enamel; Permashell W 940V.

B. Paint WI-TR-VS - Wood, Transparent, Varnish, Stain:
1. One coat of stain; Color TBD.
2. One coat sealer; Heirloom Sanding Sealer 80-6200.
3. Satin: Two coats of varnish; Heirloom W/B Polyurethane Satin MC 80-6841.

C. Paint CI-OP-3L - Concrete/Masonry, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Semi-gloss: Two coats of latex enamel; Spartawall SWLL50.
3. Flat: Two coats of latex enamel; Spartawall SWLL10.

D. Paint MI-OP-3A - Ferrous Metals, Unprimed, Alkyd, 3 Coat:
1. One coat of alkyd primer.
2. Semi-gloss: Two coats of alkyd enamel; Aristowall AWLL50.

E. Paint MI-OP-2A - Ferrous Metals, Primed, Alkyd, 2 Coat:
1. Touch-up with alkyd primer.
2. Semi-gloss: Two coats of alkyd enamel; Aristowall AWLL50.

F. Paint MgI-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
1. One coat Ultra-Grip Premium UGPR00-1.
2. Semi-gloss: Two coats of alkyd enamel; Aristowall AWLL50.

G. Paint GI-OP-3LA - Gypsum Board/Plaster, Latex-Acrylic, 3 Coat:
1. One coat of latex pigmented primer sealer.
2. Semi-gloss: Two coats of latex-acrylic enamel; Spartawall SWLL50.
3. Eggshell: Two coats of latex-acrylic enamel; Spartawall SWLL30.

H. Paint FI-OP-2A - Fabrics/Insulation Jackets, Alkyd, 2 Coat:
1. One coat of alkyd primer sealer.
2. Flat: One coat of alkyd enamel; Spartawall SWLL10.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 GENERAL

A. Finish Level: Gypsum finish level for all work to receive paint within the within the following areas to receive Level 5 finish:
1. Executive Boardroom
2. Large Conference Rooms

3. Entrance Lobby
4. Lobby Stairs
5. All epoxy painted walls and ceilings

B. This quality level overrides the quality levels established through other criteria.

3.02 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Gypsum Wallboard: 12 percent.
2. Plaster and Stucco: 12 percent.
3. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.03 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing coatings that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

I. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

J. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.

K. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

L. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-PC 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).

M. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

N. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

O. Interior Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

P. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

Q. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

R. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.04 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's instructions.

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance.

F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

G. Sand wood and metal surfaces lightly between coats to achieve required finish.

H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

I. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

B. Owner will provide field inspection.

3.06 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.07 PROTECTION

A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

3.08

A. Wood Doors: WI-TR-VS.

3.09 SCHEDULE - COLORS

A. Rference Finish Schedule for Colors.

END OF SECTION

SECTION 09 9600
HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. High performance coatings.

1.02 RELATED REQUIREMENTS

A. Section 09 9000 - Painting and Coating.

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating coating materials .

C. Samples: Submit four samples 8x10 inch in size illustrating colors for selection.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include cleaning procedures and repair and patching techniques.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Coating Materials: 1 gallon of each type and color.
   2. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document that applies to application on site.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum 3 years documented experience.

1.06 MOCK-UP

A. Provide mock-up of panel, 10 feet long by 20 feet wide, illustrating coating .

B. Locate where directed.

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

1.07 FIELD CONDITIONS

A. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.

B. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.

C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

D. Restrict traffic from area where coating is being applied or is curing.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. High-Performance Coatings:
   1. Base Manufacturer: Tnemec Company, Inc: www.tnemec.com
   2. Carboline Company: www.carboline.com.

3. PPG Architectural Finishes, Inc: www.ppgaf.com.
4. Sherwin-Williams Company: www.protective.sherwin-williams.com/industries.
5. Substitutions: Section 01 6000 - Product Requirements.

2.02 HIGH-PERFORMANCE COATINGS

A. Provide coating systems that meet the following minimum performance criteria, unless more stringent criteria are specified:
   1. Abrasion Resistance: ASTM D 4060 Tabor Test. Wall system top coat shall have no more than 31 mg. loss after 1,000 cycles._____
   2. Scrubbability: Excellent, when tested in accordance with ASTM D 4213.
   3. Gloss and Color Retention: Excellent, when tested in accordance with ASTM.
   4. Finish/topcoat shall be resistant to the following disinfectant / cleaning solutions for a minimum of 24 hours:
      a. Acidulate 28
      b. Enviro-Kleen 120
      c. MB-10
      d. Sani-Plex128
      e. LPH
      f. Spor-Klenz
      g. Vesphene II

2.03 MATERIALS

A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.
   1. Maximum volatile organic compound (VOC) content: As required by applicable regulations.
   2. Colors: As indicated.

B. Interior EP System: High solids solvent and water base urethane three coat system.
   1. System Type: High Solids Epoxy / Ceramic-Modified Waterborne Urethane.
   2. Surface Preparation: Clean & Dry. Per MFG.
   3. Primer: Series 287 Enviro-Tread. DFT 2.0 to 3.0 Mils.
   4. Intermediate Coat: Series 84 Ceramlon ENV. DFT 4.0 to 6.0 Mils.
   5. Finish Coat: Series 297 Enviro-Glaze. DFT 2.0 to 3.0 Mils.
   6. Total DFT: 8.0 to 12.0 Mils.

C. Primers: As recommended by coating manufacturer for specific substrate, unless otherwise specified.

D. Shellac: Pure, white type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.

3.02 PREPARATION

A. Clean surfaces of loose foreign matter.

B. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.

C. Remove finish hardware, fixture covers, and accessories and store.

D. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

3.03 PRIMING

A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

3.04 COATING APPLICATION

A. Apply coatings in accordance with manufacturer's instructions, to thicknesses specified.

B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Clean surfaces immediately of overspray, splatter, and excess material.

C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.06 PROTECTION

A. Protect finished work from damage.

END OF SECTION

SECTION 10 2113.13
METAL TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal toilet compartments.

B. Urinal and Vestibule screens.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Concealed steel support members.

B. Section 06 1000 - Rough Carpentry: Blocking and supports.

1.03 REFERENCE STANDARDS

A. ASTM A424 - Standard Specification for Steel, Sheet, for Porcelain Enameling; 2009a.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.

C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings. Field verify all openings before submission of shop drawings.

C. Product Data: Provide data on panel construction, hardware, and accessories.

D. Manufacturer's Installation Instructions: Indicate special procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Toilet Compartments:
   1. General Partitions Mfg. Corp; Product ____: www.generalpartitions.com.
   2. Global Steel Products Corp; Product ____: www.globalpartitions.com.
   3. Metpar Corp; Product _____: www.metpar.com.
   4. Substitutions: Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Stainless Steel Sheet: ASTM A666, Type 304.

2.03 COMPONENTS

A. Toilet Compartments: Stainless steel, floor-mounted unbraced.

B. Doors, Panels, and Pilasters: Sheet steel faces, pressure bonded to sound deadening core, formed and closed edges; corners made with corner clips or mitered, welded, and ground smooth.
   1. Panel Faces: 20 gage.
   2. Door Faces: 22 gage.
   3. Pilaster Faces: 20 gage.
   4. Reinforcement: 12 gage.
   5. Internal Reinforcement: Provide in areas of attached hardware and fittings. Mark locations of reinforcement for partition mounted washroom accessories.

C. Door and Panel Dimensions:
   1. Thickness: 1 inch.

2. Door Width: 24 inch.
3. Door Width for Handicapped Use: 36 inch, out-swinging.
4. Height: 72 inch.

D. Pilasters: 1-1/4 inch thick, of sizes required to suit compartment width and spacing.

E. Urinal Screens: Wall mounted with two panel brackets. pilaster

2.04 ACCESSORIES

A. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with No. 4 finish, 3 inch high, concealing floor fastenings.
1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.

B. Head Rails: Hollow chrome-plated steel tube, 1 x 1-5/8 inch size, with anti-grip strips and cast socket wall brackets.

C. Brackets: Satin stainless steel.

D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.

E. Hardware: Polished chrome plated non-ferrous cast metal:
1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
2. Thumb turn or sliding door latch with exterior emergency access feature.
3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
4. Coat hook with rubber bumper; one per compartment, mounted on door.
5. Provide door pull for outswinging doors.

2.05 FINISHING

A. Stainless Steel Compartments: No. 4 finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that field measurements are as indicated.

C. Verify correct spacing of and between plumbing fixtures.

D. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. Adjust hinges to position doors in partial opening position when unlatched. Return out swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

SECTION 10 2226.33
FOLDING PANEL PARTITIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Acoustic operable panel partition.

B. Ceiling track and operating hardware.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood blocking and track support shimming.

B. Section 07 9005 - Joint Sealers: Acoustical sealant.

C. Section 08 7100 - Door Hardware: Lock cylinders for panels.

1.03 REFERENCE STANDARDS

A. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.

B. ASTM E413 - Classification for Rating Sound Insulation; 2010.

C. ASTM E557 - Standard Guide for Architectural Design and Installation Practices for Sound Isolation between Spaces Separated by Operable Partitions; 2012.

D. ASTM E596 - Standard Test Method for Laboratory Measurement of Noise Reduction of Sound-Isolating Enclosures; 1996 (Reapproved 2009).

E. ASTM F793 - Standard Classification of Wallcovering by Use Characteristics; 2010a.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on partition materials, hardware and accessories, and colors and finishes available.

C. Shop Drawings: Indicate opening sizes, track layout, details of track and required supports, and stacking depth.

D. Samples for Review: Submit two samples of surface finish, 12 x 12 inches size, illustrating quality.

E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods. Describe cleaning materials detrimental to finish surfaces and hardware finish.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified this section with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Other Acceptable Manufacturers:
   1. Hufcor, Inc; Product ____: www.hufcor.com.
   2. Panelfold, Inc; Product ____: www.panelfold.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COMPONENTS

A. Operable Panel Partition: Center opening; paired panels; center stacking; manually operated.
   1. Panel Finish: Vinyl coated fabric specified in Section 09 7200.
   2. Noise Reduction Coefficient (NRC): ASTM E596, NRC of 0.65 minimum.
   3. Sound Transmission Class (STC): 38-42 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90, on panel size of 100 sq ft.

B. Core: Solid wood construction utilizing manufacturer's standard fabrication methods.

C. Core: 16 gage formed sheet steel frame top, bottom, jambs, and intermediates; welded construction, with acoustical insulation fill.
   1. Thickness with Finish: 3 inches.
   2. Factory applied surface finish.
   3. Trim: Trimless.
   4. Hinges: Continuous piano type, 18 gage stainless steel.
   5. Panel to Panel Seals: Grooved and gasketed astragals; continuous flexible ribbed vinyl seal fitted to panel edge construction; color to match panel finish.

D. Track: Formed steel; 1-1/4 x 1-1/4 inches size; thickness and profile designed to support loads, steel sub-channel and track connectors, track switches, _____.

E. Carriers: Nylon wheels on trolley carrier at top of every second panel, sized to carry imposed loads, with threaded pendant bolt for vertical adjustment.

F. Hardware: Latching door handles of cast steel, satin chrome finish ; pull bars; _____.

G. Acoustic Seals: Flexible acoustic seals at jambs, meeting mullions, ceilings, retractable floor and ceiling seals, and above track to structure acoustic seal.

H. Vinyl Coated Fabric: ASTM F793 Category VI, polyvinyl fluoride finish for washability and improved flame retardance_____ color.

I. Pocket Enclosures: Door, frame, and trim to match adjacent walls.

J. Acoustic Sealant: Specified in Section 07 9005.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that required utilities are available, of the correct characteristics, in proper location, and ready for use.

C. Verify track supports are laterally braced and will permit track to be level within 1/4 inch of required position and parallel to the floor surface.

D. Verify floor flatness of 1/8 inch in 10 feet, non-cumulative.

E. Verify wall plumbness of 1/8 inch in 10 feet, non-cumulative.

3.02 INSTALLATION

A. Install partition in accordance with manufacturer's instructions and ASTM E557.

B. Fit and align partition assembly and pocket doors level and plumb.

C. Lubricate moving components.

D. Apply acoustic sealant to achieve required acoustic performance.

3.03 ADJUSTING

A. Adjust partition assembly to provide smooth operation from stacked to full open position. Do not over-compress acoustic seals.

B. Visually inspect partition in full extended position for light leaks to identify a potential acoustical leak.

C. Adjust partition assembly to achieve lightproof seal.

3.04 CLEANING

A. Clean finish surfaces and partition accessories.

END OF SECTION

SECTION 10 2601
WALL AND CORNER GUARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface mounted stainless steel corner guards including mounting adhesive and hardware.

1.02 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wall and Corner Guards:
   1. Bobrick ; Product B633.
   2. Bradley; Product 991.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COMPONENTS

A. Corner Guards - Surface Mounted: Extruded one-piece unit without splices, installed with adhesive.
   1. Material: Type 304 stainless steel, No. 4 finish.
   2. Thickness: 18 gage, 0.05 inch.
   3. Width of Wings: 1-1/2 inches.
   4. Styles: Provide 90 degree corners and wall end protectors.

B. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.

B. Position corner guard 6 inches above finished floor to 48 inches high.

3.02 TOLERANCES

A. Maximum Variation From Required Height: 1/4 inch.

END OF SECTION

SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

1.02 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers; 2010.

B. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate cabinet physical dimensions.

C. Product Data: Provide extinguisher operational features.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Ansul, Inc: www.ansul.com.
   2. Pyro-Chem: www.pyrochem.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

B. Fire Extinguisher Cabinets and Accessories:
   1. Ansul, Inc.: www.ansul.com.
   2. JL Industries, Inc: www.jlindustries.com.
   3. Larsen's Manufacturing Co: www.larsensmfg.com.
   4. Potter-Roemer: www.potterroemer.com.
   5. Pyro-Chem: www.pyrochem.com.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL for the purpose specified and indicated.

2.03 FIRE EXTINGUISHER CABINETS

A. Metal: Formed primed steel sheet; 0.036 inch thick base metal.

B. Cabinet Configuration: Recessed type.
   1. Sized to accommodate accessories.

C. Door: 0.036 inch thick, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with two butt hinge. Provide nylon catch.

D. Door Glazing: Glass, clear, 1/8 inch thick float. Set in resilient channel gasket glazing.

E. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.

F. Weld, fill, and grind components smooth.

G. Finish of Cabinet Exterior Trim and Door: stainless steel .

H. Finish of Cabinet Interior: White enamel.

END OF SECTION

SECTION 11 5213
PROJECTION SCREENS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Front projection screen assemblies.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Supports for suspended projection screens.

B. Section 06 1000 - Rough Carpentry: Wood blocking in walls and ceilings.

C. Section 06 2000 - Finish Carpentry: Site constructed wood frames for rear projection screens.

D. Section 09 2116 - Gypsum Board Assemblies: Suspended gypsum board ceilings for recessed screens, and openings in gypsum board partitions for fixed and rear projection screens.

E. Section 09 5100 - Acoustical Ceilings: Suspended panel ceilings for recessed screens.

F. Section 26 2717 - Equipment Wiring: Electrical supply, conduit, and wiring for electric motor operated projection screens.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog cuts and descriptive information on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: For custom installations, indicate dimensions, verified field measurements, mounting details, and interface with adjacent construction.

D. Operation and Maintenance Data: Provide manufacturer's operation and maintenance instructions.

E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Experienced in manufacturing products specified in this section.

B. Installer Qualifications: Experienced in installation of the work of this section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver projection screens to project site in manufacturer's original unopened packaging. Inspect for damage and size before accepting delivery.

B. Store in a protected, clean, dry area with temperature maintained above 50 degrees F. Stack according to manufacturer's recommendations.

C. Acclimate screens to building temperatures for 24 hours prior to installation, or in accordance with manufacturer's recommendations.

1.06 FIELD CONDITIONS

A. Maintain interior of building between 60 degrees F and 75 degrees F during and after installation of projection screens.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide ____ year manufacturer warranty for projection screen assembly.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Da-Lite Screen Company: www.da-lite.com.

B. Draper, Inc: www.draperinc.com.

2.02 FRONT PROJECTION SCREENS

A. Manufacturers:
   1. Bretford, Model _____: www.bretford.com.
   2. Da-Lite Screen Company, Model _____: www.da-lite.com.
   3. Draper, Inc (Motorized): www.draperinc.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Front Projection Screens: Factory assembled unless otherwise indicated.
   1. Dimensions: As indicated on drawings.
   2. In _____: Motorized, matte light diffusing fabric screen, horizontally tensioned , wall mounted.
      a. Screen Viewing Area: __ inches by __ inches.
      b. Screen Dimensions: __ inches by __ inches.

C. Matte Light Diffusing Fabric: Light diffusing screen fabric; washable, flame retardant and mildew resistant.
   1. Material: Matte white vinyl on fiberglass backing, with nominal gain of 1.0 over viewing angle not less than 70 degrees from axis, horizontally and vertically.
   2. Seams: No seams permitted in fabric up to 96 inches high by 72 inches wide.

D. Masking Borders: White, four sides.

E. Extra Drops: White; 11 inches.

F. Exposed Screen Cases: Steel; integral roller brackets.
   1. Finish: Baked enamel.
   2. Color: White.
   3. End Caps: Steel; finished to match case.
   4. Mounting: Wall.

G. Concealed-in-Ceiling Screen Cases: Steel; integral roller brackets.
   1. Door Slat: Self trim; self-closing and -opening.
   2. Case Finish: Baked enamel.
   3. Case Color: White.
   4. End Caps: Steel; finished to match case.

H. Electrically-Operated Screens:
   1. Roller: 2 inch aluminum, with locking device.
   2. Vertical Tensioning: Screen fabric weighted at bottom with steel bar with plastic end caps.
   3. Horizontal Tensioning: Tab-guided cable system.

I. Provide mounting hardware, brackets, supports, fasteners, and other mounting accessories required for a complete installation, in accordance with manufacturer's recommendations for specified substrates and mountings.

2.03 ELECTRICAL COMPONENTS

A. Electrical Components: Listed and classified by UL as suitable for the purpose specified and indicated.

B. Motors: Direct drive, 110 V, 60 Hz.
   1. Screen Motor: Mounted inside roller; three wire with ground; quick reverse type; equipped with thermal overload cut-off.
      a. Electrical Characteristics: 1.2 amps.
      b. Motor mounted on sound absorber.

C. Controls: 3 position control switch with plate.

1. Provide 2 control stations to screen, with internal override to prevent more than one signal reaching the screen.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate is finished and ready to accept screen installation.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that openings for recessed screens are correctly sized.

D. Verify that entrances to installation area are sized to permit entry of rigid screen.

E. Verify type and location of electrical connections.

F. Do not install projection screens until climate control systems are in place and interior painting and other finishes are completed.

3.02 PREPARATION

A. Coordinate screen installation with installation of projection systems.

B. Coordinate installation with adjacent construction and fixtures, including ceilings, walls, lighting, fire suppression, and registers and grilles.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, using manufacturer's recommended hardware for relevant substrates.

B. Do not field cut screens.

C. Install screens in mountings as specified and as indicated on drawings.

D. Install multiple screens in accordance with drawings and manufacturer's instructions. Verify that screens are aligned horizontally and vertically, and that spacing between screens is uniform and of minimum size.

E. Install plumb and level.

F. Install electrically operated screens ready for connection to power and control systems by others.

G. Adjust projection screens and related hardware in accordance with manufacturer's instructions for proper placement and operation.

H. Test electrical screens for proper working condition. Adjust as needed.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 11 6100

LABORATORY FUME HOODS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide laboratory fume hoods with valves, faucets, and accessories as required for operational installation.

B. Related Sections:
   1. Section 12300: Manufactured Laboratory casework.
   2. Section 12355: Laminate Casework and Lab Furniture.
   3. Division 15: Fume hood connections from hood duct collar to exhaust system.
   4. Division 16: Electrical power supply.

1.2 SYSTEM DESCRIPTION

A. Design Requirements: Design fume hoods to provide proper exhaust volume under normal laboratory conditions.
   1. Fume Hoods: Design to operate in safe, efficient manner, within acceptable tolerances for face velocities specified. Design fume hoods to prevent dead air pockets and reverse air currents along surface of hood interiors.

1.3 REFERENCES

A. AIHA Z9.5 - Laboratory Ventilation; American Industrial Hygiene Association; 2003. (ANSI/AIHA Z9.5)

B. ASHRAE Std 110 - Method of Testing Performance of Laboratory Fume Hoods; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; 1995.

C. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.

D. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability; 2004b.

E. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2005.

F. NFPA 45 - Standard for Fire Protection for Laboratories Using Chemicals; 2004.

G. SEFA 1.2 - Laboratory Fume Hoods; Scientific Equipment and Furniture Association; 2002.

H. UL 1805 - Standard for Laboratory Hoods and Cabinets; 2002.

I. UL 61010A-1 - Electrical Equipment for Laboratory Use; Part 1: General Requirements; 2002.

1.4 PERFORMANCE REQUIREMENTS

A. Average Face Velocity: For laboratory fume hoods, 80 fpm with sashes fully open, 100 fpm with sash open to 18 inches.

B. Containment: Furnish and install laboratory fume hoods that are tested according to ASHRAE 110 at a release rate of 4.0 L/min. as follows:
   1. Face Velocity Variation: Not more than 10 percent of average face velocity.
   2. Sash Position: Fully open.
   3. As-Manufactured (AM) Rating: AM 0.05 ppm.
   4. As-Installed (AI) Rating: AI 0.05 ppm.

C. Static-Pressure Loss: Not more than 3/8-inch wg at 100 fpm face velocity when tested according to SEFA 1.2.

D. Noise Criteria: Hood shall operate at a 45 NC when connected to a exhaust system of no greater than 45 NC. Octave band analysis measured at 3 feet in front of the open sash at 100 fpm face velocity.

E. Provide exterior cabinet finish to perform to acceptable level for the following tests according to SEFA 8:
   1. Chemical Spot Test.
   2. Hot Water Test.
   3. Impact Test.
   4. Paint Adhesion on Steel.
   5. Paint Hardness on Steel.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Submit manufacturer's data for each type of fume hood.
C. Shop Drawings: Show plans, elevations, ends, cross-sections, service run spaces, location and type of service fixtures.
   1. Furnish details and location of anchorages and fitting to floors, walls and base.
   2. Indicate layout of units with relation to surrounding walls, doors, fixtures, and other building components.
   3. Show connection to hood exhaust system; location of access doors, cut-off valves, junction boxes.
   4. Coordinate shop drawings with other work involved.
   5. Furnish roughing-in drawings for mechanical and electrical services.
D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
E. Operation Data: Include description of equipment operation and required adjusting and testing.
F. Maintenance Data: Identify system maintenance requirements, servicing cycles, lubrication types required and local spare part sources.
G. Test Reports: Submit as-installed test reports.

1.6 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of fume hoods with delivery of other laboratory furniture components.
B. Protect finished surfaces from soiling and damage during handling and installation; keep covered with protective covering.

1.7 WARRANTY

A. Warrant against defects in materials and workmanship on fume hoods, work surfaces, and accessories; include labor and replacement parts (except lamps).
B. Warranty Period: One year from date of installation or two years from date of purchase, whichever is sooner.
C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Labconco XL Series Fume Hoods
B. LabCrafters Air Sentry Series Fume Hoods
C. BMC Metal Arc fume Hoods
D. Kewaunee Fume Hoods
E. Fisher Hamilton Fume Hoods
F. Substitutions: Refer to Section 01 6300.

2.2 MATERIALS AND FABRICATION

A. General: Design hoods to be highly fume resistant, for collection, retention and disposal of hazardous fumes with complete safety.
   1. Types: As indicated on Drawings.

2. Design for minimum expenditure of purging air from room supply, and for minimum turbulence within hood chamber.

B. Framework: Heavy-gage steel members, reinforced, braced and assembled to insure strength and rigidity. Frame Construction: Minimum 14 gauge cold rolled sheet steel.

C. Body Construction: Fabricate exterior component parts to allow removal of end panels, front end fascia pieces, top fascia and air foil strips, and to allow access to plumbing lines and service fixtures.
   1. Exterior Panels: Minimum 20 gauge, 0.036 inch cold rolled sheet steel.
   2. Corner Posts: 16 gauge, 0.06 inch sheet steel, angled aerodynamic design; pre-punched to accommodate service fixtures and electrical receptacles on each side as indicated; unused openings plugged.
   3. Sash Foils: 18 gauge, 0.048 inch Type 316 SS with aerodynamic openings to provide a lower barrier of clean air; airfoil-shaped directing air into hood with minimum turbulence, retaining bypass opening even when sash is fully closed.
   4. Two interior access panels for access to services and other parts requiring maintenance.
   5. Two exterior front access panels located on corner posts for access to services and other parts requiring maintenance.
   6. Apply manufacturer's standard acid and alkali resistant finish to interior and exterior surface of component parts prior to final assembly.

D. Ends: Double-wall end panels without projecting corner posts or other obstructions to interfere with smooth, even flow of air.
   1. Close area between double walls as required.

E. Plenum Chamber: Adequate volume for hood dimensions, extending full width of hoods to equalize incoming air flow, of same material as hood lining.
   1. Provide corrosion resistant, stainless steel duct stub of proper dimension for connection to exhaust duct assembly.

F. Hood Sashes: Safety glass in type 316 stainless steel frame configuration, with counterbalance mechanism allowing for low force operation. Provide sash stops where indicated.
   1. Framed tempered dual vertical rising safety glass sash for ten foot hoods; single vertical rising safety glass sash for eight foot hoods.
   2. Counterbalanced
   3. Sash stops at 18” provided on sash with auto self closing/return feature

G. Airfoil: Type 316 Stainless Steel, removable

H. Polyester Liner: Reinforced polyester panel, minimum 3/16 inch thick, smooth finish and white color.

I. Baffles: Same material as liner, operation as indicated.

J. Epoxy Resin Work Surfaces: 1-1/4 inches thick, 3/8 inch deep dished solid epoxy resin surface conforming to hood interior.

K. Exhaust Transitions
   1. Exhaust outlets to be round stainless steel duct collars.
   2. Constant Volume (Base Bid) VAV prep (Alt Bid).

L. Face Velocity Monitor: Digital monitor with LCD digital readout indicating face velocity of fume hood, with visual normal flow indicator and audio/visual low flow alarm; adjustable low flow alarm set point and delay; temporary and permanent alarm silence feature.

M. Mechanical Services and Fittings: For water, gas, vacuum and other laboratory gases as specified in Laminate Furniture Casework Specification.

N. Electrical Services and Fittings:

1. 120 volt: Polarized 3-wire, grounding type, 120 volt, 20 amp, NEMA 5-20R duplex receptacles mounted in corner cover assembly; wire to separate electrical circuit; configuration as scheduled. Color to match Division 16 specification with stainless steel flush cover plate.
2. Full factory wired fume hoods to terminate at one junction box location. Junction box will be located on top of fume hood.
3. Outlets as per plan

O. Lighting:
1. 115 volt, 50/60 Hz fixtures with tubes and bulbs. Provide quantity to achieve lighting performance criteria.
2. Vapor Proof Lighting: Two tube fluorescent light fixtures located behind tempered glass safety shield, serviceable from outside fume hood cavity.

P. Features:
1. Provide fume hood distillation grids & ceiling enclosures
2. Internal depth as defined by overall fume hood depth; see drawings and equipment list.
3. Colors to be from Standard colors.
4. Cord pass through port located on fume hood sides as indicated on drawings.
5. All service fixtures as scheduled and as per Casework specifications.
6. Sinks per plan.
7. Ceiling enclosures.
8. Venting Pump cabinets below via a ducted tube to the exhaust ductwork.

Q. Flammable Storage: 18 gauge, double wall metal construction, FM listed:
1. Construction: 18 gauge, double wall metal, with 2 inch liquid-tight containment basin at bottom, complying with NFPA 30 and California Fire Code (CFC) Article 79.
2. Doors: Self-closing, full length piano hinge, 3 point self-latching, with lock.
3. Vents: Upper and lower, FM approved, with bungs, capable of being installed internally or externally.
4. Finish: Painted metal to match fume hood.
5. Label: Provide FM listing label. Provide warning sign "FLAMMABLE-KEEP FIRE AWAY".

R. Corrosive Storage:
1. Construction: 18 gauge, double wall metal, with 2 inch liquid-tight containment basin at bottom, complying with NFPA and California Fire Code (CFC) Article 80. Provide corrosive resistant surface at shelf, lining and containment basin.
2. Doors: Self-closing, full length piano hinge, 3 point self-latching, with lock.
3. Vents: Upper and lower, with bungs, capable of being installed internally or externally.
4. Finish: Painted metal to match fume hood.
5. Label: Provide warning sign "CORROSIVE".

S. Vacuum Pump:
1. Construction: 18 gauge, double wall metal, with 2 inch liquid-tight containment basin at bottom, complying with NFPA and California Fire Code (CFC) Article 80. Provide corrosive resistant surface at shelf, sound absorbing lining and containment basin.
2. Doors: Louvered, Self-closing, full length piano hinge, 3 point self-latching, with lock.
3. Vents: (2) 3” vents on the rear of the cabinet; one for vacuum pump tubing one for ducted vent kit.
4. Finish: Painted metal to match fume hood.

5. Electrical: Provide 120 volt/20 A duplex type outlet mounted to inside back of cabinet with 7' pigtail. Provide switch for outlet on front upper face of cabinet.
6. Provide and install 1 1/2" min diameter vent pipe from the rear of cabinet. Supply 10' of 1 ½" diameter rigid PVC pipe for connection to exhaust ductwork. Secure to vent pipe from cabinet and to exhaust ductwork.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install fume hoods plumb, level, rigid, securely anchored to building and adjacent furniture in proper location, in accordance with manufacturer's recommendations and installation instructions.
   1. Install closures to provide neat clean appearance.
   2. Securely attach access panels but provide for easy removal and secure re-attachment.

B. Coordinate sequence of work with mechanical and electrical trades and with related work.

3.2 FIELD QUALITY CONTROL

A. Field test each unit after completion of installation to verify proper operation of hoods in accordance with specified requirements.
   1. Perform tests in accordance with Section 7 of Scientific Apparatus Makers Association Standard LF-10.

3.3 ADJUSTING AND CLEANING

A. Adjusting: Carefully check and adjust moving parts to insure smooth, near-silent, and accurate operation.
B. Cleaning: Clean exterior and interior surfaces exposed to view.

3.4 PROTECTION

A. Provide protective measures to prevent equipment and surfaces from exposure to other construction activity

END OF SECTION

SECTION 12 2400
WINDOW SHADES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Window shades and accessories.

B. Electric motor operators.

C. Motor controls.

1.02 RELATED REQUIREMENTS

A. Section 26 0943 - Network Lighting Controls - Lutron: Lighting control system for control of motorized window shades.

B. Section 26 2726 - Wiring Devices: Finish requirements for wall controls specified in this section.

1.03 REFERENCE STANDARDS

A. ASTM D4674 - Standard Practice for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Office Environments; 2002a (Reapproved 2010).

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manually Operated Roller Shades:
   1. Hunter Douglas; _____: www.hunterdouglas.com.
   2. Mariak.
   3. Substitutions: See Section 01 6000 - Product Requirements.

B. Motorized Roller Shades, Motors and Motor Controls:

C. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

2.02 WINDOW SHADE APPLICATIONS

A. Shades at Board Room: Blackout shades with second shade in same opening.
   1. Type: Roller shades.
   2. Fabric: blackout and 3% openness factor solar shade.
   3. Color: As selected by Architect from manufacturer's full range of colors.
   4. Mounting: Inside, in head pocket.
   5. Operation: Motorized.

2.03 ROLLER SHADES

A. Manual Roller Shades: Unframed solar fabric roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories; fully factory-assembled.
   1. Drop: Regular roll.
   2. Size: As indicated on drawings.
   3. Hand: provide for either left or right hand operation.

B. Motarized Roller Blackout Shades:
   1. Motor: Fractional horsepower asynchronous motor with reversible capacitor designed for intermittent operation; thermally protected, totally enclosed.
      a. Provide solenoid activated disk brake and internal limit switches which are externally adjustable.
   2. Speed: Minimum 12 rpm.
   3. Blackout Shades Controls: Momentary operated, double pole, double throw switch located remotely; each window shall have separate switch, with switches ganged together. Rooms with multiple exposures shall have the ability to control independently.

C. Fabrics: Manufacturer's standard fire resistant fabrics; colors and patterns as selected by Architect from manufacturer's full range, refer to A-700.

1. Solar Shades: Manufacturer's standard fire resistant vinyl or glass cloth fabric.
2. Blackout Shades: Manufacturer's standard blackout shade system where indicated.
3. Colors: As selected by Architect from manufacturer's full range of colors.
4. Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
5. Sheer Shades: Reduce glare yet still reveal considerable details to the outside; no privacy; Openness Factor of 3 percent.
6. Blackout Shades: Block virtually all the light; Openness Factor equal to zero (0).
7. No growth, tested to ASTM G21 for ATCC9642, ATCC9348, and ATCC9645.

D. Roller Tube: As required for type of operation, extruded aluminum with end caps.
1. Dimensions: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.
2. Fabric Attachment: Utilize double sided adhesive tape.

E. Hembars and Hembar Pockets: Wall thickness designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
1. Style: Thermally sealed fabric pocket covering rectangular aluminum hembar.
2. Finish: Anodized.
3. Color: _____.
4. Blackout Shades: Provide a slot in bottom bar with wool-pile light seal.

F. Manual Operation: Clutch operated continuous loop; beaded ball chain meeting WCMA A100.1.

G. Motor Operation: Motor system housed inside roller tube, controlling shade movement via motor controls indicated; listed to UL 325.
1. Audible Noise: Maximum 39 dBA measured 3 feet from the motor unit; no audible clicks when motor starts and stops.
2. Motors: Size and configuration as recommended by manufacturer for the type, size, and arrangement of shades to be operated; integrated into shade operating components and concealed from view.
3. Motor Type: Both AC and DC motors are acceptable; provide required transformers for DC motors.
4. Coupling of Multiple Shades: Where possible, minimize number of motors by coupling adjacent shades.
5. Control Compatibility: Fully compatible with the controls to be installed.

2.04 MOTOR CONTROLS

A. Motorized shades to be controlled by lighting control system and associated control devices as specified in Section 26 0943.

B. Control Requirements:
1. Unless specifically indicated to be excluded, provide all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the control intent indicated.
2. Capable of assigning shades to groups and subgroups without rewiring.
3. Capable of synchronizing multiple units of the same size to start, stop and move in unison.

C. Wall-Mounted Controls: UV stabilized visible parts meeting ASTM D4674; furnished with backlit buttons; provided by shade manufacturer.
1. Control Functions:
a. Open: Automatically open controlled shade(s) to fully open position when button is pressed.
b. Close: Automatically close controlled shade(s) to fully closed position when button is pressed.
c. Raise: Raise controlled shade(s) only while button is pressed.
d. Lower: Lower controlled shade(s) only while button is pressed.

e. Stop shade(s) in motion by tap on any button.
f. Presets: Provide button(s) as indicated for selection of programmable scenes.

2. Finish: As specified in Section 26 2726.
3. Button Engraving: Manufacturer's standard engraving, unless otherwise indicated.
4. Basis of Design: Lutron Electronics, Inc; seeTouch QS Model _____: www.lutron.com.

2.05 ACCESSORIES

A. Fascias: Size as required to conceal shade mounting.
1. Material and Color: To match shade.

B. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.

C. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

2.06 FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. Fabricate shades to fit openings within specified tolerances.
1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom bar and window stool.

C. Dimensional Tolerances: As recommended in writing by manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Start of installation shall be considered acceptance of substrates.

3.02 PREPARATION

A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

B. Coordinate with window installation and placement of concealed blocking to support shades.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.

B. Installation Tolerances:
1. Maximum Offset From Level: 1/16 inch.

C. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure shades for smooth operation.

3.04 SYSTEM STARTUP

A. Motorized Shade System: Provide services of a manufacturer's authorized representative to perform system startup.

3.05 CLEANING

A. Clean soiled shades and exposed components as recommended by manufacturer.

B. Replace shades that cannot be cleaned to "like new" condition.

3.06 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.

3.07 PROTECTION

A. Protect installed installed products from subsequent construction operations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.08 MAINTENANCE

A. Provide to Owner, a proposal as an alternate to the base bid, a separate renewable maintenance contract for the service and maintenance of a motorized shade system for one year from date of Substantial Completion. Include a complete description of preventive maintenance, systematic examination, adjustment, parts and labor, cleaning, and testing, with a detailed schedule.

END OF SECTION

SECTION 12 3553.13
METAL LABORATORY CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal cabinets and cabinet hardware.

B. Acid storage cabinets.

C. Solvent storage cabinets.

D. Vacuum pump cabinets.

E. Countertops.

F. Service fittings and outlets.

1.02 RELATED REQUIREMENTS

A. Section 07 9005 - Joint Sealers.

B. Section 12 3600 - Countertops: Additional requirements for countertops.

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.

B. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength, Low Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2012

C. NFPA 30 - Flammable and Combustible Liquids Code; 2012.

D. SEFA 1.2 - Laboratory Fume Hoods; 2010.

E. SEFA 2.3 - Installation of Scientific Laboratory Furniture and Equipment; 2010.

F. SEFA 3 - Work Surfaces; 2010.

G. SEFA 7 - Laboratory and Hospital Fixtures; 2010.

H. SEFA 8 - Laboratory Casework; 2010.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Large Components: Ensure that large components can be moved into final position without damage to other construction.

B. Service Fixtures: Coordinate location and characteristics of service connections.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Details of materials, component dimensions and configurations, construction details, joint details, attachments; manufacturer's catalog literature on hardware, accessories, and service fittings, if any.

C. Shop Drawings: Casework locations, large scale plans, elevations, cross sections, rough-in and anchor placement dimensions and tolerances, clearances required, and utility locations, if any.
   1. Detail casework; include elevations, and plans, with large scale sections and details. Note finishes, and show installation details.
      a. Include catalog numbers and specifications of Casework Manufacturer.
      b. Submit three sets of laser quality, 11 x 17 shop drawings consisting of
         1) Finish, hardware, construction options selection sheet.
         2) Small scale floor plan showing casework in relation to the building.
         3) Large scale elevations and plan views.
         4) Cross-Sections; service runs; locations of blocking within walls (blocking by general contractor); rough-in requirements and sink centerlines.

c. Manufacturer and/or Manufacturer's rep verifies all critical building dimensions prior to fabrication.

D. Samples For Color Selection: Color charts for each different finish material.
1. Submit samples of each exposed finish.
a. Submit catalog showing construction details, material specifications and hardware specification of all items used.
b. Submit one set of metal component powder coat samples.

E. Test Reports: Independent laboratory reports showing compliance with chemical resistance requirements for cabinet finish.

F. Maintenance Data: Manufacturer's recommendations for care and cleaning.

1.06 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Laboratory Casework:
1. Thermo Fisher Scientific: www.thermoscientific.com.
2. Jamestown Metal Products: www.jamestown.com.
3. Kewaunee Scientific Corp: www.kewaunee.com.
4. Hanson Lab Furniture Inc: www.hansonlab.com.
5. Substitutions: Not permitted.

2.02 METAL LABORATORY CASEWORK

A. Casework: Die-formed metal sheet; each unit self-contained and not dependent on adjacent units or building structure for rigidity; factory-fabricated, -assembled, and -finished.
1. Style: Flush overlay.
2. Sheet Metal: Steel.
a. Gables, Front and Back Panels, Gusset Plates and Rails: 18 gage thick.
b. Door Fronts, Drawers, Cabinet Floors, Shelves, Filler Panels and Drawer Dividers: 20 gage thick.
c. Backing Sheet to Door and Door Fronts: 22 gage thick.
3. Structural Performance: In addition to the requirements of SEFA 3, 7 and 8, provide components that safely support the following minimum loads, without deformation or damage:
a. Base Units: 500 pounds per linear foot (744 kg per m) across the cabinet ends.
b. Tables: 300 pounds (136 kg) on four legs.
4. Corners and Joints: Without gaps or inaccessible spaces or areas where dirt or moisture could accumulate.
5. Edges and Seams: Smooth. Form counter tops, shelves, and drain boards from continuous sheets.
6. Shelf Edges: Turn down 1 inch on each side and return 5/8 inch front and back.
7. Ends: Close open ends with matching construction.
8. Welding: Electric spot weld; grind joints smooth and flush.
9. Drawers and Doors: Fabricate drawer and door fronts of sandwiched sheets of sheet steel welded together and reinforced for hardware. Fill with sound deadening core.
10. Glazing: With gasket and removable stops; minimize rattling and vibration.
11. Fixture Locations: Cut and drill counter tops, backs, and other components for service outlets and fixtures.
12. Access Panels: Provide access panels for maintenance of utility service fixtures and fittings and mechanical and electrical components.
13. Filler Panels: Where cabinets do not fit tight to adjacent construction, provide filler panels of matching construction and finish.
14. Finish on Steel (Except Stainless Steel): Provide a finish on all surfaces having chemical resistance equal to Level 0 (no change) or Level 1 (slight change of gloss or slight discoloration) according to SEFA 8.1.

a. Coating Type: baked enamel; minimum two coats.
b. Color: As selected from manufacturer's standard selection.
c. Preparation: Degrease and phosphate etch, and prime.

15. Separation: Use bituminous paint or non-conductive tape to coat metal surfaces in contact with cementitious materials and to separate dissimilar metals.

B. Acid Storage Cabinets: Construction identical to other cabinets, with following exceptions:
1. Completely lined with corrosion-resistant liner material; stainless steel fasteners for all connections and hardware inside cabinet.
2. Shelves: Perforated or vented, rigid polypropylene.
3. Bottom Pan: Liquid tight, polypropylene liner covering entire bottom of acid storage cabinet.
4. Vents: Comply with SEFA 1.2.
a. Locate acid storage cabinet vents in accordance with manufacturer's instructions.
b. Vent base cabinets through work surface with manufacturer's vent kit.
c. Vent each acid storage cabinet separately.
d. When acid storage cabinets are installed below fume hoods, provide louvered cabinet doors.
e. Seal all penetrations with chemical resistant sealant.

C. Solvent Storage Cabinets: Construction identical to other cabinets, with following exceptions:
1. Construct to NFPA 30 and applicable OSHA requirements.
2. Fire Resistance: Maximum internal temperature of 325 degrees F when subjected to a ten minute fire test and using a standard time-temperature curve in accordance with NFPA 30.
3. Minimum 18 gauge steel, double panel construction with 1-1/2 inch space between panels and electrical grounding connection.
4. Shelves: Full depth, adjustable.
5. Bottom Pan: 2 inches deep liquid tight pan covering entire bottom of cabinet.
6. Cabinet Hardware: UL-listed, self-closing, latching doors synchronized so that both doors always fully close; three point latching system in right hand leaf of every pair of doors and equip latching system with lock; fusible-link hold-open device that releases the door to close when ambient temperature exceeds 165 degrees F.
7. Vents: Provide venting capable of achieving at least ten air changes per hour.
a. Tie into building hazardous exhaust system.
b. Vent Connections: 1-1/2 inch minimum diameter, corrosion resistant piping having flame spread rating of 25 or less, when tested in accordance with ASTM E84.
c. Provide minimum of two vents with fire baffle for each cabinet.
8. Signage: Provide manufacturer's standard, signage reading "FLAMMABLE - KEEP FIRE AWAY" or similar message in bright red color.

D. Vacuum Pump Cabinets: Construction identical to other cabinets, with following exceptions:
1. No cabinet bottom but with integral toe space, removable back panels, and precut 2-1/2 inch vent hole for separate vent assembly.
2. Insulation: Manufacturer's standard acoustical insulation on interior of door panels, interior side of back and panels as well as underside of top panel.
3. Motor Platform: Separate from cabinet, capable of supporting 300 pounds, two of four casters to be lockable, swivel-type; 2 inch lip and liquid tight pan covering entire bottom of cabinet.
4. Pump On/Off Switch: Integral, 120V, 20A, with pilot light indicating availability of power and mode of vacuum pump operation.
a. Conduit Stub: 20 foot, 1/2 inch flexible metal conduit connected to switch, for connection to building power.
5. Convenience Outlet: Integral electrical duplex outlet located in rear of cabinet, accessible from inside cabinet and pre-wired to pump on/off switch.
6. Exhaust Fan: 235 cubic feet per minute exhaust fan attached to exterior of cabinet; include 4 inch collar connection for duct and intake louvers in door.

E. Epoxy Resin Countertops: Filled epoxy resin molded into homogenous, non-porous sheets; no surface coating and color and pattern consistent throughout thickness; with integral or adhesively seamed components.
   1. Flat Surface Thickness: 1 inch, nominal.
   2. Surface Finish: Smooth, non-glare.
   3. Color: #14 Platinum from Epoxyn Lab Countertops 800.424.5254.
   4. Exposed Edge Shape: 1/8 inch bevel chamfer.
   5. Drip Edge: Drip groove 1/8 inch wide and deep, located 1/2 inch back from edge on underside of all exposed edges.
   6. Back and End Splashes: Same material, same thickness; separate for field attachment.

2.03 MATERIALS

A. Sheet Steel: Mild, cold rolled and leveled unfinished steel sheet, ASTM A1008/A1008M, Class 1 (matte) finish.

B. Solvent-Resistant Liner Material: Polypropylene.

C. Cabinet Hardware: Manufacturer's standard styles, exposed components stainless steel.
   1. Finish of Exposed Components: No. 4 finish.
   2. Locks: Lock with 4 pin cylinder and 2 keys per lock.
   3. Shelves:
      a. Shelf Standards and Rests: Vertical chrome steel standards with rubber button fitted steel rests.
      b. Shelf Brackets: Vertical chrome steel standards with chrome steel arms.
   4. Swinging Doors:
      a. Hinges: Offset pin.
      b. Catches: Magnetic.
      c. Pulls: Stainless Steel wire pulls, 4 inches wide.
   5. Sliding Doors:
      a. Pulls: Stainless Steel wire pulls, 4 inches wide.
      b. Track Assembly: Nylon track with roller bearing followers.
   6. Drawers:
      a. Pulls: Stainless Steel wire pulls, 4 inches wide.
         1) One pull shall be: located at the centerline of the drawer, regardless of width, to ensure ease of operation and maximize drawer slide life.
      b. Slides: Steel, full extension arms, ball bearings; capacity as recommended by manufacturer for drawer height and width. Self-closing, bottom mount epoxy coated with captive roller and positive in stop. Slide shall have 100 lb. Load rating, must be self-closing and must prevent drawer fronts from contacting the cabinet body. Drawer slides must meet or exceed Grade 1 requirements per ANSI A156.9/BHMA with full extension slides on writing, file and paper storage.
   7. Hinges: 5-Knuckle Hinges/ Reveal Overlay. Hinges shall be 0.095” thick stainless steel five-knuckle hospital-tip, institutional Grade (Grade 1 per ANSI/BHMA A156.9) quality with 0.187” diameter tight pin. Each hinge shall be secured with a minimum of nine No. 8 screws. Hinge shall permit door to swing 270 degrees without binding. Doors less than 48” in height shall have two hinges. Doors over 48” in height shall have three hinges.

D. Casters for Mobile Base Cabinets:
   1. Shall be available in 4” (3” diameter wheel) nominal heights. 4” casters must have a minimum load rating of 200 lbs per caster.
   2. Shall be ball bearing with 360 degree swivel.
   3. Shall have non-marring wheels available in both locking and non-locking.

E. Service Fixtures and Fittings:
   1. Lab Sinks: Black Epoxy
      a. Bowl Size: 28"L x 16"W x 12"D
   2. Air Outlet: Model: Z8001B-Air manufactured by Zurn.

a. Turret: Model Z88000 manufactured by Zurn.
b. Wall Flange: Model Z88600 manufactured by Zurn.

3. Vacuum Outlet: Model: Z8001B-Vac manufactured by Zurn.
   a. Turret: Model Z88000 manufactured by Zurn.
   b. Wall Flange: Model Z88600 manufactured by Zurn.
4. Escutcheons: Stainless steel.
5. Fixtures:
   a. Faucet and valve handles shall be color-coded per service index color:

Service	Color	Symbol
Cold Water	Green	CW
Hot Water	Red	HW
Gas	Blue	GAS
Air	Orange	AIR
Vacuum	Yellow	VAC
Nitrogen	Brown	NIT
Deionized Water	White	DI

F. Electrical Outlet Covers: Stainless steel.

G. Electrical Service raceway:
1. Wiremold Series 4000 aluminum or steel divided dual service raceway 4 3/4" D x 1 3/4" W
2. The raceway systems shall provide protection for power, low voltage, data and communication in a 2-channel configuration.
3. Steel raceway to have grey, baked enamel finish.

H. Sound Deadening Material: Inorganic, for sandwich panel fabrication.

I. Sealant: Sanitary type, specified in Section 07 9005.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify capacity of support framing and anchors.

B. Verify that service connections are correctly located and of proper characteristics.

3.02 INSTALLATION

A. Perform installation in accordance with manufacturer's instructions and with SEFA 2.3.

B. Use anchoring devices to suit conditions and substrate materials encountered.

C. Set casework items plumb and square, securely anchored to building structure.

D. Align cabinets to adjoining components, install filler panels where necessary to close gaps; seal joints between cabinets and countertops and adjacent construction.

E. Separate dissimilar metals to prevent galvanic action.

F. Vented Cabinets: Install in strict compliance with manufacturer's written installation instructions.
1. Install vent kits and connect to exhaust system.
2. Use only rigid materials for venting. No flexible materials permitted.
3. Plug vent openings in unvented cabinets with manufacturer's standard closure.

G. Replace units that are damaged, including those that have damaged finishes.

3.03 ADJUSTING

A. Adjust operating parts, including doors, drawers, hardware, and fixtures, to function smoothly.

3.04 CLEANING

A. Clean all components.

3.05 PROTECTION

A. Do not permit finished casework to be exposed to continued construction activity.

B. Repair damage that occurs prior to Substantial Completion, including finishes, using methods prescribed by manufacturer; replace units that cannot be repaired to like-new condition.

END OF SECTION

SECTION 12 3553.19
WOOD LABORATORY CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood cabinets and cabinet hardware.

B. Manufactured plastic laminate cabinets and cabinet hardware

C. "C" Frame Support Modules

D. Specified Lab Tables

E. Overhead Service Carriers (OSC)

F. Drying Racks

G. Shelving, wall cabinets

H. Supports and misc. items as noted and necessary for a complete furniture installation.

I. Service fittings and outlets.

1.02 RELATED REQUIREMENTS

A. Section 07 9005 - Joint Sealers.

B. Section 11 6100 - Fume Hoods

C. Section 12 3553.19 - Metal Laboratory Casework.

1.03 DEFINITIONS

A. Exposed: Portions of casework visible when drawers and cabinet doors are closed, including end panels, bottoms of cases more than 42 inches above finished floor, tops of cases less than 72 inches above finished floor and all members visible in open cases or behind glass doors.

B. Semi-Exposed: Portions of casework and surfaces behind solid doors, tops of cases more than 72 inches above finished floor and bottoms of cabinets more than 30 inches but less than 42 inches above finished floor.

C. Concealed: Sleepers, web frames, dust panels and other surfaces not generally visible after installation and cabinets less than 30 inches above finished floor.

1.04 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.

B. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2009 (ANSI/HPVA HP-1).

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

D. SEFA 1.2 - Laboratory Fume Hoods; 2010.

E. SEFA 2.3 - Installation of Scientific Laboratory Furniture and Equipment; 2010.

F. SEFA 3 - Work Surfaces; 2010.

G. SEFA 7 - Laboratory and Hospital Fixtures; 2010.

H. SEFA 8 - Laboratory Casework; 2010.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Component dimensions, configurations, construction details, joint details, attachments; manufacturer's catalog literature on hardware, accessories, and service fittings, if any.

C. Shop Drawings: Casework locations, large scale plans, elevations, cross sections, rough-in and anchor placement dimensions and tolerances, clearances required, and utility locations, if any.

1. Detail casework; include elevations, and plans, with large scale sections and details. Note finishes, and show installation details.
    a. Include catalog numbers and specifications of Casework Manufacturer.
    b. Submit three sets of laser quality, 11 x 17 shop drawings consisting of
        1) Finish, hardware, construction options selection sheet.
        2) Small scale floor plan showing casework in relation to the building.
        3) Large scale elevations and plan views.
        4) Cross-Sections; service runs; locations of blocking within walls (blocking by general contractor); rough-in requirements and sink centerlines.
    c. Manufacturer and/or Manufacturer's rep verifies all critical building dimensions prior to fabrication.

D. Samples For Color Selection: Wood samples, fully finished, for color and species selection; laminate and edge band samples for manufactured casework.
    1. Submit samples of each exposed finish.
        a. Submit catalog showing construction details, material specifications and hardware specification of all items used.
        b. Submit one set of metal component powder coat samples.

E. Test Reports: From independent laboratory indicating compliance with referenced chemical-resistance standards for cabinet finish and liner materials.

F. Maintenance Data: Manufacturer's recommendations for care and cleaning.

1.06 QUALITY ASSURANCE

A. Mock-Up: Full size base cabinet complete with drawers, door, adjustable shelf and counter top.
    1. Locate where directed.
    2. Mock up may remain as part of the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Laboratory Casework:
    1. Thermo Fisher-Hamilton: www.hamiltonlab.com.
    2. Keur Industries: www.keurind.com.
    3. Kewaunee Scientific Corp: www.kewaunee.com.
    4. Hanson Lab Furniture Inc: wwwhansonlab.com.
    5. Substitutions: Not permitted.

B. Manufactured Plastic Laminate Casework:
    1. Hanson Lab Furniture Inc: wwwhansonlab.com.
    2. A-1 Plastics Inc. 618 W. Bradley El Cajon, CA 92020 619.444.9442

2.02 WOOD LABORATORY CASEWORK

A. Wood Laboratory Casework: Solid wood and wood panel construction; each unit self-contained and not dependent on adjacent units or building structure for rigidity; in sizes necessary to avoid field cutting except for scribes and filler panels.
    1. Style: Flush overlay.
    2. Construction: All joints doweled, glued and screwed, except drawers may be lock shoulder jointed; with interior of units smooth and flush; cabinet bottom flush with top of face frame; without gaps or inaccessible spaces or areas where dirt or moisture could accumulate.
    3. Structural Performance: In addition to the requirements of SEFA 3, 7 and 8, components safely support the following minimum loads:
    4. Scribes and Fillers: Where cabinets do not fit tight to adjacent construction, provide filler panels of matching construction and finish.
    5. Finish: Factory-finish all exposed and semi-exposed surfaces with the same finish.
        a. Finish Performance: Provide finish on all surfaces having chemical resistance of Level 0 (no change) or Level 1 (slight change of gloss or slight discoloration) according to SEFA 8.1 and no visible effect when surface is exposed to:

1) Hot water at temperature between 190 F and 205 F trickled down the test surface at 45 degree angle for 5 minutes.
2) Constant moisture in the form of 2 inch by 3 inch by 1 inch cellulose sponge kept continually saturated with water and in contact with test surface for 100 hours.

b. Preparation: Wood sanded smooth, free from dust and mill marks.
c. Coating: Clear, superior-quality, chemical-resistant acyclic urethane; applied in accordance with manufacturer instructions, force-dried, sanded and wiped clean.
d. Coats: Multiple coats as required to achieve minimum 1.5 mil dry film thickness.
e. Appearance: Clear satin gloss; not cloudy or muddy.

B. Epoxy Resin Countertops: Filled epoxy resin molded into homogenous, non-porous sheets; no surface coating and color and pattern consistent throughout thickness; with integral or adhesively seamed components.
1. Flat Surface Thickness: 1 inch, nominal.
2. Surface Finish: Smooth, non-glare.
3. Color: #14 Platinum from Epoxyn Lab Countertops 800.424.5254.
4. Exposed Edge Shape: 1/8 inch bevel chamfer.
5. Drip Edge: Drip groove 1/8 inch wide and deep, located 1/2 inch back from edge on underside of all exposed edges.
6. Back and End Splashes: Same material, same thickness; separate for field attachment.

2.03 MATERIALS

A. Wood-Based Materials:
1. Solid Wood: Air-dried to 4.5 percent moisture content, then tempered to 6 percent moisture content before use.
2. Composite Wood Panels: Containing no urea-formaldehyde resin binders.

B. Exposed Solid Wood: Clear, dry, sound, plain sawn, selected for compatible grain and color, no defects.

C. Exposed Hardwood Plywood: HPVA HP-1 Grade AA, Type I; veneer core; same species as exposed solid wood, clear, compatible grain and color, no defects. Band exposed edges with solid wood of same species as veneer.

D. Semi-Exposed Hardwood Plywood: HPVA HP-1 Grade C, Type I; veneer core; plain sliced, any species similar in color and grain to exposed portions.

E. Concealed Solid Wood or Plywood: Any species and without defects affecting strength or utility.

F. Cabinet Hardware: Manufacturer's standard styles, exposed components stainless steel.
1. Finish of Exposed Components: No. 4 finish.
2. Locks: Lock with 4 pin cylinder and 2 keys per lock.
3. Shelves:
a. Shelf Standards and Rests: Vertical chrome steel standards with rubber button fitted steel rests.
b. Shelf Brackets: Vertical chrome steel standards with chrome steel arms.
4. Swinging Doors:
a. Hinges: Offset pin.
b. Catches: Magnetic.
c. Pulls: Chrome wire pulls, 4 inches wide.
5. Sliding Doors:
a. Pulls: Recessed steel circular design.
b. Track Assembly: Nylon track with solid bearing followers.
6. Drawers:
a. Pulls: Chrome wire pulls, 4 inches wide.
b. Slides: Steel, full extension arms, ball bearings; capacity as recommended by manufacturer for drawer height and width. Self-closing, bottom mount epoxy coated with captive roller and positive in stop. Slide shall have 100 lb. Load rating, must be: self-closing and must prevent drawer fronts from contacting the cabinet body. Drawer

slides must meet or exceed Grade 1 requirements per ANSI A156.9/BHMA with full extension slides on writing, file and paper storage.

7. Hinges: 5-Knuckle Hinges/ Reveal Overlay. Hinges shall be 0.095” thick stainless steel five-knuckle hospital-tip, institutional Grade (Grade 1 per ANSI/BHMA A156.9) quality with 0.187” diameter tight pin. Each hinge shall be secured with a minimum of nine No. 8 screws. Hinge shall permit door to swing 270 degrees without binding. Doors less than 48” in height shall have two hinges. Doors over 48” in height shall have three hinges.

G. Casters for Mobile Base Cabinets:
   1. Shall be available in 4” (3” diameter wheel) nominal heights. 4” casters must have a minimum load rating of 200 lbs per caster.
   2. Shall be ball bearing with 360 degree swivel.
   3. Shall have non-marring wheels available in both locking and non-locking.

H. Service Fittings and Fixtures:
   1. Lab Sinks: Black epoxy.
      a. Bowl Size: 28"L x 16"W x 12"D
   2. Air Outlet: Model: Z8001B-Air manufactured by Zurn.
      a. Turret: Model Z88000 manufactured by Zurn.
      b. Wall Flange: Model Z88600 manufactured by Zurn.
   3. Vacuum Outlet: Model: Z8001B-Vac manufactured by Zurn.
      a. Turret: Model Z88000 manufactured by Zurn.
      b. Wall Flange: Model Z88600 manufactured by Zurn.
   4. Escutcheons: Stainless steel.
   5. Fixtures:
      a. Faucet and valve handles shall be color-coded per service index color:

Service	Color	Symbol
Cold Water	Green	CW
Hot Water	Red	HW
Gas	Blue	GAS
Air	Orange	AIR
Vacuum	Yellow	VAC
Nitrogen	Brown	NIT
Deionized Water	White	DI

I. Electrical Outlet Covers: Stainless steel.

J. Electrical Service raceway:
   1. Wiremold Series 4000 aluminum or steel divided dual service raceway 4 3/4" D x 1 3/4" W
   2. The raceway systems shall provide protection for power, low voltage, data and communication in a 2-channel configuration.
   3. Steel raceway to have grey, baked enamel finish.

K. Sound Deadening Material: Inorganic, for sandwich panel fabrication.

L. Sealant: Sanitary type, specified in Section 07 9005.

2.04 MANUFACTURED CASEWORK

A. Provide Plastic Laminate Faced Cabinets Manufactured with:
   1. Particleboard Core (Mobile Cabinets):

All particleboard shall be Grade M-3 and shall meet or exceed all requirements as set by ANSI A208.1-2009.

Density 40-50 lbs/cu.ft	
Moisture Content	10% Max
Modulus of Rupture	2393 psi
Modulus of Elasticity	398,900 psi
Internal Bond	80 psi
Hardness	500 pounds Min
Linear Expansion 0.35%	

Thickness Tolerance	+/- 0.008”
Face Screw Holding	247 pounds Min

2. MR (Moisture Resistant) Core (Sink Cabinets) shall be:
   a. Interior-Grade moisture resistant particleboard.
   b. Meet or exceed M-3 Grade, according ANSI-A208.1-2009.
3. Joinery:
   a. Mechanical joinery:
      1) All cabinet body components shall be secured utilizing concealed interlocking mechanical fasteners as approved by the AWI Quality Standards 8th Edition - 2003 Sections 400A-T-12, 400B-T1- and 1600-T-11.

B. Surface Material:
1. Acceptable laminate color, pattern, and finish as either scheduled or otherwise indicated on drawings or as selected by Architect from manufacturer’s standards types and nominal thickness including:
   a. Vertical surface decorative grade (VGS):.028” thick
   b. General purpose decorative grade (HGS):.048” thick
   c. Cabinet decorative liner grade (CLS):.020” thick
   d. Non-decorative backer grade (BKH):.028” thick
   e. Thermally fused melamine laminate
   f. Chemical resistant decorative laminate

C. Edge Banding:
1. PVC & ABS
   a. Shall be applied utilizing hot melt adhesive and radiused by automatic trimmers. Edging shall be available in full range of color options to match laminates.
   b. Supplier: Richelieu Hardware; 800.619.5446

D. Adhesives
1. PVA
   a. Adhesive shall be mechanically applied
   b. NAUF, no VOC
2. EVA
   a. Adhesive shall be mechanically applied

2.05 FABRICATION

A. General Cabinet Body Construction:
1. Cabinet Box Style shall be flush overly.
2. Cabinet Box Core shall be M-3 particleboard.
3. Bottoms and ends of cabinets, and tops of wall and tall cabinets (all structural components) shall be ¾” thick.
4. All panels shall be manufactured with balanced construction.
5. Fixed Interior components such as fixed shelves, dividers, and cubicle compartments shall be full ¾” thick and attached with concealed interlocking mechanical fasteners.
6. Cabinet body exterior surfaces shall be: VGS for vertical surfaces and Chemical Resistant Laminate for top surface of mobile cabinets.
7. Cabinet finished interior options shall be: Standard
8. Cabinet body interior surfaces shall be Chemical Resistant Thermally Fused Melamine with an add alternate for Decorative Thermally Fused.
9. Cabinet body front edge shall be: 3MM PVC or ABS with an alternate for a self edge.
10. Mounting stretchers are ¾” thick structural components fastened to end panels and back by mechanical fasteners, and are concealed by the cabinet back.
11. When the rear of a cabinet is exposed, a separate finished ¾” thick decorative laminate back panel may be specified.
12. Backs of cabinets are 1/4” thick surfaced both sides for balanced construction and fully captured on both sides and bottom.

13. A 5mm diameter row hole pattern 32mm (1-1/4") on center shall be bored in cabinet ends for adjustable shelves. This row hole pattern shall also serve for hardware mounting and replacement and/or relocation of cabinet components.
14. An upper ¾" thick stretcher shall be located behind the back panel and attached between the end panels with mechanical fasteners. This stretcher is also fastened to the full sub-top thus capturing the back panel.

B. Base Cabinet Construction:
   1. 1. All base cabinets, except sink cabinets, shall have a solid ¾" thick sub-top of core (as specified above), fastened between the ends with interlocking mechanical fasteners.
   2. 2. Sink cabinets with a split removable back panel shall have a formed metal front brace, and steel corner gussets shall be utilized to support and securely fasten top in all four corners. Front brace shall be powder coated black.

C. Tall Cabinet Construction:
   1. All tall cabinets shall be provided with an intermediate fixed shelf to maintain internal dimensional stability under heavy loading conditions as well as an intermediate ¾" thick stretcher located behind the back panel and be secured between the cabinet ends with mechanical fasteners. The stretcher shall be secured to the shelf through the back with #8 x 2" plated flat head screws.

D. Wall Cabinet Construction:
   1. 1. All wall cabinet bottoms shall be 1" thick core (type specified above), mechanically fastened between end panels and secured to the bottom back stretcher. A lower ¾" thick stretcher shall be located behind the back panel and attached between the end panels with mechanical fasteners. The stretcher is also secured through the back and into the cabinet bottom.
   2. 2. All wall cabinet exterior bottoms shall be: Match Exterior Surface.
   3. 3. All wall cabinet tops shall be: Standard: ¾" thick.

E. Tall and Wall Cabinet Top Edges shall be: 0.020" PVC at Top of End Panels, Stretchers & Back.

F. Tall, Wall and Hutch Tops shall be: Material Match Standard Interior.

G. Tall, Wall and Hutch Upper Door Reveal shall be: Standard: 15mm Reveal.

H. Toe Base of Cabinet:
   1. Individual bases shall be constructed of pressure treated plywood factory applied to base and tall cabinets and shall support and carry the load of the end panels, and the cabinet bottom, directly to the floor. The base shall be let in from sides and back of the cabinet to allow cabinets to be installed tightly together and tight against a wall, also to conceal the top edge of applied vinyl base molding (not supplied by casework manufacturer). There shall be a front to back center support for all bases over 30" wide.
   2. Toe Base Height Standard: 96mm
   3. Toe Base Options Standard: Attached.

I. Drawer Fronts and Solid Doors:
   1. All drawer fronts and solid door components shall be: Standard: M-3 Particleboard surfaced both sides for balanced construction.
   2. Options shall be HPL Grade VGS Door Interior and Exterior (both sides match front surface color).
   3. Surfaces shall be: Standard: HPL Grade VGS.
   4. Door and drawer front edge shall be: 3mm ABS with an alternate for a self edge.

J. Drawer Boxes:
   1. Drawer box constructed with a full ½" thick core shall be: Standard: 3M non-racking, non-deflecting platform bottom that is carried directly by "L" shaped, bottom mount drawer glides.
   2. Drawer box at finished interiors shall be: Surface to Match Finished Interior.

3. Standard: Slides are secured with 1-1/4" long screws driven through the platform and into the sides. Drawer box sides, backs, sub-front, and bottom shall be ½". The top edge shall be nominal 1mm (.020") PVC matching the drawer color. Drawer box corners shall be joined with fluted hardwood dowels and glue spaced at a minimum of 32mm on center. Drawer box fronts shall be removable and attached to drawer box sub-front with screws from inside of drawer. Horizontal parting rails between drawers shall be ¾" thick core, with balanced surfaces, secured to and further reinforcing cabinet ends. Full-height sides and back on all drawer boxes.

K. Doors:
   1. Sold Doors shall be: Standard: ¾" thick core.
   2. Glazed Doors, Framed shall be:
      a. Hinged or sliding ¾" thick, framed doors shall be Tempered Glass Panels. Panels must be a minimum of ¼" thick. Glazing panel shall be set into the doorframe without the use of a separate molding. Glazing shall be held in place with removable stops.
   3. Glazed Doors, Frameless shall be:
      a. Sliding, minimum of ¼" thick tempered glass panels. All edges to be radius ground and polished.
   4. Sliding Doors shall be:
      a. a. Extruded aluminum upper track with anodized finish. All tall cabinets shall receive two hanging brackets per door with two rollers per bracket. All other cabinets shall receive two hanging brackets per door with one roller per bracket. The bottom of door shall be captured in a retainer to prevent doors from swinging in or out.
   5. Pocket Doors shall be:
      a. Zinc plated, self-closing, three-way adjustable geometric door hinge with precision steel ball bearing slides.

L. Shelves:
   1. Adjustable:
      a. Adjustable shelves shall be: Standard: M-3 Particleboard, with balanced surfaces.
      b. Adjustable shelves in closed cabinets shall be: 1 1/8" for all shelves.
      c. All adjustable shelves in open cabinets shall be 1 1/8" thick, except for special use cabinets such as mail, cubical, instrument or locker type units.
      d. Adjustable shelf edge on open cabinets shall be: 3mm on Front and Back Edges,.020" on Sides with an add alternate for a self edge.
      e. Adjustable shelf edge on closed cabinets shall be 3mm on Front and Back Edges,.020" on Sides with an add alternate for a self edge.
   2. Fixed:
      a. Fixed shelves shall be: Standard: M-3 Particleboard, with balanced surfaces.
      b. Fixed shelves shall be: 1 1/8" for All Shelves.
      c. Fixed Shelf surfaces on closed cabinets shall be: Standard: Match Interior Selections.
      d. Fixed shelf surfaces on open cabinets shall be: VGS on Both Sides.
   3. Wall shelving shall be:
      a. Wall shelves shall be: Standard: M-3 Particleboard, with balanced surfaces.
      b. Wall shelves shall be: 1 1/8" for All Shelves.

M. Wall Shelf surfaces shall be: Standard: thermally fuses melamine laminate with an alternate for VGS laminate on Both Sides.

N. Mobile Base Cabinets:
   1. Mobile top shall have 3mm edging and shall have an overhang at front, sides and rear to act as a bumper. Mobile top shall be available in a variety of colors. Mobile unit shall be constructed on a ¾" thick core, as specified, and platform with 3mm edging. Sides, back and casers will be securely fastened using mechanical fasteners.
   2. Mobile units shall be available with 4" nominal height casters to clear C-Frame legs.
   3. Mobile back shall be 1" thick specified core.
   4. Mobile unit shall have a maximum load rating of 500 pounds.

5. Mobiles will have a ¾” thick finished top with material as specified: Chemical Resistant Laminate.

O. C-Frames:
   1. Constructed with epoxy powder coated rectangular steel tubing.
      a. C-Frame shall include a full height removable metal chase panels and an 8" fixed panel to be slip-fit to the C-Frame top rail.
      b. C-Frames are free standing and shall include adjustable leveling feet.
      c. The C-frames are available in a 30" and 36" sizes.
      d. i. Heights: sitting (30”), ADA (34”), and standing (37”).
      e. ii. Depths: 24”
         1) Widths: 48” and 60”.
      f. The C-Frame is load rated for 800 equally distributed pounds.
      g. C-Frames are available as individual units or as starter and adder configurations and corner “C” frames.
      h. C-Frames shall be integrally designed with Mobile Base cabinets to allow base cabinets to clear C-Frame legs (unobstructed movement over and around C-Frame legs).

P. Reagent Shelving:
   1. Reagent shelving units to be 42” to 60” wide.
      a. Reagent shelving units core material shall be grade M-3, 1 1/8”particleboard core.
      b. Shelving materials shall be: Thermally fused melamine with an alternate for VGS laminate.
   2. Triple post and rail front shelf retainer lip shall be aluminum posts with horizontal SS rod triple rails for all shelving.
   3. Exposed side and back shelf retainer lips shall be stamped powder coated metal lips.
   4. Uprights:
      a. Each upright to be slotted back-to-back steel channel (Base Bid)
      b. Finish to be epoxy powder coated
      c. Each upright to accept accessory and mounting hardware on minimum two sides.
      d. Uprights to be mounted by:
         1) Bolted to the floor through a base plate for slotted back-to-back steel channel uprights. (Base Bid)
      e. Uprights are 84" in height (Base Bid)

Q. Stamped Metal Data & Electrical Boxes
   1. 6” x 7” x 12” dimensioned with precut electrical and lab service fixture outlet locations powdercoated and manufactured to metal casework specifications.

R. Wall Mount Track for Shelving:
   1. Each wall track to be: an extruded aluminum strip, epoxy powder coated.
      a. Extruded aluminum channel, epoxy powder coated (Bid alternate)
      b. Steel channel, epoxy powder coated (Base Bid)
   2. Wall track shall be compatible with all reagent shelving and overhead brackets.
   3. Shelving Accessories:
      a. Vertical adjustable shelving as shown on drawings. Each shelf to be slotted for incremental infinitely vertically adjustable in available channel openings.
      b. Shelf support brackets and full metal back support lips shall allow support from upper or lower mounting positions.
      c. Shelving materials shall be: Thermally fused melamine with an alternate for VGS laminate.
      d. Uprights to be same as Reagent shelving uprights.

S. Overhead Service Carriers:
   1. Suspended overhead service carrier:
      a. Unit shall be designed to carry all services including water, vacuum, gasses, electrical, exhaust, data and communications.

b. Service carrier to be designed in separate interchangeable 36”, 48”, 60”, and 72” sections.
c. Each section shall have pre-punched plumbing fixture locations and 4 7/8" wide channel to accept Wiremold Series 4000 raceway. Future use of unused openings shall not require field modifications. Internal strut supports are designed for securing supply lines with strut type clamps.
d. Service carrier to be formed steel structure that allows slight angled access to fixtures from either side of unit.
e. Exterior and interior finish to be epoxy powder coated.
f. Service carrier to allow clear unobstructed access to furniture below.
g. Service carrier to incorporate integral ceiling supply umbilical and/or threaded rod supports for each service run.
h. Above ceiling supports (by others) shall be tied to building structure to provide adequate support.
i. Service carrier shall allow for optional local exhaust where shown.
j. Fixtures available for services include adjustable valves, no drip no leak quick disconnects, communication/data junction boxes, and electrical outlets.
k. Service carrier shall be installed in locations and heights as shown on plans.
l. Dust cover: The wing overhead service carrier shall include a formed mild steel with an epoxy powder coated finish dustcover.

2.06 FINISHES

A. Plastic Laminate Casework Colors:
1. High Pressure Laminate from the full color selections of Wilsonart, Nevamar Formica or Pionite.
2. Thermally Fused Melamine Laminate from the standard color selections of Wilsonart, Nevamar Formica or Pionite that meet performance requirements of ANSI/NEMA 3 LD - 2005 for GP-28
3. Thermally Fused Melamine Decorative Laminate in standard color selections.
4. Cabinet Liner.020” thick, high-pressure cabinet liner conforming to ANSI/NEMA 3 LD-2005, Grade CLS. Surface texture shall be: similar to exterior finish. Color shall match interior colors of almond, grey or white.

B. Edge Banding:
1. PVC & ABS
a. Shall be applied utilizing hot melt adhesive and radiused by automatic trimmers. Edging shall be available in full range of color options to match laminates.
b. Supplier: Richelieu Hardware; 800.619.5446

C. C-frames shall be:
1. Standard color selections including Light Grey, or Light Neutral.

D. Reagent Shelving shall be:
1. Standard color selections of including Light Grey or Light Neutral.

E. Wall Mount Track for Shelving shall be:
1. Standard color selections of including Light Grey or Light Neutral.

F. Overhead Service Carriers:
1. Wing or Skycap shall be:
a. Standard color selections including Light Grey, White or Light Neutral.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of support framing and anchors.

B. Verify that service connections are correctly located and of proper characteristics.

3.02 INSTALLATION

A. Perform installation in accordance with manufacturer's instructions and with SEFA 2.3.

B. Use anchoring devices to suit conditions and substrate materials encountered.

C. Set casework items plumb and square, securely anchored to building structure.

D. Align cabinets to adjoining components, install filler panels where necessary to close gaps; seal joints between cabinets and countertops and adjacent construction.

E. Replace units that are damaged, including those that have damaged finishes.

3.03 ADJUSTING

A. Adjust operating parts, including doors, drawers, hardware, and fixtures, to function smoothly.

3.04 CLEANING

A. Clean all components.

3.05 PROTECTION

A. Do not permit finished casework to be exposed to continued construction activity.

B. Repair damage that occurs prior to Substantial Completion, including finishes, using methods prescribed by manufacturer; replace units that cannot be repaired to like-new condition.

END OF SECTION

SECTION 13 2126
COLD STORAGE ROOMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prefabricated insulated cold storage rooms with wall, floor, and ceiling panels.

B. Door, frame, and hardware.

C. Self contained refrigeration unit.

D. Controls and lighting.

E. Shelving and supports.

F. Maintenance of refrigeration unit.

1.02 RELATED REQUIREMENTS

A. Section 07 9005 - Joint Sealers.

B. Section 22 0513 - Common Motor Requirements for Plumbing Equipment.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.

B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.

C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2010.

D. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.

E. NSF 7 - Commercial Refrigerators and Freezers; NSF International; 2009.

F. NEMA MG 1 - Motors and Generators; National Electrical Manufacturers Association; 2011.

G. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL (EAUED) - Electrical Appliance and Utilization Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination with Electrical: Coordinate location and characteristics of electrical service.

B. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate layout, room dimensions, materials, components, fasteners, doors, hardware, equipment, finishes, method of installation and assembly, panel placement, supplementary support or bracing, controls, and service rough-in.

C. Product Data: Provide data on hardware and fixtures, joint details.

D. Certificates: Certify that products of this section meet or exceed specified requirements.

E. Operation Data: Include operating equipment, service and lubrication schedules .

F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Wrap and crate finished components and assemblies at factory to prevent damage or marring of surfaces during shipping and handling.

B. Do not deliver materials or assemblies to site until installation spaces are ready to receive units.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty for remote refrigeration compressor unit.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cold Storage Rooms:
   1. Bally Refrigerated Boxes, Inc.
   2. The Vollrath Co.
   3. Zer-O-Lock, Inc.
   4. Environmental Specialties, Inc.
   5. Harris Environmental Systems Inc.
   6. Hotpack Corporation.
   7. Climate Technologies, Inc.
   8. Haggerty Refrigeration, Inc.
   9. Courtesy Refrigeration, Inc.
   10. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COLD STORAGE ROOMS

A. Cold Storage Rooms: Factory-fabricated packaged units, comprised of modular panels, equipment, and fittings.
   1. All exposed components non-combustible.
   2. Food Service Applications: Comply with NSF 7.
   3. Electrical Equipment: Listed and classified by UL as suitable for the purpose specified and indicated.

B. Performance Requirements:
   1. Wall Panels: Withstand live lateral load of 100 lbs point load, 5 psf uniform load.
   2. Ceiling Panels: Withstand their own weight, dead loads, and live loads of _____ with maximum deflection of 1:180.
   3. Floor Panels: Withstand 100 psf uniform load without physical damage or indentation of panel or insulation and a point load of 300 psf without indentation.
   4. Cooler Rooms: Maintain 40 degrees F; plus or minus 2 F degrees.
      a. Maintain 4 degree Celcius, plus or minus 2 degree Celcius.
   5. Vapor Seal: Interior room atmospheric pressure of 1 inch sp, 72 degrees F, 40 percent RH: No failure.

2.03 COMPONENTS

A. Wall Panels: Comprising the following:
   1. Exterior Sheet: 0.0313 inch stainless steel.
      a. Exterior sheet to be 0.0313 inch powder coated galvanized steel for unexposed exterior panels.
   2. Interior Sheet: 0.0313 inch stainless steel.
   3. Core: Insulation bonded to exterior and interior sheets.
   4. Panel Width: 48 inches, one piece floor to ceiling.
   5. Panel Assembly: Tongue and groove edges, integral cam action locking clamps spaced not over 40 inches on center.

B. Ceiling Panels: Same construction as walls except exterior sheets of 0.025 inch galvanized sheet steel.

C. Floor Panels: Comprising the following:
   1. Top Sheet: 0.0625 inch stainless steel.
   2. Bottom Sheet: 0.0250 inch stainless steel.
   3. Core: 5/8 inch thick plywood laminated between top sheet and insulation; all bonded.
   4. Panel Width: 48 inches, one piece wall to wall.
   5. Panel Assembly: Tongue and groove edges, integral cam action locking clamps spaced not over 40 inches on center.
   6. Doors: Overlap type for 42" by 84" opening, construction as for walls but with edges closed in, 3" for 4C Cooler.

D. Insulation Thickness: 4 inches.

E. Provide an alternate for the following panel construction:
   1. Interior and Exterior Surfaces: Powder coated galvanized steel, minimum (0.04 inches) thick, with baked enamel finish. Color from standard colors.
      a. Exterior Sheet: 0.030 inch (0.75 mm) aluminum.
      b. Interior Sheet: 0.030 inch (0.75 mm) aluminum.

F. Doors: Overlap type for 42"x84" inch opening, construction as for walls but with edges closed; 3 inch thick insulation; flexible gasket containing magnetic strip on four edges; heated gasket thermostatic control with two way air relief valve.

G. View Windows: Sealed insulating glass units in doors, triple glass at freezers.
   1. Provide anti-sweat heat controller.

2.04 MATERIALS

A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating; 0.0313 inch thick.

B. Stainless Steel Sheet: ASTM A666 Type 304; No. 4 finish, 0.025 inch thick.

C. Insulation: Polyurethane foamed-in-place, density 2.2 lb/cu ft, K factor of 0.12, self extinguishing type.

D. Accessories: Thresholds, closure plates, ramps, hanger rods, tie down plates, bolts, screws, and washers; non-corrosive.

E. Insulating Glass: Hermetically sealed triple pane units, 1/4 inch thick lights, clear float glass panes, 5/8 inch unit thickness; certified by independent testing agency to comply with ASTM E2190.

F. Sealant: _____ type as specified in Section 07 9005.

G. Door Gaskets: Resilient hollow neoprene; electric heated at freezer doors; organic grease and oil resistant, replaceable and adjustable, concealed magnetic strip to maintain air tight seal.

2.05 COMPONENTS

A. Hardware: Cast brass, nylon bearing self closing hinges, roller catch latch and keeper; cylinder lock and inside safety release mechanism.

B. Shelving and Supports: Stainless steel construction, open rod construction, free standing style; _____ supports.

C. Overhead Light Fixtures: Vapor tight, incandescent with 150 watt lamp, operating toggle switch on exterior wall of room with pilot light, wired in rigid conduit.

D. Deli-door light fixtyres: Vapor tight, incandescent with 150 watt lamp, operating toggle switch on exterior wall of room with pilot light, wired in rigid conduit

E. Two data outlets per box.

2.06 EQUIPMENT

A. Cooling System: Direct expansion refrigerant, water cooled; remote located condensing unit for all rooms, evaporator, unit cooler, self contained with valves, controls, switches, timers, refrigerant piping, insulated suction lines, and wiring. Size and capacity to maintain environment specified; hot gas defrost; electrically heated trace condensate drain.
   1. Cooling Unit: Locate on building roof per construction documents. Pipe coolant to cold rooms.

B. Electrical Characteristics:
   1. 4. Electrical: Refer to Electrical Drawings for power supply.
   2. 480 volts, three phase, 60 Hz.

C. Motor: NEMA MG 1.

D. Control Panel: Provide with recording dial thermometers, alarms, and controls at door of each room.

E. Controls: Honeywell DR4500 penless.

F. Outputs of the box temperatures and alarms to be wired to the BMS via NEMA 4X Option with (4) 20mA outputs and alarm relays. Each box will be 100% redundant and the control panel will include a lead/lag time clock (Grasslin Talento 891), box temperature high and low control, pre-alarm control, and indicating lamps.

G. Thermometer: Direct reading type.

H. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.

I. Disconnect Switch: Factory mount disconnect switch in control panel.

2.07 FINISHES

A. Exterior Steel Cladding: White color. Baked acrylic enamel.

B. Interior Steel Cladding: White color. Baked acrylic enamel.

C. Stainless Steel: No. 4 finish.

D. Hardware: Polished chrome.

PART 3 EXECUTION

3.01 INSTALLATION

A. Assemble and install components in accordance with manufacturer's instructions.

B. Set floor panels in place and align. Connect to floor drains. Seal joints continuously and lock panels tightly together.

C. Set wall attachments on floor and anchor securely.

D. Cut holes, install anchors, and seal room panels for plumbing, power, and lighting.

E. Assemble wall panels; lock in place with cam locks. Brace securely until ceiling panels are installed.

F. Install ceiling panels; lock into wall panels. Provide and install supplementary ceiling hanger supports to building structure above.

G. Install sill plate at door opening .

H. Hang doors. Adjust to operate smoothly.

I. Locate condensing unit for each room on top of building roof as indicated. Support coil on room interior and make connections as required. Wire-in alarm unit and door and threshold heaters. Connect units to valved water piping. Run condensate line to nearest drain.

J. Install ceiling trim and ceiling fascia, cover plates between top of room and finished ceiling and end closure plates between room and adjacent wall.

K. Seal joints and services through walls with sealant to provide moisture and vapor seal.

3.02 FIELD QUALITY CONTROL

A. Test and adjust control equipment to ensure performance conforms to specified requirements.

B. Operate each room and test full range of functions over a continuous 48 hour period, recording physical data on operating equipment. Continuously record temperature and humidity.

C. Test each room for air tightness.

D. Adjust and re-test any rooms not meeting requirements.

E. Provide three copies of a written quality control test report.

F. Shut off equipment and controls and lock doors to prevent operation or access by unauthorized persons.

3.03 CLEANING

A. Remove temporary protection from prefinished surfaces.

B. Wash and clean floor, walls, and ceiling inside room and exposed surfaces on the outside. Clean glass, fixtures, and fittings.

3.04 CLOSEOUT ACTIVITIES

A. Demonstrate, in the presence of Owner, the operation, function, and maintenance of each room and its associated equipment.

3.05 MAINTENANCE

A. Provide service and maintenance of refrigeration unit for two years from Date of Substantial Completion, at no extra cost to Owner.

END OF SECTION