jhm-architec OC///24461 Ridge Route Unive #100 • Laguna rime C. V. 2002. SD///804 Pier View Way #103 • Oceanside CA 92054 P///760-730-5527 24461 Ridge Route Drive #100 • Laguna Hills CA 92653 P///949-496-6191

addendum

ADDENDUM NO:

DATE: PROJECT No.: BID No.: MAY 30, 2018 PUHSD 15.04 060518

01

DISTRICT: Perris Union High School District PROJECT: Remodel of the Human Resources Department PROJECT ADDRESS: 155 E. 4th Street, Perris, CA 92570

NOTICE TO BIDDERS

This Addendum forms a part of the Contract and modifies the original bidding documents. It is intended that all work affected by the following modifications shall conform with related provisions and general conditions of the Contract of the original drawings and specifications. Modify the following items wherever appearing in any drawings or sections of the specifications. Acknowledge receipt of <u>ADDENDUM NO. 01</u> in the space provided on the Bid Form. Failure to do so may subject to disqualification.

REVISIONS TO THE PROJECT MANUAL

ITEM No. 001- PROJECT SPECIFICATIONS

- A. ADD Division 01 project specifications in its entirety per attached.
- B. ADD Division 03 project specifications in its entirety per attached.
- C. ADD Division 06 project specifications in its entirety per attached.
- D. ADD Division 07 project specifications in its entirety per attached.
- E. ADD Division 08 project specification in its entirety per attached.
- F. ADD Division 09 project specifications in its entirety per attached.
- G. ADD Division 10 project specifications in its entirety per attached.
- H. ADD Division 12 project specifications in its entirety per attached.
- I. ADD PUHSD Master Specification for Data Cabling Infrastructure in its entirety per attached.

REVISIONS TO THE DRAWINGS

NO ITEMS

SUPPLEMENTAL MATERIAL TO THE CONSTRUCTION DOCUMENTS

NO ITEMS

END OF ADDENDUM



PROJECT MANUAL

DISTRICT OFFICE REMODEL

PERRIS UNION HIGH SCHOOL DISTRICT

Orange County Office: Address: 24461 Ridge Route Drive #100, Laguna Hills, CA 92653 Phone: 949.496.6191, Fax: 949.496.0269

San Diego Office: Address: 804 Pier View Way #103, Oceanside, CA 92054 Phone: 760.730.5527, Fax: 760.730.5627

Web: www.pjhm.com





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80	12	13	HOLLOW METAL FRAMES			
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- 08 14 16 FLUSH WOOD DOORS
- 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
- 08 71 00 DOOR HARDWARE
- 08 80 00 GLAZING

DIVISION 09 00 (0 FINISHES
092400092900095113095323096513096519096813097200099113099123	PORTLAND CEMENT PLASTER GYPSUM BOARD ACOUSTICAL CEILINGS METAL ACOUSTICAL CEILING SUSPENSION ASSEMBLIES RESILIENT BASE AND ACCESSORIES RESILIENT TILE FLOORING TILE CARPETING PRESENTATION DRY ERASE WALLCOVERING EXTERIOR PAINTING INTERIOR PAINTING
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DIVISION 41 00 00	MATERIAL PROCESSING AND HANDLING EQUIPMENT
DIVISION 42 00 00	PROCESS HEATING, COOLING, AND DRYING EQUIPMENT
DIVISION 43 00 00	PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT
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- C. Products Installed But Not Supplied Under This Section
- D. Related Sections
- E. Allowances
- F. Unit Prices
- G. Measurement Procedures
- H. Payment Procedures
- I. Alternates
- 1.02 REFERENCES
 - A. Work of the Contract can be summarized by references to the Contract, Agreement, General Conditions, Special Conditions, Supplemental Conditions, Specification, Drawings, Addenda and modifications to the contract documents issued subsequent to the initial printing of this project manual and including, but not necessarily limited to, printed material referenced by any of these. It is recognized that work of the contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the contract documents.
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Provide quality workmanship for the related work indicated and specified herein, meeting the quality standards of the trades affected by the scope of work per these contract documents.
 - B. Project/Work Identification
 - 1. Demolition of:
 - a. (E) Storefronts, Select Openings
 - b. (E) Hollow Metal Openings
 - c. (E) Wood Stud Partitions, Select Partitions
 - d. (E) Metal Acoustical Ceiling Suspension Assemblies, Select Ceilings
 - 2. Removal of:
 - a. (E) Hollo Metal Openings, Select Openings
 - b. (E) Acoustical Ceiling Tiles
 - c. (E) Floor Finishes
 - d. (E) Wall Coverings, Select Rooms
 - e. (E) Casework, Select Rooms
 - 3. Modification of:
 - a. (E) Wood Stud Partitions, Select Partitions
 - b. (E) Power and Data Devices
 - 4. Construction of:
 - a. (N) Storefronts
 - b. (N) Hollow Metal Openings

SUMMARY OF WORK

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- c. (N) Aluminum Doors
- d. (N) Wood Stud Partitions
- e. (N) Metal Acoustical Ceiling Suspension Assemblies
- f. (N) Acoustical Ceiling Tiles
- g. (N) Wall Finishes
- h. (N) Floor Finishes [Owner provided/Contractor Installed]
- i. (N) Casework
- j. (N) Power and Data Devices
- k. (N) Tactile Signage
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - B. Regulatory Requirements
 - 1. The contract documents indicate the intended occupancy and utilization of the buildings and its individual systems and facilities, compliance with governing regulations is intended and required for the work and for the owner's occupancy and utilization.
 - C. Certifications
 - D. Field Samples
 - E. Mock-ups
 - F. Pre-installation Meetings
- 1.07 DELIVERY, STORAGE, AND HANDLING
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- 1.01 SUMMARY
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 - 1. Payment Procedures
 - 2. Schedule of Values
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1 01 21 00 Allowances
 - 2. 01 23 00 Alternates
 - 3. 01 32 16 Construction Progress Schedule
 - 4. 01 77 00 Closeout Procedures
 - E. Allowances
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- 1.02 REFERENCES
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- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
 - A. Product Data
 - B. Shop Drawings
 - C. Samples
 - D. Quality Assurance/Control Submittals
 - 1. Schedule of Values
 - a. Submit a Preliminary Schedule of Values to the ARCHITECT and OWNER for review and approval within 5 calendar days after the date of OWNER issued Notice of Intent to Award (NOI). Submit a PDF copy in Microsoft Excel spreadsheet format. AIA Document G703-1992 will not be accepted.
 - 1. Preliminary Schedule of Values to include all trades, General Conditions, General Contractor's Overhead and Profit, and bonds and insurance for each site.
 - 2. Review and approval of Preliminary Schedule of Values by the ARCHITECT and OWNER shall be required prior to award of the construction contract.
 - Submit a Final Schedule of Values to the ARCHITECT for review and approval within 15 calendar days after the date of OWNER-CONTRACTOR Agreement. Submit a PDF copy in Microsoft Excel spreadsheet format. AIA Document G703-1992 will not be accepted.
 - c. In the Schedule of Values, the Contract Sum shall be broken down into specific elements of the Work, as follows, coded in accordance with the OWNER'S coding structure.
 - 1. General Contractor's Overhead and Profit
 - 2. Site Mobilization
 - 3. Bonds and Insurance

PRICE AND PAYMENT PROCEDURES

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- 4. Field Supervision
- 5. Project Close-Out (Section of General Requirements)
- 6. Other General Conditions and General Requirements
- 7. Demolition each item/element itemized.
- 8. Site Clearing and Preparation
- 9. Site Earthwork
- 10. Site Improvements (Paving, etc.)
- 11. Site Utilities
- 12. Landscape Irrigation
- 13. Landscape Planting
- 14. Each CSI Format Division 2 through 48
- 15. HVAC Work
- 16. Plumbing
- 17. Fire Protection Sprinklers
- 18. Electrical Power and Lighting
- 19. Electrical Site Lighting
- 20. Fire Alarm and Smoke Detection Systems
- 21. Electrical Communications and Security Systems
- 22. Project Allowance
- d. On projects of more than one building, provide separate schedules for each building.
- e. The percent-complete values from the approved cost-loaded Construction Progress Schedule shall provide the basis for each Application for Payment. Before each Application, update the Progress Schedule with all approved Change Orders.
- 2. Application For Payment
 - a. Payment Application Forms: Use OWNER provided forms for the Application for Payment.
 - b. Submit Application for Payment to the ARCHITECT (four (4) signed original copies of each certified application). All copies shall be complete, including the updated Schedule of Values and Construction Progress Schedule, releases and similar attachments. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to ARCHITECT.
 - c. Each certified Application for Payment shall be consistent with previous applications and payments as reviewed by ARCHITECT and paid for by OWNER.
 - d. Payment Application Times: The period of Work covered by each Application for Payment is based on the payment date for each progress payment as specified in the General Conditions. The period covered by each Application for Payment is the previous month.
 - e. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with the first certified Application for Payment include, but are not limited to, the following:
 - 1. Certified Schedule of Values or Cost-Loaded Schedule
 - 2. Performance and payment bonds
 - 3. List of principal suppliers and fabricators

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- 4. Worker Compensation certificates
- 5. Auto Insurance
- 6. Hazardous Material Insurance Certificates
- 7. Construction Progress Schedule
- 8. Submittal Schedule
- 9. Emergency Contact List
- 10. Copies of authorizations and licenses from governing authorities for performance of the Work
- f. Application for Payment at Substantial Completion: Following OWNER issuance of the certificate of Substantial Completion, submit an Application for Payment together with the following:
 - 1. Occupancy permits and similar approvals by authorities having legal jurisdiction over the Work
 - 2. Removal of temporary facilities and services
 - 3. Testing, adjusting and balance records
 - 4. Removal of surplus materials, rubbish, and similar elements
 - 5. Meter readings
 - 6. Start-up performance reports
 - 7. OWNER training and orientations
 - 8. Change-over information related to OWNER occupancy, use, operation, and maintenance
 - 9. Final cleaning
 - 10. Ensure that incomplete Work is not accepted and will be completed without undue delay
 - 11. Advice on shifting insurance coverage
 - 12. List of defective Work, recognized as exceptions to certificate of Substantial Completion
 - 13. Change of door locks to OWNER system
- g.
- Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include, but are not limited to, the following:
 - 1. Completion of Contract Closeout requirements
 - 2. Project record and other closeout documents
 - 3. Completion of final punch list items
 - 4. Delivery of extra materials, products and or stock
 - 5. Identification of unsettled claims
 - 6. Proof that taxes, fees, and similar obligations are paid
 - 7. Evidence of payment and release of liens
 - 8. Operating and maintenance instruction manuals
 - 9. Consent of surety to final payment
 - 10. Waivers and releases
 - 11. Warranties, guarantees and maintenance agreements
- h. Retention
 - Retention will be released no sooner than 35 days and not later than 60 days after Notice of Completion has been recorded with the County Recorder's Office.
- E. Closeout Submittals

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SECTION 01 21 00 ALLOWANCES

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 - A. Section Includes
 - 1. Submission Procedures
 - 2. Change Procedures
 - 3. Schedule of Allowances
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. (Division 0) Bid Form
 - E. Allowances
 - 1. Add monetary value of scheduled allowances to base bid price.
 - 2. Change Order Items which occur during the course of construction shall be deducted from the allowance set forth for each CONTRACTOR.
 - 3. Change Items will be processed as described in the General Conditions of the Contract and will be included in a formal Change Order. All Change Orders must be signed by the ARCHITECT, OWNER and CONTRACTOR prior to fabrication or use.
 - 4. Any portion of the allowance remaining at the end of the project shall be deducted from the contract via Change Order.
 - 5. For schedule of allowances, see section 3.15.
 - F. Unit Prices
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 - A. No Allowances

SECTION 01 23 00 ALTERNATES

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- 1.01 SUMMARY
 - A. Section Includes
 - 1. Submission Procedures
 - 2. Documentation of changes to Contract Sum/Price and Contract Time
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. (Division 0) Bid Form
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
 - Indicate variation of Bid Price for Alternates described below and list in the Proposal any supplement to it, which requests a "difference" in Bid Price by [adding to] or [deducting from] the base bid price.
 - 2. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.
 - Alternates quoted in the Proposal will be reviewed and accepted or rejected as stated in the Information for Bidders. Accepted Alternates will be identified in the Notice of Award.
 - 4. Once the responsible Bidder has been selected, the OWNER may determine to add to or deduct from the Contract any of the additive or deductive items in accordance with the Information for Bidders.
 - 5. For schedule of alternates, see section 3.15.
- 1.02 REFERENCES
- 1.03 DEFINITIONS
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- 3.15 SCHEDULES
 - A. No Alternates

SECTION 01 25 00 SUBSTITUTION PROCEDURES

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Provide, install, and finish of products specified under options and conditions for substitutions stated in this section of specifications and as needed for a complete, proper, and operable installation.
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. (Division 0) General Conditions
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Products List
 - 1. Submit six (6) copies of complete list of major products and systems which are proposed for installation. Include Substitution Request Form attached to the end of this specification. Digital submissions may be accepted at ARCHITECT's discretion.
 - 2. Tabulate products and systems by specifications section number and title.
 - 3. For products and systems specified only by reference standards, list for each such product or system:
 - a. Name and address of manufacturer or fabricator.
 - b. Trade name.
 - c. Model or catalog designation, including date.
 - d. Manufacturer's or fabricator's data and literature on:
 - Reference standards, performance test data, certifications.
 - B. Specified Options
 - 1. For products specified only by reference standard, select product meeting that standard, by any manufacturer.
 - For products specified by naming several products or manufacturers, select any one (1) of the products or manufacturers named.
 - 3. For products specified by naming one (1) or more products or manufacturers and stating "or equal", submit a request for substitutions for any product or manufacturer which is not specifically named, but only after submitting bid on specified products and systems.

- C. Submission of Data Substantiating a Request for a Substitution of "An Equal Item"
 - 1. A substitution request must be submitted to the OWNER not later than seven (7) days prior to the Bid Deadline specified in the Notice Inviting Bids. The OWNER will not consider any substitution request received thereafter, except to the extent provided in the General Conditions. Concurrently with submitting a substitution request, the Bidder must provide all information required pursuant to the General Conditions to substantiate the request. The OWNER shall not be required to make a determination in regard to any substitution request and/or substantiating information prior to award of the Contract. If the OWNER gives a Notice of Award for the Contract to a Bidder, but subsequently disapproves a substitution proposed by that Bidder, the Bidder must provide the Specified Item in accordance with the Contract Documents and at no additional cost to the OWNER.
 - 2. It is the intent of the OWNER and ARCHITECT to have this project constructed with materials, products and systems originally designed and specified into project. This opportunity to request substitutions is not for the convenience of bidders or CONTRACTORS to submit bids for materials, products and systems which may be more familiar to them, or having a lesser cost.
 - 3. Submit separate request for each substitution item. Support each request with an explanation for the request, and include:
 - a. Complete data substantiating compliance of proposed substitutions with requirements stated in contract documents:
 - 1. Product identification, including manufacturer's name and address.
 - 2. Manufacturer's literature; identify: Product description, reference standards, performance and test data.
 - 3. Samples, as applicable.
 - 4. Name and address of similar projects on which product has been used, and date of each installation, as well as servicing agency and installer.
 - b. Itemized comparison of the proposed substitution with products specified, listing significant variations.
 - c. Data relating to changes in the construction schedule.
 - d. Any effect of substitution on separate contracts.
 - e. Any effect of substitution on in-place construction or other materials and systems to be installed.
 - f. Accurate cost data comparing proposed substitution with product specified.
 - g. Designation of required license fees or royalties.
 - h. Designation of availability of maintenance services and sources of replacement materials.
 - 4. Substitutions will not be considered for acceptance when:
 - a. Lesser material cost is the sole reason for request.
 - b. They are indicated or implied on shop drawings or product data submittals without formal request.
 - c. Acceptance may require revision of contract documents.

- 5. Substitute products shall not be ordered or installed without written acceptance and authorization of OWNER and ARCHITECT.
- 6. Substitutions shall be approved by OWNER and ARCHITECT prior to fabrication or use.
- 7. Only the OWNER and ARCHITECT will determine the acceptability of proposed substitutions.
- D. Representations
 - 1. In making a legitimate, authorized formal request for substitution, represent that:
 - a. A thorough investigation has transpired concerning the proposed product, and it has been determined that it is equal to or superior in all respects to that specified.
 - b. The same warranties or bonds and guarantees will be provided as for that specified.
 - c. Installation of the accepted substitution will be coordinated into the work; and such changes to in-place work, ordered materials and products, or other work to be in progress prior to installation of the requested substitutions, will be performed without any additional cost to OWNER.
- E. Duties
 - 1. Requests for substitutions must be expeditiously forwarded for consideration per the requirements of the General Conditions.
 - 2. Notification of decisions concerning acceptance or rejection will be in writing, and are final without need for clarification.
- 1.05 SUBMITTALS
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- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SUBSTITUTION REQUEST FORM

Date:
Attn:
PJHM Architects, Inc. 24461 Ridge Route Drive, Suite 100 Laguna Hills, CA 92653
Architect's Project No.:
Project:
Permit/Application No.:
The undersigned requests consideration of the following substitution:
Specified Item:
(Drawing Sheet/Detail No., Specification Section, Description, etc.)
Proposed Substitution:
Statement of Cause:
Special Note: Modifications to any language contained in this document is unacceptable.

If modifications are made, the entire substitution package will be returned without review.

We have attached the following submittal checklist for your use, verify all items are included with your substitution request submittal.

Substitution request has been submitted not later than seven (7) days prior to the bid deadline specified in the Notice Inviting Bids.

Notice Inviting Bids Date:______Substitution Request Date:_____

- Product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the requests with applicable portions of the data clearly identified, manufacturer's literature, samples, names and address of the manufacturer's representative have all been provided.
- Complete documentation of all regulatory approvals required by the Contract Documents for the proposed substitution.
- Itemized comparison/analysis of proposed substitution with that of the specified product.
- Detailed cost summary of the change, if any, to the Contract Sum.
- Evaluation of the effect of the proposed substitution on the construction schedule and impact on completion date.
- Description of changes to the Contract Documents which proposed substitution will require for its proper installation.
- Manufacturer's Warranty comparison between the specified manufacturer and the proposed manufacturer.

The undersigned states that the following paragraphs, unless modified on the attachments, are correct:

- A. The proposed substitution does not affect dimensions shown on the Drawings.
- B. The undersigned will pay all costs for changes to the building design, including engineering design, detailing and construction costs, and LAHJ review/approval fees caused by the requested substitution.
- C. The proposed substitution will have no adverse affect on other trades or specified warranty requirements.
- D. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted By:					
Name:	_Signature:				
Firm/Company:					
Address:					
Telephone:	_Date:				
Approved by (ARCHITECT):					
Approved by (OWNER):					
Name:	_Name:				
Signature:	_Signature:				
Date:	_Date:				
(ARCHITECT to include submittal approval stamp)					

END OF SECTION

SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Coordination.
 - 2. Field engineering.
 - 3. Pre-construction conference.
 - 4. Progress meetings.
 - 5. Pre-installation conferences.
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 01 71 23 Field Engineering
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Coordination
 - 1. Coordinate scheduling, submittals, and work of the various sections of the specifications to assure efficient and orderly sequence of installation of interdependent construction elements with provisions for accommodating items installed later.
 - 2. Prior to commencement of a particular type or kind of work, examine relevant information, Contract Documents and subsequent data issued to the project.
 - 3. Verify that utility requirement characteristics of 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.
 - 4. Coordinate space requirements and installation of mechanical and electrical work, which are indicated diagrammatically on drawings. Follow routing shown for pipes, ducts and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance and for repairs.
 - 5. In finished areas, except as otherwise indicated, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
 - 6. In locations where several elements of mechanical and electrical work must be sequenced and positioned with precision in order to fit into available space, prepare coordination drawings showing the actual conditions required for the installation. Prepare coordination drawings prior to purchasing, fabricating or installing of the elements required to be coordinated.

PROJECT MANAGEMENT AND COORDINATION 01 31 00 - 1

- 7. Closing up of walls, roofs, concealed spaces, partitions, or furred spaces, backfilling and other covering up operations shall not proceed until all enclosed or covered work and inspections have been completed. Verify before proceeding.
- 8. Coordinate completion and clean up of work of separate sections in preparation for substantial completion (and for portions of work designated for OWNER'S full and/or partial occupancy).
- 9. After OWNER'S 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.
- 10. Coordinate all utility company work in accordance with the General Conditions.
- B. Field Engineering (If applicable to project scope)
 - 1. CONTRACTOR shall employ a Land Surveyor, registered in the State of California and acceptable to the ARCHITECT.
 - 2. Control datum for survey is that established by OWNER provided survey. CONTRACTOR is to locate and protect survey control and reference points.
 - 3. Refer to Section 01 71 23 Field Engineering for limits of work for CONTRACTOR and OWNER.
- C. Pre-Construction Conference
 - 1. OWNER shall schedule a conference immediately after receipt of fully executed Contract Documents prior to project mobilization.
 - 2. Mandatory Attendance: OWNER, ARCHITECT, CONTRACTORS and CONTRACTOR'S Job Superintendent.
 - 3. Optional Attendance: ARCHITECT'S consultants, subcontractors and utility company representatives.
 - 4. OWNER will preside at conference. ARCHITECT shall record meeting minutes and distribute copies through the OWNER.
 - 5. Agenda:
 - a. Execution of OWNER-CONTRACTOR Agreement.
 - b. Issue Notice to Proceed.
 - c. Submission of executed bonds and insurance certificates.
 - d. Distribution of Contract Documents.
 - e. Submission of list of subcontractors, list of products, schedule of values, project schedule, and submittal schedule.
 - f. Designation of responsible personnel representing the parties.
 - Procedures and processing of field decision, submittals, substitutions, applications for payments, proposal request, change orders and contract closeout procedures.
 - h. Scheduling.
- D. Job Start Meeting
 - 1. After the OWNER awards the contract, and prior to the commencement of the work, a mandatory Job Start meeting (Pre-Job conference) shall be conducted by the OWNER with the CONTRACTOR and those subcontractors listed in its bid documents.
- E. Progress Meetings
 - 1. ARCHITECT will schedule and administer meetings throughout progress of the work at bi-monthly (Every two weeks) intervals or more frequently if needed.

PROJECT MANAGEMENT AND COORDINATION 01 31 00 - 2

- 2. ARCHITECT will make arrangements for meetings, prepare agenda and preside at meetings. ARCHITECT will record minutes (Field Reports) and distribute copies.
- 3. Attendance required: OWNER, ARCHITECT, and CONTRACTOR. CONTRACTOR'S attendance is mandatory.
- 4. Minimum Agenda Items
 - a. Review minutes of previous meetings (Field Reports).
 - b. Review work progress.
 - c. Field observations, problems, and decisions.
 - d. Identification of problems which impede planned progress.
 - e. Review of submittals, schedule, and status of submittals.
 - f. Review of off-site fabrication and delivery schedules.
 - g. Maintenance of progress schedule.
 - h. Corrective measures to regain projected schedules.
 - i. Planned progress during succeeding work period.
 - j. Coordination of projected progress.
 - k. Maintenance of quality and work standards.
 - I. Effect of proposed changes on progress schedule and coordination.
 - m. Other business relating to work.
- F. Pre-Installation Conference
 - 1. When required in individual specification sections, convene a preinstallation conference prior to commencing work of the section.
 - 2. Require attendance of parties directly affecting, or affected by, work of the specific section.
 - 3. Notify ARCHITECT through OWNER at least five (5) days in advance of meeting date.
 - 4. CONTRACTOR shall prepare agenda, preside at conference, record minutes and distribute copies within two (2) days after conference to participants
 - 5. Review conditions of installation, preparation and installation procedures and coordination with related work.
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS

- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 01 32 16 CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Construction Progress Schedule Procedures
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - A. 01 11 00 Summary of Work
 - B. 01 20 00 Price and Payment Procedures
 - C. 01 25 00 Substitution Procedures
 - D. 01 31 00 Project Management and Coordination
 - E. 01 33 00 Submittal Procedures
 - F. 01 77 00 Closeout Procedures
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
 - A. Schedule Submittals
 - 1. CONTRACTOR shall submit Construction Progress Schedules as follows:
 - a. Preliminary Schedule: Submit a preliminary Baseline Schedule within fourteen days after Notice of Award. OWNER will review the Preliminary Schedule and return comments within ten workdays.
 - b. Initial Schedule: Revise the preliminary Schedule and resubmit within ten days, to provide the Project's Baseline Schedule.
 - c. Weekly Schedule Update: While retaining the Baseline Schedule, revise copies to show actual construction progress to date, and submit at scheduled weekly dates, or as otherwise required by the OWNER.
 - d. In the event that the progress of the Work or the sequencing of the activities of the Work differs significantly from that indicated in the Baseline Schedule, the Contractor shall submit a Recovery Schedule to the OWNER, demonstrating the CONTRACTOR'S plan to recover lost time, achieve all contractual milestones, and complete the work within the contract time. Appropriate recovery actions include, but are not limited to, assignments of additional labor or equipment, shift or overtime work, expediting of submittals or deliveries, overlapping of activities, or sequencing changes to increase activity concurrence. An accompanying narrative shall describe the cause of the problems and the
 - CONSTRUCTION PROGRESS SCHEDULE 01 32 16 - 1

actions planned by the Contractor to recover the schedule. The OWNER will review the Recovery Schedule and provide comments, leading to approval of the schedule.

- e. With each Application for Payment.
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
 - A. Form and Content of Schedules
 - Schedule shall be in the form of a computer-generated Critical Path Method (CPM) or Gantt format showing all construction activities required to complete the Work of the Project within the Contract Time and any OWNER-defined Milestones.
 - 2. CONTRACTOR shall utilize an established standard, centralized, Internet-based scheduling program.
 - 3. Schedule shall include but not be limited to the following:
 - a. Complete sequence, with start and completion dates, of each and every activity of construction or element of the construction process.
 - Phases of construction, with start and completion Milestones, as well as any other Milestones defined by the OWNER.
 - c. Critical submittals, including OWNER and ARCHITECT review and approval periods, including 15 workdays for the first submittal (10 days for resubmittal), 21 days when the ARCHITECT's consultants must review, and 30 days for review of submittals of Structural Steel, Door Hardware, and Hollow Metal Doors and Frames.
 - Procurement, manufacture and/or fabrication; testing and delivery to the Project site of special long-lead-time material and equipment.
 - e. Operational start-up, test and balance, performance testing, and training of operators for systems and equipment; for Substantial Completion and for Final Completion.
 - f. Temporary facilities; construction of mock-ups, prototypes and/or samples; punch list; interfaces with Separate Work Contracts; and regulatory agency approvals and permits required for performance of the Work.
 - g. Deferred Approvals, allowing a minimum of ninety (90) days for all Deferred Approval items.
 - h. OWNER interfaces and Owner-Furnished equipment, either installed by CONTRACTOR (OFCI) or by OWNER (OFOI).
 - i. Decision dates for products specified by allowances, selection of finishes, and other ARCHITECT- or OWNERfurnished schedules or decisions.
 - 4. Schedule shall be updated periodically as specified to show progress of each activity and all changes since the previous submission, including:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.

CONSTRUCTION PROGRESS SCHEDULE

- c. Revised projections due to changes.
- d. Other identifiable changes.
- B. Schedule Requirements
 - 1. Schedule shall represent CONTRACTOR'S plan to complete the Work within the Milestones and/or Contract Time. However:
 - a. A schedule extending beyond the Milestones and/or Contract Time will not be acceptable.
 - A schedule indicating Work completed in less than the Milestones and/or Contract Time will not be acceptable.
 CONTRACTOR shall indicate any available float.
 - A schedule found unacceptable by the OWNER shall be revised by CONTRACTOR and resubmitted within five (5) days.
 - 2. Schedule shall be in sufficient detail to assure adequate planning and execution of Work, including but not limited to:
 - Start and completion of all items of Work and their major components, and all designated dates identified as Milestones by OWNER.
 - b. Construction activity durations shall be limited to no more than two reporting periods, with exception of fabrication and procurement activities, unless approved otherwise by OWNER. Activity durations shall be total of actual workdays to perform and complete that activity and shall not include consideration of weather impact on the activity.
 - c. Activities for procurement, delivery, and installation of equipment, materials and other supplies, including time for submittals, reviews and re-submittals. Include decision dates for selection of finishes.
 - d. Time for fabrication and delivery of manufactured products for the Work, showing interdependence of procurement and construction activities.
 - e. Identify each activity with applicable CSI Specification Division number, and coordinate with the CONTRACTOR'S approved "Schedule of Values." Include adequate breakdown of activities for the Mechanical and Electrical elements of the work, to enable accurate monitoring and to assure full coordination with OWNER'S operating personnel.
 - f. Each activity shall be capable of being cost and resourceloaded with the resulting cost total equal to the Contract Amount
 - g. Activities shall include all associated interface activities contained within the Contract Documents including, but not limited to, OWNER maintenance-and-operations activities
 - h. Each activity shall be defined to permit reasonable monitoring and evaluation of progress in performance of the Work.
 - 3. Notwithstanding acceptance of the Schedule, failure to identify and/or include any element of the Contract into the Schedule shall not release CONTRACTOR from obligation of completing all required Work in accordance with the Contract Completion Date or any Milestones.
 - 4. Submittal of the Schedule shall constitute CONTRACTOR'S confirmation that the Schedule meets the requirements of the

CONSTRUCTION PROGRESS SCHEDULE 01 32 16 - 3 Contract Documents, and the Work will be executed in the sequence indicated in the Schedule.

- 5. If CONTRACTOR fails to comply with the specified requirements, OWNER reserves the right to engage an independent scheduling consultant and/or provide its own expertise to fulfill these requirements, and shall be entitled to recover by assessment all incurred costs for the services from the CONTRACTOR.
- 6. Submittal of any Schedule is subject to review and acceptance by ARCHITECT and OWNER. OWNER retains the right to withhold progress payments in whole or part until CONTRACTOR submits a Schedule acceptable to OWNER.
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 01 33 00 SUBMITTAL PROCEDURES

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Submittal Procedures.
 - 2. Shop Drawings.
 - 3. Product Data.
 - 4. Samples.
 - 5. Manufacturers' Instructions.
 - 6. Manufacturers' Certificates.
 - 7. Coordinated Drawings.
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
 - A. Procedures
 - CONTRACTOR shall submit a Schedule of Submittals, listing their required submission and review dates to the ARCHITECT for review and acceptance. The schedule shall allow sufficient time for checking by the ARCHITECT. In addition, the submittal schedule shall be incorporated into and coordinated with the construction progress schedule. Additional service fees will be required, paid by the CONTRACTOR at no cost to the OWNER, to the ARCHITECT for ARCHITECT's review of out of sequence submittals, excessive resubmittal attempts, expedited review requests, and submittals not in conformance with the submittal schedule time limits.
 - 2. Transmit separate request for each submittal directly to the ARCHITECT.
 - a. Bind submittals sturdily, neatly label covers.
 - Include ARCHITECT'S job number as it appears on Contract Documents.
 - c. Include LAHJ application or approval numbers.
 - e. Digital submissions will be accepted at the discretion of the ARCHITECT.
 - 3. Sequentially number the transmittal forms. Re-submittals are to have original number with an the letter 'R' followed by revision number. Example Naming: Submittal 07 92 00 R2
 - 4. Identify Project, CONTRACTOR, subcontractor or supplier; pertinent Drawing sheet and detail number(s) and specification section number, as appropriate.

SUBMITTAL PROCEDURES 01 33 00 - 1

- a. Provide name and telephone number of individual who may be contacted for further information.
- 5. Apply CONTRACTOR'S dated stamp with CONTRACTOR'S original signature or initials affixed thereto, certifying that review, 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. Stamped signatures or initials are not acceptable.
- 6. Schedule submittals to expedite the Project. Coordinate submission of related items.
 - a. Make all submittals in accordance with the progress schedule and far enough in advance of scheduled dates of installation to provide required time for reviews for securing necessary approvals for possible revision and re-submittal and for placing orders and securing delivery.
- 7. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- 8. State effect of substitution on construction schedule and changes required in other work or products.
- 9. Provide space for CONTRACTOR and ARCHITECT review stamps.
- 10. Revise and re-submit submittals as required, identify all changes made since previous submittal with revision clouds and revision delta symbols.
- 11. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- 12. Determine and verify all field dimensions and conditions, materials, catalog numbers and similar data.
- 13. Coordinate as required with all trades and all public agencies involved.
- 14. Unless otherwise specifically authorized by ARCHITECT, make all submittals in groups pertaining to specification sections, containing all associated items. ARCHITECT will reject partial submittals as not complying with the provisions of this section.
- A. Product Data
 - 1. Submit eight (8) copies. Seven (7) copies will be retained by the ARCHITECT.
 - 2. Mark each copy to identify applicable products, models, options and other data. Supplement manufacturers' standard data to provide information unique to this Project.
 - 3. After review, distribute and provide copies for Record Documents.
- B. Shop Drawings
 - Submit newly prepared information, drawn to accurate scale. Highlight, encircle or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project will not be approved as Shop Drawings.
 - 2. Shop Drawings shall include fabrications and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
 - a. Dimensions.

- b. Identification of products and materials included.
- c. Compliance with specified standards.
- d. Notation of coordination requirements.
- e. Notation of dimensions established by field measurement.
- 3. Sheet Size: Except for templates, patterns and similar full-size drawings, submit Shop Drawings on sheets at least 8½ inch x 11 inch, but not larger than 30 inch x 42 inch.
- 4. The CONTRACTOR shall review, stamp with his approval as herein required, and submit with reasonable promptness and in orderly sequence, in accordance with the submittal schedule, all shop drawings required by the Contract Documents or subsequently by the ARCHITECT as covered by modifications. Shop drawings shall be properly identified. At the time of submission the CONTRACTOR shall inform the ARCHITECT in writing of any deviation in the shop drawings from the requirements of the Contract Documents.
- 5. Stamp: Each page of shop drawings shall bear the CONTRACTOR'S stamp, which shall signify the CONTRACTOR'S representation that he/she has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained in the shop drawings. Each stamp shall be accompanied by a wet signature of the CONTRACTOR who may be contacted for information. Stamped signatures or initials are not acceptable.
- 6. Method of Review: Make initial submittal of eight (8) hard copies of the shop drawings to the ARCHITECT. Comments or corrections will be noted and returned to the CONTRACTOR, who shall identify all changes made since the previous submittal and re-submit in the same manner. When reviewed, the shop drawings will be stamped and returned to the CONTRACTOR who shall make distribution of copies to his/her subcontractors.
- 7. The ARCHITECT will review shop drawings with reasonable promptness so as not to cause any delay, but only for conformance with the design concept of the project and with the information given in the Contract Documents. The ARCHITECT'S favorable review of a separate item shall not indicate acceptance of an assembly in which the item functions.
- 8. Submittal of shop drawings to the ARCHITECT shall be made by the CONTRACTOR with a dated transmittal form or letter and not by subcontractors or suppliers.
- 9. The ARCHITECT'S review of shop drawings shall not relieve the CONTRACTOR of responsibility for any deviation from the requirements of the Contract Documents unless the CONTRACTOR has informed the ARCHITECT in writing of such deviation at the time of submission and the ARCHITECT has given written acceptance to the specific deviation, nor shall the ARCHITECT'S favorable review relieve the CONTRACTOR from responsibility for errors or omissions in the shop drawings.
- 10. No portion of work requiring shop drawings shall be commenced until the shop drawings have been returned with a favorable review by the ARCHITECT.
- C. Samples

- 1. Submit samples to illustrate functional and aesthetic characteristics of the Product with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- 2. Submit samples of finishes from the full range of manufacturers' standard colors, textures and patterns for ARCHITECT selection or in custom colors selected.
- 3. Include identification on each sample with full Project information.
- 4. Submit a minimum of five (5) samples or as specified in individual sections of the specifications, four (4) of which will be retained by the ARCHITECT.
- 5. Reviewed samples which may be used in the Work are indicated in individual specification Sections.
- 6. Selection or rejection of samples will be made by the ARCHITECT in writing.
- D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - When specified in individual specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing in quantities specified for Product Data.
 - b. Identify conflicts between manufacturers' instructions and Contract Documents.
 - c. When specified in individual specification sections, submit manufacturers' certificate to ARCHITECT for review in quantities specified for Product Data.
 - Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits and certifications as appropriate.
 - e. Certificates may be recent or previous test results on material or product, but must be acceptable to ARCHITECT.
- E. Closeout Submittals
 - 1. When specified in individual specification sections, submit eight (8) copies. Seven (7) copies will be retained by the ARCHITECT.
 - 2. Mark each copy to identify applicable products, models, options and other data. Supplement manufacturers' standard data to provide information unique to this Project.
 - 3. After review, distribute and provide copies for Record Documents.
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES
SECTION 01 42 19 REFERENCE STANDARDS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Definitions
 - 2. Specifications Format and Content
 - 3. Industry Standards
 - 4. Code and Standards
 - 5. Governing regulations/authorities
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

The standards are referenced in these specifications by acronyms which are listed below with the full name of the sponsoring organization and the address from which copies may be obtained.

AA Aluminum Association 900 19th Street NW, Suite 300 Washington, DC 20006 www.aluminum.org

AABC Associated Air Balance Council 1518 "K" Street, NW, Suite 503 Washington, DC 20005 www.aabchq.com

AAMA American Architectural Manufacturers Association 1827 Walden Office Square, Suite 104 Schaumburg, IL 60173-4268 www.aamanet.org

AASHTO American Association of State Highway and Transportation Officials 444 North Capitol Street, Suite 249 Washington, DC 20001 www.aashto.org

AATCC American Association of Textile Chemists and Colorists P.O. Box 12215 One Davis Drive Research Triangle Park, NC 27709-2215 www.aatcc.org ACI American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094 www.aci-int.org

ACPA American Concrete Pipe Association 222 West Las Colinas Blvd., Suite 641 Irving, TX 75039-5423 www.concrete-pipe.org

ADC Air Diffusion Council 104 South Michigan Avenue, Suite 1500 Chicago, IL 60603

AF&PA American Forest and Paper Association 1111 19th Street, NW, Suite 800 Washington, DC 20036 www.afandpa.org

AGA American Gas Association 400 North Capitol Street N.W. Washington, D.C. 20001 www.aga.com

AHA American Hardboard Association 1210 West Northwest Hwy Palatine, IL 60067-1897 www.hardboard.org

AHAM Association of Home Appliance Manufacturers 1111 19th Street NW, #402 Washington, DC 20036 www.aham.org

Al Asphalt Institute Research Park Drive P.O. Box 14052 Lexington, KY 40512-4052 www.asphaltinstitute.org

AlA The American Institute of Architects 1735 New York Avenue, NW Washington, DC 20006-5292 www.e-architect.com

AISC American Institute of Steel Construction One East Wacker Drive, Suite 3100 Chicago, IL 60601-2001 www.aisc.org AISI American Iron and Steel Institute P.O. Box 4321 Chestertown, MD 21690 www.steel.org

AITC American Institute of Timber Construction 7012 South Revere Parkway, Suite 140 Englewood, CO 80112 www.aitc-glulam.org

ALCA Associated Landscape Contractors of America 12200 Sunrise Valley Drive, Suite 150 Reston, VA 20191 www.alca.org

ALI Associated Laboratories, Inc. P.O. Box 152837 1323 Wall Street Dallas, TX 75315

ALSC American Lumber Standards Committee P.O. Box 210 Germantown, MD 20875

AMCA Air Movement and Control Association International, Inc. 30 West University Drive Arlington Heights, IL 60004-1893 www.amca.org

ANLA American Nursery and Landscape Association 1250 "I" Street, NW, Suite 500 Washington, DC 20005-3922 www.anla.org

ANSI American National Standards Institute 11 West 42nd Street, 13th Floor New York, NY 10036-8002 www.ansi.org

APA APA-The Engineered Wood Association 2130 Barret Park Drive, Suite 102 Kennesaw, GA 30144-3681 www.apawood.org

APA Architectural Precast Association 6710 Winkler Road, Suite 8 Fort Myers, FL 33919 www.archprecast.org ARI Air Conditioning and Refrigeration Institute 4301 Fairfax Drive, Suite 425 Arlington, VA 22203 www.ari.org

ARMA Asphalt Roofing Manufacturers Association 1156-15th Street, NW, Suite 900 Washington, DC 20005 www.asphaltroofing.org

ASA Acoustical Society of America 500 Sunnyside Blvd. Woodbury, NY 11797 www.acoustics.org

ASCE American Society of Civil Engineers World Headquarters (703) 295-6300 1801 Alexander Bell Drive Reston, VA 20190-4400 www.asce.org

ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305 www.ashrae.org

ASLA American Society of Landscape Architects 4401 Connecticut Avenue, NW, Fifth Floor Washington, DC 20008-2369 www.asla.org

ASME ASME International Three Park Avenue New York, NY 10016-5990 www.asme.org

ASPE American Society of Plumbing Engineers 3617 Thousand Oaks Blvd., Suite 210 Westlake, CA 91362-3649

ASQC American Society for Quality 611 East Wisconsin Avenue Milwaukee, WI 53201-3005 www.asq.org

ASSE American Society of Sanitary Engineers 28901 Clemens Road Westlake, OH 44145 www.asse-plumbing.org ASTM American Society for Testing and Materials 100 Barr Harbor Drive West Conshohocken, PA 19428-2959 www.astm.org

AWCI Association of the Wall and Ceiling Industries - International 307 East Annandale Road, Suite 200 Falls Church, VA 22042-2433 www.awci.org

AWI Architectural Woodwork Institute 1952 Isaac Newton Square Reston, VA 20190 www.awinet.org

AWPA American Wood-Preservers' Association 3246 Fall Creek Highway, Suite 1900 Granbury, TX 76049-7979

AWS American Welding Society 550 NW LeJeune Road Miami, FL 33126 www.amweld.org

AWWA American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 www.awwa.org

BHMA Builders' Hardware Manufacturers Association 355 Lexington Avenue, 17th Floor New York, NY 10017-6603

BIA Brick Institute of America 11490 Commerce Park Drive Reston, VA 22091-1525 www.bia.org

CE Corps of Engineers (U.S. Department of the Army) 20 Massachusetts Avenue, NW Washington, DC 20314 CRD standards are available from:

U.S. Army Corps of Engineers Waterways Experiment Station Technical Report Distribution Section Services Branch, TIC 3909 Halls Ferry Road Vicksburg, MS 39180-6199

> REFERENCE STANDARDS 01 42 19 - 5

CBM Certified Ballast Manufacturers Association 1422 Euclid Avenue, Suite 402 Cleveland, OH 44115-2094

CCC Carpet Cushion Council P.O. Box 546 Riverside, CT 06878-0546 www.carpetcushion.org

CDA Copper Development Association 260 Madison Avenue, 16th Floor New York, NY 10016-2401 www.copper.org

CGA Compressed Gas Association 1725 Jefferson Davis Highway, Suite 1004 Arlington, VA 22202-4102 www.cganet.com

CISCA Ceilings & Interior Systems Construction Association 1500 Lincoln Highway, Suite 202 St. Charles, IL 60174 www.cisca.org

CISPI Cast Iron Soil Pipe Institute 5959 Shallowford Road, Suite 419 Chattanooga, TN 37421 www.cispi.org

CLFMI Chain Link Fence Manufacturers Institute 10015 Old Columbia Road, #B-215 Columbia, MD 21046 www.chainlinkinfo.org

CPSC Consumer Product Safety Commission East West Towers 4330 East-West Highway Bethesda, MD 20814

CPPA Corrugated Polyethylene Pipe Association 432 North Superior Street Toledo, OH 43604

CRA California Redwood Association 405 Enfrente Drive, Suite 200 Novato, CA 94949 www.calredwood.org

CRI Carpet and Rug Institute 310 South Holiday Avenue Dalton, GA 30722-2048 www.carpet-rug.com CRSI Concrete Reinforcing Steel Institute 933 North Plum Grove Road Schaumburg, IL 60173-4758 www.crsi.org

CSSB Cedar Shake and Shingle Bureau 515 116th Avenue, NE, Suite 275 Bellevue, WA 98004-5294 www.cedarbureau.org

CTI Ceramic Tile Institute of America 12061 West Jefferson Blvd. Culver City, CA 90230-6219 www.ceramic-tile.com

DHI Door and Hardware Institute 14170 Newbrook Drive Chantilly, VA 20151-2223 www.dhi.org

DIPRA Ductile Iron Pipe Research Association 245 Riverchase Parkway East, Suite O Birmingham, AL 35244 www.dipra.org

DOC Department of Commerce 5285 Port Royal Road Springfield, VA 22161

DOT Department of Transportation 400 Seventh Street, SW Washington, DC 20590

EIMA EIFS Industry Members Association 402 North Fourth Street, Suite 102 Yakima, WA 98901-2470 www.eifsfacts.com

EJMA Expansion Joint Manufacturers Association 25 North Broadway Tarrytown, NY 10591-3201 www.ejma.org

EPA Environmental Protection Agency 401 "M" Street, SW Washington, DC 20460 www.epa.gov

FCICA Floor Covering Installation Contractors Association 7439 Millwood Drive West Bloomfield, MI 48322-1234 www.fcica.com

> REFERENCE STANDARDS 01 42 19 - 7

FM Factory Mutual 1151 Boston-Providence Turnpike P.O. Box 9102 Norwood, MA 02062-9102 www.fmglobal.com

FCCHR Foundation for Cross-Connection Control and Hydraulic Research University of Southern California KAP-200 University Park MC-2531 Los Angeles, CA 90089-25319

FS Federal Standards (Available from GSA) 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407

FTI Facing Tile Institute % Stark Ceramics P.O. Box 8880 Canton, OH 44711

GA Gypsum Association 810 First Street NE, Suite 510 Washington, DC 20002 www.gypsum.org

GANA Glass Association of North America 3310 SW Harrison Street Topeka, KS 66611-2279 www.glasswebsite.com/gana

HMA Hardwood Manufacturers Association 400 Penn Center Blvd., Suite 530 Pittsburgh, PA 15235-5605 www.hardwood.org

HPVA Hardwood Plywood and Veneer Association 1825 Michael Farraday Drive P.O. Box 2789 Reston, VA 20195 www.hpva.org

IEEE Institute of Electrical and Electronic Engineers 445 Hoes Lane (212) 705-7900 Piscataway, NJ 08855-1331 www.standards.ieee.org

IESNA Illuminating Engineering Society of North America 120 Wall Street, 17th Floor New York, NY 10005-4001 www.iesna.org ILI Indiana Limestone Institute of America Stone City Bank Building, Suite 400 Bedford, IN 47421 www.iliai.com

ITS Intertek Testing Services P.O. Box 2040 3933 US Route 11 Cortland, NY 13045-7902 www.itsglobal.com

KCMA Kitchen Cabinet Manufacturers Association 1899 Preston White Drive Reston, VA 22091-4326 www.kcma.org

LMA Laminating Materials Association 116 Lawrence Street Hillsdale, NJ 07642-2730 www.lma.org

MBMA Metal Building Manufacturer's Association 1300 Sumner Avenue Cleveland, OH 44115-2851 www.mbma.org

MCAA Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850-4329 www.mcaa.org

MFMA Maple Flooring Manufacturers Association 60 Revere Drive, Suite 500 Northbrook, IL 60062 www.maplefloor.org

MIA Marble Institute of America 33505 State Street Farmington, MI 48335 www.marble-institute.com

MIA Masonry Institute of America 2550 Beverly Blvd. Los Angeles, CA 90057 www.masonryinstitute.org

ML/SFAMetal Lath/Steel Framing Association (A Division of the NAAMM) 8 South Michigan Avenue, Suite 1000 Chicago, IL 60603 MSS Manufacturers Standardization Society for the Valve and Fittings Industry 127 Park Street, NE Vienna, VA 22180-4602 www.mss-hq.com

NAA National Arborist Association P.O. Box 1094 (603) 673-3311 Amherst, NH 03031-1094 www.natlarb.com

NAAMM National Association of Architectural Metal Manufacturers 8 South Michigan Avenue, Suite 1000 Chicago, IL 60603 www.naamm.org

NAIMA North American Insulation Manufacturers Association 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314 www.naima.org

NAPA National Asphalt Pavement Association NAPA Building 5100 Forbes Blvd. Lanham, MD 20706-4413

NBGQA National Building Granite Quarries Association 1220 "L" Street, NW #100-167 Washington, DC 20005 www.nbgqa.com

NCMA National Concrete Masonry Association 2302 Horse Pen Road Herndon, VA 20171-3499 www.ncma.org

NCPI National Clay Pipe Institute P.O. Box 759 253-80 Center Street Lake Geneva, WI 53147 www.ncpi.org

NCRPM National Council on Radiation Protection and Measurements 7910 Woodmont Ave., Suite 800 Bethesda, MD 20814-3095 www.ncrp.com

NCSPA National Corrugated Steel Pipe Association 1255 23rd Street, NW, Suite 850 Washington, DC 20037 www.ncspa.org

> REFERENCE STANDARDS 01 42 19 - 10

NEBB National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877-4121 www.nebb.org

NECA National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814-5372 www.necanet.org

NEI National Elevator Industry 185 Bridge Plaza North, Suite 310 Fort Lee, NJ 07024

NEMA National Electrical Manufacturers' Association 1300 North 17th Street, Suite 1847 Rosslyn, VA 22209 www.nema.org

NFPA National Fire Protection Association One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101 www.nfpa.org

NHLA National Hardwood Lumber Association P.O. Box 34518 Memphis, TN 38184-0518 www.natlhardwood.org

NIA National Insulation Association 99 Canal Center Plaza, Suite 222 Alexandria, VA 22314 www.insulation.org

NOFMA National Oak Flooring Manufacturers Association P.O. Box 3009 Memphis, TN 38173-0009 www.nofma.org

NPA National Particleboard Association 18928 Premiere Court Gaithersburg, MD 20879-1569 www.pbmdf.com

NPCA National Paint and Coatings Association 1500 Rhode Island Avenue, NW Washington, DC 20005-5597 www.paint.org NRCA National Roofing Contractors Association P.O. Box 809261 Chicago, IL 60680-9261 www.roofonline.org

NRMCA National Ready Mixed Concrete Association 900 Spring Street Silver Spring, MD 20910 www.nrmca.org

NSA National Stone, Sand and Gravel Association 2101 Wilson Blvd. Arlington, VA 22201 www.nssga.org

NSF NSF International P.O. Box 130140 Ann Arbor, MI 48113-0140 www.nsf.org

NSSEA National School Supply and Equipment Association 8300 Colesville Road, Suite 250 Silver Spring, MD 20910 www.nssea.org

NTMA National Terrazzo and Mosaic Association 3166 Des Plaines Avenue, Suite 121 Des Plaines, IL 60018 www.ntma.com

NUSIG National Uniform Seismic Installation Guidelines 12 Lahoma Court Alamo, CA 94526

NWWDA The Window and Door Manufacturer's Door Association 1400 East Touhy Avenue, Suite 470 Des Plaines, IL 60018 www.wdma.org

OSHA Occupational Safety and Health Administration (U.S. Department of Labor) 200 Constitution Avenue, NW Washington, DC 20210

PCA Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077-1083 www.portcement.org

PCI Precast/Prestressed Concrete Institute 175 W. Jackson Blvd. Chicago, IL 60604 www.pci.org

> REFERENCE STANDARDS 01 42 19 - 12

PDCA Painting and Decorating Contractors of America 3913 Old Lee Highway, Suite 33-B Fairfax, VA 22030 www.pdca.com

PDI Plumbing and Drainage Institute 45 Bristol Drive (508) 230-3516 South Easton, MA 02375 www.pdionline.org

PEI Porcelain Enamel Institute 4004 Hillsboro Pike, Suite 224-B Nashville, TN 37215 www.porcelainenamel.com

RFCI Resilient Floor Covering Institute 401 East Jefferson #102 Rockville, MD 20850 www.rfci.com

RIS Redwood Inspection Service c/o California Redwood Association 405 Enfrente Drive, Suite 200 Novato, CA 94949-7206 www.calredwood.org

SDI Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60012 www.sdi.org

SDI Steel Door Institute 30200 Detroit Road Cleveland, OH 44145-1967 www.steeldoor.org

SIGMA Sealed Insulating Glass Manufacturers Association 401 N. Michigan Avenue Chicago, IL 60611-4267

SJI Steel Joist Institute 3127 Tenth Avenue, North Ext. Myrtle Beach, SC 29577-6760 www.steeljoist.org

SMA Stucco Manufacturers Association 14006 Ventura Blvd. Sherman Oaks, CA 91403 SMACNA Sheet Metal and Air Conditioning Contractors National Association, Inc. 4201 Lafayette Center Drive Chantilly, VA 20151-1209 www.smacna.org

SPI Society of the Plastics Industry, Inc. Spray Polyurethane Division 1801 "K" Street, NW, Suite 600K Washington, DC 20006 www.socplas.org

SPIB Southern Pine Inspection Bureau 4709 Scenic Highway Pensacola, FL 32504-9094 www.spib.org

SPRI (Formerly: Single Ply Roofing Institute) 200 Reservoir Street, Suite 309A Needham, MA 02494 www.spri.org

SSPC The Society for Protective Coatings 40 24th Street, Sixth Floor Pittsburgh, PA 15222-4656 www.sspc.org

SWI Steel Window Institute c/o Thomas Associates, Inc. 1300 Sumner Avenue Cleveland, OH 44115-2851 www.steelwindows.com

TCA Tile Council of America 100 Clemson Research Blvd. Anderson, SC 29625 www.tileusa.com

TPI Truss Plate Institute 583 D'Onofrio Drive, Suite 200 Madison, WI 53719

TPI Turfgrass Producers International 1855-A Hicks Road Rolling Meadows, IL 60008 www.turfgrasssod.org

UL Underwriters Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062 www.ul.com UNI Uni-Bell PVC Pipe Association 2655 Villa Creek Drive, Suite 155 Dallas, TX 75234 www.uni-bell.org

USDA U.S. Department of Agriculture 14th Street and Independence Avenue, SW Washington, DC 20250

USPS U.S. Postal Service 475 L'Enfant Plaza, SW Washington, DC 20260-0010

WA Wallcoverings Association 401 North Michigan Avenue Chicago, IL 60611-4267 www.wallcoverings.org

WCLIB West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281-3145 www.wclib.org

WCMA Window Covering Manufacturers Association 355 Lexington Avenue, 17th Floor New York, NY 10017-6603

WIC Woodwork Institute of California P.O. Box 980247 West Sacramento, CA 95798-0247 www.wicnet.org

WLPDIA Western Lath/Plaster/Drywall Industries Association 8635 Navajo Road San Diego, CA 92119

WMMPA Wood Moulding & Millwork Producers Association 507 First Street Woodland, CA 95695 www.wmmpa.com

WRI Wire Reinforcement Institute P.O. Box 450 Findlay, OH 45839-0450 www.wirereinforcementinstitute.org

WWPA Western Wood Products Association - Yeon Building 522 S.W. Fifth Avenue, #500 Portland, OR 97204-2122 www.wwpa.org

> REFERENCE STANDARDS 01 42 19 - 15

1.03 DEFINITIONS

- A. Regulations: Includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the work.
- 1.04 SYSTEM DESCRIPTIONS
 - A. Specification Format and Content
 - 1. Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 2004 Masterformat numbering system.
 - 2. The sections are placed in the Project Manual in numeric sequence; however, this sequence is not complete and the Table of Contents of the specifications must be consulted to determine the total listing of sections.
 - 3. The section title is not intended to limit the meaning or content of the section, nor is it to be fully descriptive of the requirements specified therein.
 - 4. The organization of the specifications shall not control the division of the work among subcontractors or establish the extent of work to be performed by any trade.
 - 5. Specifications use certain conventions regarding style of language and the intended meaning of certain terms, words and phrases when used in particular situations or circumstances. These conventions are:
 - Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable to maintain the context of the Contract Document indicated.
 - 2. Imperative and streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the CONTRACTOR. Subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the CONTRACTOR, or by others when so noted.
 - 3. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.
 - B. Codes and Standards
 - Latest edition of pertaining ordinances, laws, rules, codes, regulations, standards and others of public agencies having jurisdiction of the work are intended wherever reference is made in either the singular or plural to Code or Building Code except as otherwise specified, including but not limited to latest edition of those in the following listing.
 - 2. Partial List of Applicable Codes
 - a. 2016 California Administrative Code, C.C.R., Title 24, Part 1
 - b. 2016 California Building Code,
 C.C.R., Title 24, Part 2, Volumes 1 and 2
 (Based on the 2015 International Building Code)

REFERENCE STANDARDS 01 42 19 - 16

- c. 2016 California Electrical Code, C.C.R., Title 24, Part 3 (Based on the 2014 National Electrical Code)
- d. 2016 California Mechanical Code, C.C.R., Title 24, Part 4 (Based on the 2015 Uniform Mechanical Code)
- e. 2016 California Plumbing Code, C.C.R., Title 24, Part 5 (Based on the 2015 Uniform Plumbing Code)
- f. 2016 California Energy Code, C.C.R., Title 24, Part 6
- g. 2016 California Historical Building Code,
- C.C.R., Title 24, Part 8 h. 2016 California Fire Code,
- C.C.R., Title 24, Part 9 (Based on the 2015 International
- (Based on the 2015 International Fire Code)i. 2016 California Existing Building Code,
- C.C.R., Title 24, Part 10
- j. 2016 California Green Building Standards Code, C.C.R, Title 24, Part 11
- k. 2016 California Referenced Standards Code, C.C.R., Title 24, Part 12
- 3. Partial List of Applicable Standards
 - a. NFPA 13 Automatic Sprinkler Systems, 2016 Ed.
 - b. NFPA 14 Standpipe Systems, 2016 Ed.
 - c. NFPA 17 Dry Chemical Extinguishing Systems, 2017 Ed.
 - d. NFPA 17A Wet Chemical Extinguishing Systems, 2017 Ed.
 - e. NFPA 20 Stationary Pumps, 2016 Ed.
 - f. NFPA 22 Water Tanks For Private Fire Protection, 2013 Ed.
 - g. NFPA 24 Private Fire Service Mains, 2016 Ed.
 - h. NFPA 72 National Fire Alarm and Signaling Code, 2016 Ed.
 - i. NFPA 80 Fire Doors and Other Opening Protectives, 2016 Ed.
 - j. NFPA 92 Standard for Smoke Control Systems, 2015 Edition
 - k. NFPA 253 Critical Radiant Flux of Floor Covering Systems, 2015 Ed.
 - I. NFPA 2001 Clean Agent Fire Extinguishing Systems, 2015 Ed.
 - m. ICC 300 ICC Standards on Bleachers, Folding and Telescoping Seating and Grand Stands, 2012 Ed.
 - n. UL 300 Fire Testing of Fire Extinguishing Systems for Protection Of Restaurant Cooking Areas
 - o. UL 464 Audible Signal Appliances
 - p. UL 521 Heat Detectors for Fire Protective Signaling Systems
- 4. A copy of CCR Title 24, 2016 Part 1-5 must be kept on site during construction.
- 5. All addenda and construction change documents must be signed by the ARCHITECT.
- C. Industry Standards
 - 1. Except where Contract Documents include more stringent requirements, applicable construction industry standards shall apply as if bound into the Contract Documents to the extent referenced. Such standards are made part of Contract Documents by reference.

- 2. Conform to reference standard by date of issue current on date for receiving bids except when a specific date is indicated.
- 3. Where compliance with two (2) or more standards is specified and where standards may establish different or conflicting requirements for quantities or quality levels, the more stringent, higher quality and greater quantity of work shall apply.
- 4. The quantity or quality level shown or specified shall be the minimum provided or performed. Indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements.
- 5. Each entity engaged in construction of the work is required to be familiar with industry standards applicable to its construction activity.
- 6. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required activity, CONTRACTOR shall obtain copies directly from publication source.
- 7. Trade association's names and titles of general standards are frequently abbreviated. Where such abbreviations are used in the Specifications or other Contract Documents, they shall mean the recognized trade association, standards-generating organization, authority having jurisdiction or other entity applicable to the content of the text provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries. A partial list is included at the end of this section.
- 8. Refer to individual specification sections and related drawings for names and abbreviations of trade associations and standards applicable to specific portions of the work.
- 9. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES

- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 01 45 00 QUALITY CONTROL

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Quality assurance and control of installation.
 - 2. Certifications
 - 3. Field samples.
 - 4. Mock-up.
 - 5. Manufacturers' field services and reports.
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - 1. Monitor quality control over suppliers, manufacturers, products, services, site conditions and workmanship to produce work of specified quality.
 - 2. Comply fully with manufacturers' instructions including each step in sequence.
 - 3. Should manufacturers' instructions conflict with Contract Documents, request clarification from ARCHITECT before proceeding.
 - 4. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.
 - 5. Perform work by persons qualified to produce workmanship of specified quality.
 - 6. Where experience minimums for workmen, applicators, companies or manufacturers are required in individual sections, written certification and documentation substantiating such minimums shall be submitted and approved by the ARCHITECT, when requested.
 - 7. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
 - B. Regulatory Requirements
 - 1. All work pertaining to and all materials supplied for executing and completing this Contract shall comply with provisions specified in

the Contract Documents and with all applicable laws, regulations and ordinances governing Work.

- C. Certifications
 - 1. Manufacturers' Field Services and Reports
 - 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. Manufacturers Representatives shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
 - c. Submit report of observation to ARCHITECT for review.
- D. Field Samples
 - 1. Install field samples at the site as required by individual specifications sections for review by ARCHITECT.
 - 2. Accepted samples represent a quality level for the Work.
 - 3. Where field sample is specified in individual sections to be removed, clear area after field sample has been accepted by ARCHITECT and is no longer required for reference.
- E. Mock-ups
 - 1. Tests will be performed under provisions identified in this section.
 - 2. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals and finishes.
 - 3. Where mock-up is specified in individual sections to be removed, clear area after mock-up has been accepted by ARCHITECT and is no longer required for reference.
- F. Pre-installation Meetings
 - When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to attend meetings regarding installation of specified Work.
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
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PART 2 PRODUCTS

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PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
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- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 01 52 00 CONSTRUCTION FACILITIES

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Furnishing and Installing:
 - a. Temporary Water
 - b. Temporary Sanitary Facilities
 - c. Fences and Barricades
 - d. Construction Equipment
 - e. Storage
 - f. Temporary Job Office
 - g. Temporary Electrical
 - h. Temporary Lighting
 - i. Temporary Heat
 - j. Temporary Ventilation
 - k. Barriers
 - I. Noise Control
 - m. Pollution Control
 - n. Exterior Enclosures
 - o. Access Roads
 - p. Progress Cleaning
 - q. Fire Protection
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
 - A. Regulatory Requirements
 - 1. Comply with governing regulations and utility company regulations and recommendations.
 - 2. Comply with pollution and environmental protection regulations for use of water and energy, for discharge of wastes and storm drainage from Project Site and for control of dust, air pollution and noise.
 - 3. Temporary construction shall conform to requirements of State, County and Local authorities and underwriters which pertain to operation, health, safety and fire hazard. CONTRACTOR shall furnish and install items necessary for conformance with such

requirements, whether or not called for under the separate divisions of these specifications.

- B. Temporary Water
 - 1. The OWNER shall provide construction water at the closest existing fire hydrant as approved by the local jurisdiction. OWNER supplied point of connection shall include applicable temporary meter and backflow devices. CONTRACTORS requiring construction water shall provide all labor and materials (including cut and patch) to distribute.
- C. Temporary Sanitary Facilities
 - 1. CONTRACTOR will provide and maintain required temporary
 - chemical type toilet facilities and enclosures.
 - 2. Existing facilities shall not be used.
- D. Fences And Barricades
 - 1. After completion of site grading and before start of Work on the project site, CONTRACTOR may install a six (6) foot high temporary chain link fence with locked entrance gates to substantially enclose the entire project site. Any activities schedule to commence prior to the installation of fencing will be temporarily fenced by CONTRACTOR requiring same.
 - 2. The CONTRACTOR requiring same shall construct and maintain planking, barricades, lights and warning signs as indicated as required by Local authorities and State safety ordinances and as necessary for the protection of the public.
- E. Construction Equipment
 - 1. CONTRACTOR shall erect, equip and maintain construction equipment in strict accordance with applicable statues, laws, ordinances and regulations of authority having jurisdiction.
 - 2. CONTRACTOR shall provide, maintain and move upon completion of the Work all temporary rigging, scaffolding, hoisting equipment, rubbish chutes, ramps, stairs, runways, platforms, ladders, railings and other temporary construction as required for all work hereunder.
- F. Storage
 - Operations of the CONTRACTOR, including storage of materials, shall be confined to areas approved by OWNER. CONTRACTOR shall be liable for damage caused by him/her during such use of property of the OWNER or other parties. CONTRACTOR shall save the OWNER along with their respective officers, employees and agents, and the ARCHITECT and his employees, free and harmless from liability of any nature or kind arising from any use, trespass or damage occasioned by his operations on premises of third persons. Storage facilities shall provide protection of products from excessive cold, heat, moisture, humidity or physical abuse as specified in the respective sections for the products stored. Each CONTRACTOR requiring same shall provide their own temporary storage and security for same.
 - 2. Staging areas will be under the supervision of the CONTRACTOR. Materials shall be placed and relocated as necessary for the progress of the project.
- G. Temporary Job Office
 - 1. Should any CONTRACTOR require office space, the CONTRACTOR requiring office space shall provide.

CONSTRUCTION FACILITIES 01 52 00 - 2

- H. Temporary Electrical
 - 1. If requested by CONTRACTOR, OWNER shall provide temporary power as follows:
 - a. One (1) 200 amp single phase service.
 - b. A 50 amp sub-panel mounted on a post will not be more than 50 feet away from each building pad.
 - c. Each sub-panel shall be equipped with two (2) 110 volt receptacles, one (1) 220 volt receptacle and one (1) 50 amp twist-lock pigtail.
 - 2. Any temporary power requirements beyond these provided will be the responsibility of the CONTRACTOR requiring same.
 - 3. All welding will be done with self-contained gas powered units.
- I. Temporary Lighting
 - 1. Each CONTRACTOR shall be responsible to provide and maintain all temporary lighting as required to safely access and perform their work.
- J. Temporary Heat
 - 1. Temporary heat will be supplied and maintained by the CONTRACTOR requiring same.
 - 2. Do not use permanent equipment for temporary heating purposes unless specifically noted otherwise in the contract documents.
- K. Temporary Ventilation
 - 1. All CONTRACTORS shall ventilate enclosed areas to assist cure of materials, dissipate humidity and to prevent accumulation of dust, fumes, vapors or gases as the above may be generated by them.
- L. Barriers
 - 1. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
 - 2. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
 - 3. Provided protection for plant life and trees designated to remain and for soft and hardscape areas adjacent to work, replace damaged materials as directed by the ARCHITECT.
 - 4. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
 - 5. Construction workers shall not interact or communicate with students or staff except in emergency or safety related situations. (Post a sign to this effect at entry.)
- M. Noise Control
 - 1. CONTRACTORS shall ensure that all construction equipment utilized include noise-reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer of such equipment.
 - 2. CONTRACTORS shall review and be knowledgeable of any CEQA documentation for this project restricting or limiting noise, and implement any and all scheduling or mitigation methods necessary to conform with the CEQA documents. This includes any Mitigated Negative or Negative Declaration instrument the OWNER has produced.

- 3. CONTRACTORS shall review and be knowledgeable of any federal, state or local agency requirements for noise restrictions and adhere to the policies outlined by the applicable laws and codes.
- N. Pollution Control
 - 1. Provide methods, means and facilities to prevent contamination of soil, water and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- O. Exterior Enclosures
 - Provide temporary weather-tight closure of exterior openings to accommodate acceptable working conditions and protection for materials, to allow for temporary heating and maintenance or required ambient temperatures identified in individual specification Sections and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- P Access Roads
 - 1. Provide and maintain access to fire hydrants, free of obstructions.
 - 2. Existing on-site roads may be used for construction traffic.
 - 3. CONTRACTORS may not park or drive on concrete walks or in the buildings at any time.
- Q. Progress Cleaning
 - 1. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.
 - 2. Each applicable CONTRACTOR shall remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces prior to the space being enclosed.
 - 3. Each applicable CONTRACTOR shall broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
 - 4. Remove waste materials, debris and rubbish from site periodically and dispose off-site.
- R. Fire Protection
 - 1. Fire protection during construction shall be provided in accordance with CFC, Chapter 33.
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION

- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 01 57 00 TEMPORARY CONTROLS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Water Control
 - 2. Dust Control
 - 3. Erosion and Sediment Control
 - 4. Noise Control
 - 5. Pollution Control
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - 1. Water Control

a.

- Do not permit surface or subsurface water or other liquids to accumulate in or about the premises and vicinity thereof. Should such conditions be encountered or develop, control the water or other liquid and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams or other methods as approved by the ARCHITECT and/or the authority having jurisdiction.
- 2. Dust Control
 - Conduct earthwork operations in a manner to prevent windblown dust and dirt from interfering with the progress of the Work, the OWNER'S activities and the existing occupied structures in the areas immediately adjacent as well as adjacent properties.
 - b. Periodically water construction areas as required to minimize accumulation of dust and dirt.
 - c. Water spray or cover with tarpaulins truck loads of soil to additionally minimize generation of dust and dirt from construction operations.
 - Prevent dust and dirt from accumulating on walks, roadways, parking areas and from washing into sewer and storm drain lines.
- 3. Erosion and Sediment Control

- a. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- b. Minimize amount of bare soil exposed at one time.
- c. Provide temporary measures such as berms, dikes and drains to prevent water flow over adjacent properties or City rights-of-way.
- e. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- f. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- 4. Noise Control
 - a. Avoid excessive noise where adjacent operations may be detrimentally affected.
- 5. Pollution Control
 - Provide methods, means and facilities to prevent contamination of soil, water and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
 - b. Burning of refuse, debris or other materials will not be permitted on the Site.
 - c. Comply with regulatory requirements and anti-pollution ordinances during the course of construction and disposal operations.
- 6. Removal
 - a. Remove all temporary control measures in accordance with regulatory requirements at the completion of construction.
- B. Existing Conditions
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 01 60 00 PRODUCT REQUIREMENTS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Products
 - 2. Transportation and Handling
 - 3. Storage and Protection
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Products
 - Products: Means new material, machinery, components, equipment, fixtures and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
 - 2. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
 - 3. Provide interchangeable components of the same manufacturer for similar components.
 - 4. The ARCHITECT may reject as non-complying such material and products that do not bear identification satisfactory to the ARCHITECT as to manufacturer, grade, quality and other pertinent.
 - 5. In event of damage, promptly make replacements and repairs to the approval of the ARCHITECT and at no additional cost to the OWNER.
 - 6. Additional time required to secure replacements and to make repairs will not be considered by the ARCHITECT to justify an extension in the Contract Time of Completion.
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - 1. Transport and handle products in accordance with manufacturer's instructions.
 - 2. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement or damage.

- B. Acceptance at Site
 - 1. Promptly inspect shipments to assure that products comply with requirements, quantities are correct and products are undamaged.
- C. Storage and Protection
 - 1. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
 - 2. For exterior storage of fabricated products, place on sloped supports, above ground and protect as necessary to prevent deterioration or damage to the product.
 - 3. When approved by the OWNER, provide off-site storage and protection in a bonded warehouse approved by OWNER when site does not permit on-site storage or protection at no cost to the OWNER.
 - 4. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
 - 5. Store loose granular materials on solid flat surfaces in a welldrained area. Prevent mixing with foreign matter.
 - 6. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement or damage.
 - 7. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- D. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION

- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 01 74 00 CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Provide throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in the section.
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.
 - B. In addition to the standards described in this section, comply with pertinent requirements of governmental agencies having jurisdiction.
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL

1.

- 3.11 ADJUSTING
- 3.12 CLEANING
 - A. Cleaning of Materials and Equipment
 - Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.
 - B. Compatibility
 - 1. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.
 - C. Progress Cleaning
 - 1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
 - 2. So not allow accumulation of scrap, debris, waste material, and other items not required for construction of this work.
 - 3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
 - 4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.
 - 5. Site
 - a. Clean daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
 - Weekly, and more often if necessary, inspect all arrangements of materials stored on the site. Restack, tidy, or otherwise service arrangements as needed.
 - c. Maintain the site in a neat and orderly condition at all times.
 - 6. Structures
 - a. Weekly, and more often if necessary, inspect the structures and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
 - b. Weekly, and more often if necessary, sweep interior spaces clean. "Clean" for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a hand-held broom.
 - c. As required preparatory to installation of succeeding materials, clean the structures or pertinent portions hereof to the degree of cleanliness recommended by the

CLEANING AND WASTE MANAGEMENT 01 74 00 - 2 manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

- d. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed. "Clean" for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material which, in the opinion of the ARCHITECT, may be injurious to the finish floor material.
- D. Final Cleaning
 - "Clean" for the purpose of this article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.
 - 2. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste.
 - 3. Site
 - a. Broom clean paved areas on the site and public paved areas adjacent to the site.
 - b. Completely remove resultant debris.
 - 4. Structures
 - a. Exterior
 - 1. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
 - 2. Remove all traces of splashed materials from adjacent surfaces.
 - 3. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
 - 4. In the event of stubborn stains not removable with water, the architect may require light sandblasting or other cleaning at no additional cost to the OWNER.
 - b. Interior
 - 1. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
 - 2. Remove all traces of splashed material from adjacent surfaces.
 - 3. Remove paint droppings, spots, stains, and dirt from finished surfaces.
 - c. Glass
 - 1. Clean inside and outside.
 - d. Polished surfaces
 - 1. To surfaces requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.
 - e. Schedule final cleaning as approved by the architect to
 - enable the OWNER to accept a completely clean work.
- E. Cleaning During Owner's Occupancy
 - 1. Should the OWNER occupy the work or any portion hereof prior to its completion by the contractor and acceptance by the OWNER, responsibilities for interim and final cleaning shall be as determined

CLEANING AND WASTE MANAGEMENT 01 74 00 - 3
by the ARCHITECT in accordance with the General Conditions of the contract.

- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 01 77 00 CLOSEOUT PROCEDURES

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Closeout procedures
 - 2. Adjusting
 - 3. Project record documents
 - 4. Operation and maintenance data
 - 5. Warranties and Guarantees
 - 6. Spare parts and maintenance materials
 - 7. Instructions to OWNER'S personnel
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 01 20 00 Price and Payment Procedures
 - 2. 01 32 16 Construction Progress Schedule
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Closeout Procedures
 - 1. Partial Occupancy and Substantial Completion:
 - a. Conform to General Conditions for Closeout Procedures.
 - Prepare a list of items to be completed or corrected, aka 'Punch List'. List may be developed by areas, when approved by the ARCHITECT.
 - c. Within a reasonable time after receipt of the list, the ARCHITECT will inspect to determine status of completion.
 - d. Should the ARCHITECT determine that Work is not substantially complete:
 - 1. The ARCHITECT will promptly notify the OWNER and CONTRACTOR in writing, giving the reasons for his determination.
 - CONTRACTOR shall remedy the deficiencies and notify the ARCHITECT when Work is ready for reinspection.
 - 3. The ARCHITECT will re-inspect the Work.
 - e. When the ARCHITECT concurs that work is substantially complete:
 - The ARCHITECT will prepare a "Certificate of Substantial Completion" on AIA Form G704, accompanied by the CONTRACTOR'S list of items to be completed or corrected as verified by the ARCHITECT.

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- 2. The ARCHITECT will submit the Certificate to the OWNER and to the CONTRACTOR for their written acceptance of the responsibilities assigned to them in the Certificate.
- 2. Final Completion:
 - a. Prepare and submit a notice that Work is ready for final inspection and acceptance.
 - b. Verify the Work is complete.
 - c. Certify that:
 - 1. Work has been inspected by all governing agencies and is in compliance with Contract Documents.
 - 2. Work has been inspected for compliance with the Contract Documents.
 - 3. Work has been completed in accordance with the Contract Documents.
 - 4. Equipment and systems have been tested as required and are operational.
 - 5. Work is completed and ready for final inspection.
 - d. The ARCHITECT will make an inspection to verify status of completion.
 - e. Should the ARCHITECT determine the Work is incomplete or defective:
 - 1. The ARCHITECT will promptly notify the OWNER and CONTRACTOR in writing, listing incomplete or defective work.
 - 2. CONTRACTOR shall remedy the deficiencies promptly and notify the ARCHITECT when ready for re-inspection.
 - f. When the ARCHITECT determines the Work is acceptable under the Contract Documents, he will request the CONTRACTOR to make closeout submittals.
- 3. Closeout submittals include, but are not necessarily limited to:
 - a. Project Record Documents.
 - b. Operation and maintenance data for items so listed in pertinent Sections of these Specifications and for other items when so approved by the ARCHITECT.
 - c. Warranties and Guarantees.
 - d. Keys and keying schedule.
 - e. Spare parts, materials, extra stock to be turned over to the OWNER.
 - f. Evidence of payment and release of liens.
 - g. List of subcontractors, service organizations and principal vendors, including names, addresses and telephone numbers, where they may be contacted for emergency service at all times, including nights, weekends and holidays.
- 4. Final Payment:
 - a. Submit a Final Payment Request, showing all adjustments to the Contract Sum.
 - Retention will be released no sooner than thirty-five (35) days and not later than sixty (60) days after Notice of Completion has been recorded with the County Recorder's Office.

CLOSEOUT PROCEDURES 01 77 00 - 2

1.05 SUBMITTALS

- A. Product Data
- B. Shop Drawings
- C. Samples
- D. Quality Assurance/Control Submittals
- E. Closeout Submittals
 - 1. Project Record Documents
 - a. OWNER will provide one (1) set of drawings and one (1) copy of the Project Manual for use during construction to record changes made during construction manually. CONTRACTORS installing underground utilities shall provide electronic as-built documentation.
 - b. Record in concise and neat manner and on a weekly basis all actual revisions to the work:
 - 1. Changes made on the Drawings, including Clarification Drawings.
 - 2. Changes made to the Specifications.
 - 3. Changes made by Addenda.
 - 4. Changes made by Change Directive.
 - 5. Change Orders or other authorized Modifications to the Contract.
 - 6. Revisions made to shop drawings, product data and samples.
 - c. Store Record Documents separate from documents used for construction. Replace soiled or illegible documents.
 - 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, trade name, product model and number and supplier.
 - 2. Authorized product substitutions or alternates utilized.
 - 3. Changes made by Addenda and Modifications.
 - f. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Identify drains and sewers by invert elevation.
 - Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work. Identify ducts, dampers, valves, access doors and control equipment wiring.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Drawings.
 - g. The OWNER will require the preparation of a final reproducible "RECORD SET" of drawings that incorporate all changes made during the construction process to include
 - CLOSEOUT PROCEDURES 01 77 00 - 3

incorporation of all change orders, addenda, field orders and "As Installed" conditions noted on the CONTRACTOR prepared record documents. The preparation and printing cost of the "RECORD SET" is part of the contract.

- 2. Operation And Maintenance Data
 - a. Submit three (3) sets prior to final inspection, bound in 8½ x
 11 inch text pages, in binders with durable covers, tabbed by specification section and/or other organizing heading.
 - b. Deliver to OWNER, itemized and inventoried on transmittal.
- 3. Warranties and Guarantees
 - a. Submit three (3) wet-signed originals separate from Operation and Maintenance data.
 - b. Manufacturer's warranties and guarantees notwithstanding, warrant entire Work against defects in materials and workmanship for twelve (12) months from date of Substantial Completion. Warranties and guarantees between CONTRACTOR and manufacturers and CONTRACTOR and suppliers shall not affect warranties or guarantees between CONTRACTOR and OWNER.
 - c. Execute and assemble documents from subcontractors, suppliers and manufacturers.
 - For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.
 - e. Deliver to OWNER, itemized and inventoried on transmittal.
- 4. Underground Wet Utility Video
 - a. Upon completion of the storm drain system, the CONTRACTOR shall fully flush the storm drain system and confirm proper functionality. Additionally, the CONTRACTOR shall provide all services necessary to electronically view and record (video) the improvements to the storm drain system. The CONTRACTOR shall turn-over two (2) copies of the documented review (DVD or media of the OWNER'S choice) of the storm drain system at the completion of the project.
 - b. Upon completion of the sewer system, the CONTRACTOR shall fully flush the sewer system and confirm proper functionality. Additionally, the CONTRACTOR shall provide all services necessary to electronically view and record (video) the improvements to the sewer system at all interior clean outs and main lines and all exterior building P.O.C./cleanout out to the public system P.O.C. The CONTRACTOR shall turn-over two (2) copies of the documented review (DVD or media of the OWNER'S choice) of the sewer system at the completion of the project.
 - c. Deliver to OWNER, itemized and inventoried on transmittal.
- 5. Instructions to OWNER'S Personnel
 - Instruct the OWNER'S personnel in proper operation and maintenance of all systems, equipment and similar items, which were provided as part of the work. Provide maintenance and inspection schedules that conform to manufacturer's recommendations.

CLOSEOUT PROCEDURES 01 77 00 - 4

- b. CONTRACTOR shall provide a schedule to the OWNER for approval for each of the instruction periods required.
 - 1. Organize the instruction sessions into group sizes and schedule the elapsed time for instruction in a manner to provide complete coverage of the subject matter. Video each session and provide OWNER with two (2) copies on DVD.
- Instruction sessions will be held in a OWNER designated area on the project site and at OWNER'S convenience. Amount of time required for each session shall be as specified in individual sections.
- d. Instructors shall be qualified by the product manufacturer in the subject matter presented at each session.
 - 1. Submit names of instructors and qualifications to the ARCHITECT and OWNER for approval thirty (30) days prior to each scheduled session.
 - 2. Substitution of instructors will not be permitted without prior approval of ARCHITECT or OWNER.
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS

1

- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
 - B. Maintenance Service

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION

- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 01 78 30 WARRANTIES AND BONDS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Preparation and submittal
 - 2. Time and schedule of submittals
 - 3. Guarantee Form
 - 4. Contractor's Certificate Regarding Asbestos Material Form
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. (Division 0) Notice Inviting Bids
 - 2. (Division 0) Information for Bidders
 - 3. (Division 0) Bid Bonds
 - 4. (Division 0) General Conditions
 - 5. (Division 0) Performance Bond
 - 6. (Division 0) Labor and Material Payment Bonds
 - 7. (Division 0) Warranty and Correction of Work
 - 8. 01 77 00 Closeout Procedures
 - 9. (Division 2 through 48) Warranties required for specific products of Work.
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
 - A. Form of Submittals
 - 1. Bind in commercial quality, $8\frac{1}{2} \times 11$ inch, three-ring side binders with hardback, cleanable, plastic covers.
 - 2. Label cover of 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 principal.
 - 3. 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 the product or work item.
 - 4. 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.

- B. Preparation of Submittals
 - 1. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers and manufacturers, within ten (10) days after completion of the applicable item or 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.
 - 2. Verify that documents are in proper form, contain full information and are notarized.
 - 3. Co-execute submittals when required.
 - 4. Retain warranties and bonds until time specified for submittal.
- C. Time of Submittals
 - 1. For equipment or component parts of equipment put into service during construction with OWNER'S permission, submit documents within ten (10) days after acceptance.
 - Make other submittals within ten (10) days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work when acceptance is delayed beyond Date of Substantial Completion, submit within ten (10) days after acceptance, listing the date of acceptance as the beginning of the warranty period.
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION

- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

GUARANTEE

We hereby guarantee that the				
	, (Item/Equipment)			
which we have installed for				
	_ (Owner)			
at				
	,(Project name)			
has been performed in accordance with the requirem that the work as installed will fulfill the requirements	ents of the Contract Documents and of the Contract Documents.			
The undersigned agrees to repair or replace any or all of such work that may prove to be defective in workmanship or material together with any other adjacent work which may be displaced in connection with such replacement within a minimum period of ONE (1) YEAR from the date of acceptance of the above-mentioned project by				
unusual abuse or neglect excepted.	, (Owner) ordinary wear and tear and			
In the event of the undersigned's failure to comply with the above mentioned conditions within a reasonable period of time, as determined by the OWNER, but not later than ten (10) working days after being notified in writing by the OWNER, the undersigned authorizes the OWNER to proceed to have said defects repaired and made good at the expense of the undersigned, which will pay the costs and charges therefore upon demand.				
	(Contractor)			
	_ (Signed)			
	(Printed Name)			
Representatives to be contacted for service subject to terms of contract.				
	(Name)			
	(Address)			
	(Email)			
	(Phone Number)			

WARRANTIES AND BONDS 01 78 30 - 4

CONTRACTOR'S CERTIFICATE REGARDING ASBESTOS MATERIAL

This form is to be submitted at the time final billing is provided.

 $``l\ certify\ that\ all\ the\ materials\ and\ supplies\ installed\ under\ this\ contract\ are\ free\ of\ asbestos-containing\ materials.''$

 _(Name of Contract)	
 _(Date)	
 _(Official Name of CONTRACTOR)	
 _(Ву)	
_(Title)	
 _(Signature)	

END OF SECTION

WARRANTIES AND BONDS 01 78 30 - 5

SECTION 03 10 00 CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Formwork for cast-in-place concrete including:
 - a. Earthen Forms
 - b. Wood Forms
 - c. Form Lumber
 - d. Form Accessories
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 03 30 00 Cast-In-Place Concrete
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. CCR, Title 24, Part 2
 - B. ACI 318-14 Building Code Requirements for Structural Concrete
 - C. ACI 347R-14 Guide to Formwork for Concrete
 - D. APA Publication V345 Design/Construction Guide: Concrete Forming
 - E. WWPA Technical Guide
- 1.03 DEFINITIONS

Α.

- A. ACI: American Concrete Institute
- B. WWPA: Western Wood Products Association
- 1.04 SYSTEM DESCRIPTIONS
 - Design Requirements, Performance Requirements
 - 1. All work shall conform to ACI 318-14 standards.
 - 2. All work shall conform to ACI 347R-14 standards.
 - 3. All work shall conform to structural specifications and details.
 - 4. Forms and falsework shall adequately support live and dead loads, including equipment, concrete drops, pressures of foundations, etc.
 - 5. Design of formwork for structural stability and sufficiency is the sole responsibility of the workers and contractors.
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit manufacturer's product data for materials and accessories specified.
 - B. Shop Drawings
 - 1. Submit detailed structural calculations and drawings approved and signed by a California registered Civil Engineer where the height of the falsework or vertical shoring, as measured from the top of the sills to the soffit of the superstructure exceeds 14 feet, or where individual horizontal span lengths exceed 16 feet, or where provision

CONCRETE FORMING AND ACCESSORIES 03 10 00 - 1 for vehicular traffic through falsework or shoring occurs. For all other falsework and shoring submit layout signed by California registered Civil Engineer, manufacturer's authorized representative or a licensed contractor experienced in the usage and erection of falsework and vertical shoring. A copy of the plans and calculations shall be available at the jobsite at all times.

- 3. Submit detailed drawings indicating locations of forms, construction and expansion joints, embedded items, and accessories.
- C. Samples
- D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
- E. Closeout Submittals
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - B. Regulatory Requirements
 - 1. CCR, Title 24, Part 2, Chapter 19A
 - 2. CCR, Title 8, Division 1, Chapter 4
 - C. Certifications
 - 1. All engineered wood product forms shall bear the APA trademark.
 - D. Field Samples
 - E. Mock-ups
 - F. Pre-installation Meetings
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - 1. Deliver materials to site with labels clearly identifying product name and manufacturer.
 - 2. Handle tube forms per manufacturer's instructions. Do not drop forms.
 - B. Acceptance at Site
 - C. Storage and Protection
 - 1. Store all materials to prevent damage and permit access to materials for inspection and identification.
 - 2. Store tube forms in accordance with manufacturer's instructions
 - D. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - B. Existing Conditions
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Tube Forms
 - 1. Sonoco, 1 North Second Street, Hartsville, South Carolina, 29550
 - 2. Ceme-Tube, 579 Schommer Dr., Hudson, WI 54016
- A. Releasing Agents
 - 1. W.R. Meadows, Inc., P.O. Box 338, Hampshire, IL 60140
 - 2. Nox-Crete, 1444 S 20th St., Omaha, NE 68108
- 2.02 EXISTING PRODUCTS

2.03 MATERIALS

- A. Concrete Formwork
 - 1. Earthen Forms
 - a. Provide earthen forms as indicated on drawings only for footings where the soil is firm and stable and the concrete will not be exposed, and as approved or directed.
 - b. Cut earthen forms square, neat and accurate to size.
 - c. Maintain clean bottoms of excavations.
 - 2. Wood Forms
 - a. Provide sound, undamaged, and clean forms per APA standards:
 - 1. APA Plyform Class 1
 - 2. B-B Exterior Type
 - 3. High Density overlaid surface on one side
 - 4. Not mill oiled
 - 5. 3/4-inch thick for exposed locations, min. 5/8-inch thick for unexposed locations.
 - b. Provide additional treatment of release agent if forms are not fresh.
 - 3. Form Lumber
 - a. Provide sound, undamaged, lumber for forming, studding, and bracing per WWPA standards:
 - 1. Species: Douglas Fir-Larch
 - 2. Grade: No.1 or better
 - 4. Tube Forms
 - a. Provide sound, undamaged, seamless forms in one-piece lengths.
 - 1. (Sonoco) Sonotube Finish Free
 - 2. (Chem-Tube) Standard Ceme-Tube
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Form Fasteners
 - 1. Provide nails, spikes, lag bolts, through-bolts and anchorages required, of sufficient strength, length and character to maintain formwork during pouring operations.
 - B. Form Ties
 - Prefabricated rod, flat band, wire, internally threaded disconnecting type, not leaving metal within 1 1/2-inch of concrete surface.
 - C. Releasing Agents

- 1. Provide colorless mineral oil type form coating, non-grain raising and non-staining type, ,
 - a. (W.R. Meadows) Duogard –VOC Compliant Form Release Agent
 - b. (Nox-Crete) Nox-Crete Form Coating
- D. Forming Chamfers and Rustications
 - 1. Provide rigid foam plastic, metal formers, or pre-cut wood profiles in sizes as detailed on drawings.
- E. Keyed Construction Joints
 - 1. Provide galvanized steel or extruded plastic tongue and groove type, knock-out holes at 6 inches on centers.
- F. Dovetail Anchor Slots
 - 1. Provide minimum 24 gauge galvanized steel foam filled type, with release tape sealed slots, bent tab anchors, securable to formwork.
- G. Anchors and Hangers
 - 1. Proved anchors which do not leave exposed metal at surface.
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Prior to commencing work, examine the work of others and verify that such work has been properly completed and installed to allow for proper installation of all materials and methods required of this section.
 - 2. Examine forms in accordance with CCR, Title 24, Part 2, Section 1705A.3, and Table 1705A.3.
 - 3. Do not begin erection until unacceptable conditions have been corrected.
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Tube Form Erection
 - 1. Place and brace tube forms in accordance with manufacturer's instructions. Forms must be secured at the base and at the top of the form. Additional mid-point bracing may be required for column heights in excess of 12 feet
 - 2. Erect forms at locations and to elevations as indicated on the Drawings.
 - 3. Erect column forms plumb. Bracing must be adequate to maintain plumb of column form throughout pouring and curing of concrete.
 - 4. Avoid damaging interior surface and coating of forms.
 - 5. Waterproof and reinforce openings cut into forms.
 - 6. Do not use forms that are out-of-round, deformed, damaged, or contain defects that could impair concrete surface.

CONCRETE FORMING AND ACCESSORIES 03 10 00 - 4

- 7. Protect forms from rain and snow if work is delayed and forms have been positioned for placing concrete.
- 8. Place waterproof sheeting over top of forms to prevent damage to interior surface by rain or snow.
- 9. Do not allow forms to stand in water or snow before placing concrete.
- B. Tube Form Concrete Placement
 - 1. Do not place concrete if column forms are wet.
 - 2. Apply form release coating to interior surface.
 - 3. Place concrete at pour rate in accordance with manufacturer's instructions.
 - 4. Do not touch interior surface of forms with vibrator.
 - 5. Do not vibrate concrete from exterior of forms.
- C. Tube Form Removal
 - 1. Remove column forms in accordance with manufacturer's instructions.
 - 2. Adhesion of Concrete to Form increases over time. If removal of the form is required, remove as soon as operations will not damage concrete, a minimum of 24 hours and a maximum of 5 days after placing concrete is recommended.
 - 3. Prevent damage to concrete from form removal.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION

A. Forming

- 1. Earthen forms
 - a. Foundation concrete may be placed directly into neat excavations provided the foundation trench walls are stable as determined by the Structural Engineer of record, subject to the approval of the Division of the State Architect.
 - b. The minimum formwork shown on the drawings is mandatory to insure clean excavations immediately prior to and curing the placing of concrete.
 - c. Trench earthen forms at least two inches wider than footing widths shown on drawings.
 - d. Construct wood edge strips at each side of trench at top to secure reinforcing and prevent trench from caving. Form sides of footings where earth caves.
 - e. Tamp form and clean all debris and loose materials in earthen forms before depositing concrete.
- 2. Design forms and shoring to resist all anticipated loads.
- 3. Verify accuracy of lines, levels, and centers.
- 4. Construct formwork and appurtenances to meet design and code requirements. Construct of sound materials, of correct shape and dimensions, mortar tight and of sufficient strength to prevent sagging, buckling, movement and failures. Provide adequate shores of wood or metal to safely carry imposed loads and adjustable to prevent displacements during the work.
- 5. Plywood shall be installed with horizontal joints level, vertical joints plumb, aligned, and with joints watertight.
- 6. Back joints by studs or solid blocking, and fill where necessary for smoothness. Reused plywood shall be thoroughly cleaned, damaged edges or surfaces repaired and both sides and edges oiled

CONCRETE FORMING AND ACCESSORIES 03 10 00 - 5 with colorless form oil. Nail plywood along edges, and to intermediate supports, with common wire nails spaced as necessary to maintain alignment and prevent warping.

- 7. Set reinforcing accurately and ensure secure placement.
- 8. Maintain tolerances of ACI 347R-14 guidelines for surface class:
 - a. Class A Use for all concrete surfaces exposed or concealed.
- 9. Assist in setting and placing blockouts and sleeves for materials and products to be embedded in and passing through concrete. Comply with CCR, Title 24, Part 2, Section 1903A and ACI 318 Ch. 6.
- 10. Provide ports and openings to facilitate inspection and cleaning.
- 11. Set screeds and establish levels for tops of concrete for finish surfaces. Shape surfaces as indicated on drawings.
- 12. Screed supports for concrete over waterproof membranes or vapor retarders should be of a cradle, pad, or base type, which will not puncture membrane.
- 13. Wet formwork prior to placing concrete and keep wet during concrete curing process.
- B. Form Removal
 - Do not remove formwork, shoring, and bracing until such time as masonry and concrete has gained sufficient strength to carry its own weight, and construction and design loads, which are liable to be imposed upon it. Verify strengths by compressive strength test results.
 - 2. Loosen forms carefully. Do not wedge pry bars, hammers or other tools against masonry and concrete surfaces.
 - 3. Comply with CCR, Title 24, Part 2, Section 1906A.2.
 - 4. The following are minimum times for forms and shoring to remain in place prior to removal:
 - a. Footings and grade beams 5 days.
 - b. Walls and columns 14 days.
 - c. Beam sides 10 days.
 - d. Beam and slab soffits 14 days.
 - 5. Cut nails and form ties off flush and leave all surfaces smooth and clean.
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
 - A. Site Tests, Inspection
 - 1. Inspect wood forms in accordance with CCR, Title 24, Part 2, Section 1705A.3, and Table 1705A.3.
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 03 20 00 CONCRETE REINFORCING

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Reinforcing bars
 - 2. Welded Wire Fabric
 - 3. Chairs and Spacers
 - 4. Erection of reinforcing
 - 5. Minimum requirements for concrete coverage
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 03 10 00 Concrete Forming and Accessories
 - 2. 03 30 00 Cast-In-Place Concrete
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

- A. CCR, Title 24, Part 2, Chapter 19A and applicable sections, 2016 edition
- B. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice"
- C. ACI 315 Details and Detailing of Concrete Reinforcement
- D. ACI 318 Building Code Requirements for Structural Concrete
- E. ACI SP-66: ACI Detailing Manual
- F. AWS D1.4 Structural Welding Code Reinforcing Steel
- G. ASTM A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
- H. ASTM A615 Standard Specification for Deformed and Plan Carbon-Steel Bars for Concrete Reinforcement
- I. ASTM A706 Standard Specification for Deformed and Plan Low-Alloy Steel Bars for Concrete Reinforcement
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Perform reinforcing work in strict conformance to the Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice"
- 1.05 SUBMITTALS
 - A. Product Data
 - B. Shop Drawings
 - 1. Submit shop drawings in accordance with ACI 315 Details and Detailing of Concrete Reinforcement.
 - C. Samples
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements

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- E. Closeout Submittals
 - 1. Submit as-built drawings indicating exact locations of reinforcing.
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - All shop and fielding welding of reinforcing bars shall be performed by welding operators certified by the American Welding Society (AWS).
 - B. Regulatory Requirements
 - 1. Fabrication and placement of reinforcing shall be in accordance with:
 - a. CCR, Title 24, Part 2, Chapter 19A.
 - b. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice", current edition.
 - c. AWS D1.4 Structural Welding Code Reinforcing Steel
 - d. ACI 318 Building Code Requirements for Structural Concrete
 - e. ACI 315 Details and Detailing of Concrete Reinforcement
 - C. Certifications
 - D. Field Samples
 - E. Mock-ups
 - F. Pre-installation Meetings

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading
- B. Acceptance at Site
- C. Storage and Protection
 - 1. Do not allow reinforcing materials to have direct contact with the ground.
 - 2. Cover materials adequately to prevent rusting and contact with materials or construction injurious to proper bonding.
- D. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Reinforcing Bars (All bars shall be deformed)
 - 1. All bars except those to be welded
 - a. ASTM A615, Grade 60 unless otherwise noted.
 - 2. All bars to be welded
 - a. ASTM A706, Grade 60 unless otherwise noted.
 - 3. Ties and Stirrups

CONCRETE REINFORCING 03 20 00 - 2

- a. ASTM A615, Grade 60 unless otherwise noted.
- 4. Welded Wire Fabric
 - a. ASTM A1064
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Chairs and Spacers
 - 1. Shall be plastic when resting on exposed surfaces
 - 2. Shall be shaped for strength and support for reinforcing.
- 2.08 MIXES
- 2.09 FABRICATION
 - A. Fabricate in accordance with details shown.
 - B. Accurately bend, cut and place bars as shown on drawings. Bend bars cold; heating of bars is not permissible. Do not bend or straighten bars in any manner that will injure materials. Details for reinforcement shall comply with ACI318-11 section 7.
 - C. Welding: All welded reinforcing steel shall be A.S.T.M. A706. Perform welding, where shown or approved, by the direct electric arc process in accordance with AWS D1.4 using low hydrogen electrodes as indicated on drawings. Preheat 6 inches each side of joint. Protect joints from drafts during cooling process; accelerated cooling is prohibited. Do not tack weld bars. Clean metal surfaces to be welded of all loose scale and foreign materials. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds found defective, with chisel, and replace with proper welding. Comply with Title 24, Section 1903A.8.
 - 1. Employ only experienced AWS certified welding operators.
 - 2. Prequalification of welds are to be in accordance with code and carbon equivalent of reinforcing not exceeding 0.75.
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL
 - A. Tests, Inspection
 - 1. Comply with CCR, Title 24, Part 2, Sections 1903A and 1913A.2, 2016 edition
 - 2. Where samples are taken from bundles as delivered from the mill, with the bundles identified as to heat number, and provided the mill analyses accompany the report, then one tensile test and one bend test shall be made from a specimen from each 10 tons or fraction, of each size of reinforcing steel.
 - 3. Where positive identification of the heat number cannot be made or where random samples are to be taken, then one series of tests shall be made from each 2-1/2 tons or fraction, of each size of reinforcing steel.
 - 4. Comply with Title 24, Part 2, C.C.R., 2016 C.B.C., Chapter 17A & Section 1913A.2.
 - B. Verification of Performance

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Prior to commencing work of this section, inspect work of others and verify that such work has been properly completed and installed to allow for proper installation of all materials and methods required of this section.
- 3.03 PREPARATION
- 3.04 ERECTION

A. Placing

- 1. Reinforcement shall be placed in accordance with the Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
- 2. Each reinforcing bar shall be wired to a cross bar at a maximum spacing of 24-inches on center. Point ends of wire ties away from forms.
- 3. Provide all accessories necessary to support reinforcing in positions shown on the drawings. Do not use wood or brick to support reinforcing.
- 4. Where longitudinal reinforcing bars are placed in 2 or more layers, bars in the upper layers shall be placed directly above bars in the bottom layer.
- B. Splices and Laps
 - Only splice reinforcing where shown or noted. Splices at other locations must be approved by the structural engineer of record and DSA.
 - Splices in continuous reinforcement as used in walls, wall footings, etc., shall have a Class 'B' lab (1'-6" min.) and the splices in adjacent bars shall be not less than 5'-0" apart.
 - 3. Vertical wall bars shall be spliced at or near floor lines.
 - 4. Bars may be wired together at splices or laps except for top reinforcing of beams and slabs or where specifically detailed to be separated.
 - 5. Welded wire fabric shall be lapped 12-inches minimum.
- C. Embedder Elements
 - 1. All dowels, anchor bolts, and other hardware to be set in concrete shall be tied in place prior to placement of concrete.
 - 2. No wet setting, stabbing, rodding, or other movement of
 - embedding items shall be performed during placement of concrete.
- D. Bending
 - 1. Bend reinforcing bars cold.
 - 2. All bends within stirrups, hoops, and cross-ties shall engage a longitudinal bar. Provide No. 4 spacer bar where a longitudinal bar is not specifically detailed.
- E. Steel shall be kept clean and free of rust
- F. Dowels between footings and walls or columns shall be the same grade, size, and spacing as the main reinforcing unless noted otherwise.
- G. All bars shall be marked so their identification can be made when the final in place inspection is made.

- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
 - A. Concrete Coverage

1.

Maintain minimum concrete cover from face of concrete to edge of all reinforcement as follows:

Condition	Cover		
Cast against and permanently exposed to earth	3-inches		
Formed and exposed to earth or weather:			
- #6 bars and larger	2-inches		
 #5 bars and smaller 	1½-inch		
Unexposed raised slabs and wall faces:			
- #11 bars and smaller	¾-inch		
Unexposed columns and beams	1½-inch		
Slabs on grade:			
 From bottom of slab 	2-inches		
- From top of slab	1½-inch		
Other concrete not exposed to weather earth:			
 #11 bars and smaller 	¾-inch		

3.08 REPAIR/RESTORATION

3.09 RE-INSTALLATION

- A. Defective Work
 - The following reinforcing work will be considered defective and may be ordered by Owner to be removed and replaced at no additional expense to Owner.
 - a. Bars with kinks or bends not shown on drawings.
 - b. Bars injured due to bending or straightening.
 - c. Bars heated for bending.
 - d. Reinforcement not placed in accordance with drawings or specifications.
 - e. Rusty or oily reinforcement.
 - f. Re-bent bars.

3.10 FIELD QUALITY CONTROL

- A. Site Tests, Inspection
 - 1. Inspection of welding shall be done by a special inspector approved by the Division of State Architect and paid for by the Owner.
 - 2. 48 hours prior to pouring concrete, notify the Architect, Structural Engineer, Project Inspector, and the Division of the State Architect that reinforcing is ready for inspection.
 - 3. Secure approvals by testing laboratory and Inspector of Record (IOR) before concrete operations are commenced.
- B. Manufacturers' Field Services
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

CONCRETE REINFORCING 03 20 00 - 6

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Cast-In-Place Concrete
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 03 10 00 Concrete Forming and Accessories
 - 2. 03 20 00 Concrete Reinforcing
 - 3. 07 92 00 Joint Sealants
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. ACI 117 (Latest Edition): Specification for Tolerances for Concrete Construction and Materials
 - B. ACI 211.1 (Latest Edition): Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
 - C. ACI 301 (Latest Edition): Specifications for Structural Concrete
 - D. ACI 302.1R (Latest Edition): Guide to Concrete Floor and Slab Construction
 - E. ACI 302.2R (Latest Edition): Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
 - F. ACI 305.1 (Latest Edition): Specification for Hot Weather Concreting
 - G. ACI 306.1 (Latest Edition): Standard Specification for Cold Weather Concreting
 - H. ACI 309R (Latest Edition): Guide for Consolidation of Concrete
 - I. ACI 318-14: Building Code Requirements for Structural Concrete and Commentary
 - J. ACI 360R: Guide to Concrete Floor and Slab Construction
 - K. ASTM C 150 Latest Edition, Standard Specification for Portland Cement
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Concrete shall meet the design criteria as indicated on the structural drawings.
 - 2. Concrete shall be mixed, placed, and cured in accordance with Referenced Standards (1.02 References) and project specifications.
 - 3. The slab-on-grade is not designed to support traffic from cranes or other heavy construction vehicles. Contractor shall repair or replace damaged concrete slabs.
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit manufacturer's product data for admixtures used.
 - B. Shop Drawings

- 1. Submit concrete control and construction joint drawings and details.
- 2. Submit drawings indicating locations of reinforcing embedded items, and interfacing with other work.
- C. Samples
 - 1. Not required
- D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. All mix designs, reports, qualifications shall indicate concrete production facility.
 - b. All mix designs, reports, qualifications shall be stamped and signed by a State of California Registered Professional Civil Engineer
 - c. Submit the following for each mix design specified:
 - 1. Statement of Mix Design for Concrete
 - 2. Indicate cementitious materials, aggregates, and admixtures.
 - 3. Aggregate gradations.
 - 4. Compressive Report
 - 5. Shrinkage Report
 - 6. Mix Design Qualification
 - d. Submit the material standards conformances:
 - 1. Portland Cement: ASTM C150
 - 2. Normal Weight Concrete Aggregates: ASTM C33
 - 3. Light Weight Concrete Aggregates: ASTM C330
 - 4. Curing Materials: ASTM C171
 - 5. Water: ASTM C1602
- E. Closeout Submittals
 - 1. Not required.
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - B. Regulatory Requirements
 - 1. Concrete shall be designed and constructed in accordance with the requirements of ACI 318, CBC Chapter 19A, and project specifications.
 - C. Certifications
 - D. Field Samples
 - 1. Not Required
 - E. Mock-ups
 - F. Pre-installation Meetings
 - 1. Not Required
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - 1. Not Applicable
 - B. Acceptance at Site
 - 1. Not Applicable
 - C. Storage and Protection
 - 1. Storage of materials shall be in accordance with ACI 318, 26.5.1.1
 - D. Waste Management and Disposal

- 1. Comply with Local, State, and Federal Laws.
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Base Course
 - 1. Sand
 - 2. Gravel
 - B. Cement
 - 1. ASTM C150 Portland Cement, Type II
 - C. Aggregates
 - 1. Normal Weight Concrete (NWC): ASTM C33
 - 2. Light Weight Concrete (LWC): ASTM C330
 - D. Water
 - 1. Water used in mixing, curing, and cleaning concrete shall conform to ASTM C1602.
 - E. Admixtures
 - 1. Use as required and only with the written acceptance of the Architect or Structural Engineer.
 - 2. Admixtures shall be in accordance with ACI 318, 26.4.1.4.1
 - 3. Coloring Admixtures shall be in conformance with ASTM C979
 - a. Job-proportioning or job-mixing of material for
 - monolithic colored surfaces is not permitted.
 - b. Shall be lime-proof and contain no calcium chloride.
 - c. Color: As selected by Architect.
 - F. Curing Materials
 - 1. Wet Burlap
 - a. New burlap: AASHTO M182, ASTM C171
 - 2. Plastic Film, Waterproof Paper, Combination Polyethylene/burlap Sheets
 - a. Moisture loss of no more than 0.055 g/cm³ in 72 hours per ASTM C156.
 - b. Waterproof paper shall conform to ASTM C171.
 - 3. Spray-Applied Membranes
 - a. Conform to ASTM C 309, clear, dissipating type.
 - b. Moisture loss of no more than 0.55 kg/m² in 72 hours at curing compound coverage of 200 sq.ft. per gal. per ASTM C156.
 - c. For integrally colored concrete, curing compound shall pigmented to match coloring admixture.
- 2.04 MANUFACTURED UNITS

- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Reinforcing
 - 1. See Section 03 20 00 Concrete Reinforcing
 - B. Forming and Accessories
 - 1. See Section 03 10 00 Concrete Forming and Accessories
 - C. Temporary Surface Protection
 - 1. N/A
 - D. Vapor and Alkalinity Control
 - 1. N/A
 - E. Joint Materials
 - 1. See Section 07 92 00 Joint Sealants
 - F. Below-Grade Vapor Retarders
 - 1. N/A
 - G. Below and Above Grade Waterproofing
 - 1. N/A
- 2.08 MIXES
 - A. General
 - 1. Concrete Mixing Operations shall conform to ASTM C94
 - 2. Aggregate
 - a. Use the largest maximum aggregate size for the conditions. Reference **ACI 211.1 (Latest Edition)** for aggregate gradation.
 - 3. Water
 - a. Slab-On-Grade Construction
 - 1. Total water per yard: 285 Lbs.
 - b. Foundation Construction
 - 1. Total water per yard: 300 Lbs.
 - B. Compressive Strength
 - Provide concrete mixes which will yield the minimum 28 day compressive strengths required and shown on drawings. If not indicated or specified on drawings, concrete shall have a minimum 28-day compressive strength of 4500 psi.
 - C. Slump
 - 1. Provide concrete mixes which will meet the required slump(s) as indicated on the drawings.
 - D. Design Mix: Mix design shall be in accordance with se ACI 318, 26.4.3.1
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

3.01 INSTALLERS

Α.

- 3.02 EXAMINATION
 - Evaluation and Acceptance of Concrete
 - 1. In accordance with ACI 318, 26.12
- 3.03 PREPARATION

- A. Preparation of equipment and place of deposit
 - 1. In accordance with ACI 318, 26.5, 26.6, 26.11
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
 - A. Formwork
 - 1. In accordance with ACI 318, 26.11
 - 2. See Section 03 10 00 Concrete Forming and Accessories
 - B. Mixing
 - 1. In accordance with ACI 318, 26.5
 - C. Conveying
 - 1. In accordance with ACI 318, 26.5
 - D. Depositing
 - 1. In accordance with ACI 318, 26.5
 - E. Curing
 - 1. In accordance with ACI 318, 25.5
 - 2. Slabs-On-Grade: Ponding or Immersion Method
 - a. In accordance with ACI 308.1, Section 4 for a minimum of (168) consecutive hours.
 - 3. Suspended Slabs: Moisture Retention Method a. In accordance with ACI 308.1,
 - F. Cold Weather Requirements
 - 1. In accordance with ACI 318, 26.5.4
 - G. Hot Weather Requirements
 - 1. In accordance with ACI 318, 26.5.5
 - H. Tolerances
 - 1. Floor Flatness and Levelness

FLOOR FINISH	COMPOSITE FLATNESS (F _F)	COMPOSITE LEVELNESS (F∟)
Epoxy Coatings,	20	15
Thick Set Tile,		
Carpet	25	20
Thin Set Tile,	35	25
Sheet Flooring,		
Resinous Flooring,		
Wood Flooring,		
Burnished/Polished		
Concrete		

FLOOR FINISH	COMPOSITE FLATNESS (F _F)	COMPOSITE LEVELNESS (F _L)
Epoxy Coatings, Thick Set Tile	20	N/A
Carpet	25	N/A
Thin Set Tile, Sheet Flooring, Resinous Flooring, Wood Flooring, Burnished/Polished Concrete	30	N/A

Suspended Slabs (In accordance with ACI 302.1R-15 Table 10.15.3b)

- I. Formwork Removal
 - 1. In accordance with ACI 318, 26.11.2.1
- J. Embedment's
 - 1. In accordance with ACI 318, 20.7, 26.8
- K. Construction Joints
 - 1. In accordance with ACI 318, 26.5.6
 - 2. In accordance with Construction Documents.
- L. Finishing
 - 1. Sacking
 - a. Where indicated on drawings.
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 06 10 00 ROUGH CARPENTRY

PART 1 GENERAL

1.01 SUMMARY

Β.

- A. Section Includes
 - 1. Provide the work specified herein consisting of miscellaneous wood framing, sheathing, nails, bolts, screws, framing anchors and other rough hardware and needs for construction as indicated on the drawings for complete and proper installation.
 - Products Supplied But Not Installed Under This Section
- C. Products Installed But Not Supplied Under This Section
- D. Related Sections
 - 1. 07 65 26 Self-Adhering Sheet Flashing
- E. Allowances
- F. Unit Prices
- G. Measurement Procedures
- H. Payment Procedures
- I. Alternates

1.02 REFERENCES

- A. CCR, Title 24, Part 2, Chapter 23, 2013 Edition
- B. PS 20 American Softwood Lumber Standard.
- C. American Forest & Paper Association, National Design Specifications for Wood Construction, 2005 Edition and Supplement.
- D. West Coast Lumberman's Bureau
- E. American Plywood Association
- F. Western Wood Products Association Grading Rules
- G. ASTM D245
- 1.03 DEFINITIONS
 - A. DF: Douglas Fir-Larch
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
- 1.05 SUBMITTALS
 - A. Product Data
 - B. Shop Drawings
 - C. Samples
 - D. Quality Assurance/Control Submittals
 - E. Closeout Submittals
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - 1. Use adequate numbers of skilled personnel who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
 - B. Regulatory Requirements
 - A. Hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the

ROUGH CARPENTRY 06 10 00 - 1 building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et. seq.). Those materials not exempted by the ATCM must meet the specified emission limits as shown in CCR, Title 24, Part 11, Table 5.504.4.5 Formaldehyde Limits

- C. Certifications
 - 1. Provide lumber with visible grade stamp of an approved agency certified by NFPA.
 - 2. Redwood shall be graded by the California Redwood Association, Redwood Inspection Service
- D. Field Samples
- E. Mock-ups

Α.

F. Pre-installation Meetings

1.07 DELIVERY, STORAGE, AND HANDLING

- Packing, Shipping, Handling, and Unloading
 - 1. Exercise care in off-loading lumber to prevent damages splitting and breaking.
 - 2. Deliver materials at earliest date possible to allow maximum drying time on site.
- B. Storage and Protection
 - 1. Store materials at job site in a safe area, out of traffic and shored up off ground surface.
 - 2. Identify framing lumber by grades and store grades separately from each other.
 - 3. Protect products with adequate waterproofing.
 - 4. Pile and strip lumber at site to allow free circulation of air with pile protected from sun and moisture.

1.08 PROJECT CONDITIONS

- A. Project Environmental Requirements
 - 1. Air-season all lumber for at least 60 days before covering with finish materials.
 - 2. Moisture Content of sawn lumber shall not exceed 19-percent when framing starts of sheating is applied. Any noncompliant work shall be rejected and reframed with accectable lumber
- B. Existing Conditions
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS

2.03 MATERIALS

- A. Dimensional Lumber
 - Unless notes otherwise on Structural Drawings:
 - 1. Non-Load Bearing Studs, minimum DF#2
 - 2. Top Plates, minimum DF#2
 - 3. Sill Plates, preserative treated (PT), minimum DF#2
 - 4. Blocking, minimum DF#2
 - 5. Furring, minimum DF#2
 - 6. Bracing, minimum DF#2
 - 7. Joists, Rafters, Purlins, minimum DF#1
 - 8. Beams and Posts, minimum DF#1
 - 9. Load Bearing Studs < 15', minimum DF#2
 - 10. Load Bearing Studs >15', minimum DF#1
- B. Plywood Sheathing
 - Unless noted otherwise on Structural Drawings:
 - 1. Exterior Stud Wall Sheathing, 15/32" APA Rated, Exposure -1
 - 2. Roof Sheathing, 15/32" APA Rated, Exposure-1
- C. Architecturally Exposed Timbers
 - 1. Members 4" nominal in the least dimension shall not contain boxed heart.
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Nails, spikes, and staples: Common (with standard lengths), except as otherwise indicated, galvanized nails at sill plates for exterior locations, high humidity within conditioned spaces, and treated wood: plain finish for other interior locations; size and type to suit application.
 - B. Steel hardware and stock framing connectors: ASTM A36 steel, galvanized for exterior applications, Simpson, or other approved manufacturer. Use of manufactured connectors other than specific brand and catalog no. shown on plans requires D.S.A. approval.
 - C. Lag bolts and wood screws: ANSI/ASME Standards B18.2.1 and B18.6.1.
 - D. Machine bolts: ASTM A307.
 - E. Wood preservative: Wolmanizing treatment at least two weeks prior to delivery to site.
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Carefully select all members. Ensure that exposed members are free of heart center. Select members so that knots and obvious defects will not interfere with placement of bolts, proper nailing or making

ROUGH CARPENTRY 06 10 00 - 3 proper connections, and not impair achievement of proper finished appearances where to be exposed.

- 2. Cut out and discard defects which will render a piece unable to serve its intended function. Lumber may be rejected by architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
 - A. General Framing
 - 1. In addition to framing operations normal to fabrication and erection indicated on drawings. Install all wood backing for plaster screeds and control joints required for other work of other trades, and for casework, chalkboards, toilet partitions, etc. as required.
 - 2. Set all horizontal and sloped members with crown up.
 - 3. Non-bearing, non-shear stud walls, sills, and trimmers may be anchored to concrete with shot pins. Use bolts set in concrete when edge distance at concrete is less than 3 inches. No shot pins permitted at curb conditions.
 - 4. All wall and partition studs and mullions shall be continuous from sill to plates. Run at least two studs on each side of openings in stud walls for openings in exterior walls and in partition openings larger than 6 feet, and partitions from sill to plate. For additional details, see structural drawings.
 - 5. Double plates with all joints staggered and lapping at least four feet, and splice to bear on studs at splice joints. See Structural Drawings.
 - 6. Install nailing blocks and backing necessary for attachment of grounds, finishes, trim, fixtures, and do all required cutting, furring, and backing for electrical, plumbing and heating pipes, fixtures, etc.
 - 7. Frame stud partitions, furring and walls containing fire cabinets, electric panels, plumbing, heating, or other pipes to give proper clearance. Cutting of studs in bearing partitions and shear walls is prohibited unless specifically detailed.
 - 8. Fur walls for all pipes over 3/4" dia. Do not place pipes exceeding 1/3 of plate width in partitions used as bearing or plywood sheathed walls, but place them in furring completely clear of studs, unless detailed otherwise. Place approved piping in center of plates using neat hole. No notching is allowed. In no case allow pipes to pass through plates less than 5-1/2 inches wide.
 - 9. Unless otherwise indicated, provide 2-inch by 6-inch studs at 16 inches on centers.
 - 10. Provide cross-bridging at 8 feet on centers maximum for all joists and rafters more than 8 inches (4" at floor joists) depth. Use approved nailable metal type bridging. The lower portion of the cross-bridging shall not be attached until all roof loads have been applied, unless noted otherwise.

- 11. Provide 1 inch by 6-inch let-in bracing (at approximately 45 degrees) every 25 feet in all stud walls not sheathed. Run continuous from top plate to sill plate. (Optional for alignment purposes only).
- 12. Provide all isolated posts with connections at top and bottom; Simpson CC caps or CB base unless specifically detailed otherwise.
- 13. Double joist under parallel partitions with solid blocking between joists over all points of support.
- 14. Provide a 1/16-inch thick galvanized sheet steel base plate for all untreated wood posts where they are or will be in contact with concrete.
- 15. Do not cut or notch wood members unless specifically detailed on drawings.
- 16. Retighten all bolts, lags, screws, etc., prior to closing-in and after curing of drypack at sills.
- 17. Treat all notches and cuts in treated wood with approved wood preservatives prior to closing-in.
- B. FIRE STOPS
 - 1. Ensure that no fire stop is less than 2 inches thick and no less in width than enclosed space within partition.
 - 2. Provide stud wall and partitions with continuous rows of bridging or fire stops which will form a complete and effective separation in entire width of partitions, placed in such a manner that there will be no concealed air spaces greater than 8 feet in vertical dimension. Intermediate stops may be in line with opening headers. Provide furred space between stud walls and partitions with continuous fire stops at same elevation as those in the enclosing walls which must be installed horizontally, thus forming a solid stop from outside to outside of studs. At all concealed draft passages or shafts including furring spaces, ensure that maximum dimension is no more than 8 feet. Fire stop all partitions at all suspended ceilings.
- C. DRAFT STOPS
 - 1. Construction materials shall be of the following materials:
 - a. Minimum 5/8" gypsum board.
 - b. Minimum 15/32" plywood sheathing.
 - 2. Installation shall be at locations indicated on the drawings and per the following requirements:
 - a. At roof-ceiling assemblies so that the area of the concealed space does not exceed 1000 sq. ft. with a maximum horizontal dimension of 60 feet.
 - b. At roof-ceiling assemblies, where automatic fire sprinklers are installed in the concealed space, so that the arm of the concealed space does not exceed 3,000 sq.ft. with a maximum horizontal dimension of 100 ft.
 - c. In attics, mansards, overhangs, false fronts set out from walls and similar concealed spaces so that the area between draft stops does not exceed 3000 sq.ft. with a maximum horizontal dimension of 60 ft.
 - 3. Where automatic fire sprinklers are installed in the aforementioned spaces, the maximum area between draft stops shall be 9,000 sq.ft. with a maximum horizontal dimension of 100 feet.
 - 4. Draft stops shall form an effective barrier in concealed attic spaces, between ceilings and the underside of roof sheathing.

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- D. BEARING
 - 1. Make bearings full unless shown otherwise.
 - 2. Finish bearing surfaces on which structural members are to rest so as to give sure and even support. Where framing members slope, cut or notch ends as required to give uniform bearing surface.
- E. SHIMMING
 - 1. Do not shim any framing member except where specifically shown or required by drawings.
- F. BLOCKING
 - 1. Install blocking required to support all items of finish and to cut off all concealed draft openings, both vertical and horizontal, between ceiling and floor.
 - 2. 2x full depth solid blocking, shall be placed between joist or rafters at all supports.
- G. ALIGNMENT
 - 1. On all framing members to receive a finished surface, align finish sub-surface to vary not more than 1/8 inch from plane of surface of adjacent framing and furring members.
- H. PLYWOOD PLACEMENT
 - 1. Place all plywood with face grain perpendicular to supports and continuously over at least two supports, except where otherwise detailed.
 - 2. Center joints accurately over support unless otherwise shown on drawings.
 - 3. Protect plywood from moisture until succeeding component or materials are installed to cover plywood.
- I. FASTENING
 - 1. Use only common wire nails or spikes of standard lengths and gages
 - 2. For conditions not covered on drawings, provide penetration into piece receiving point not less than 1/2 length of nail or spike, provided that 16d nails may be used to connect two pieces of two inch thickness.
 - 3. For bolts, drill holes 1/32 inch larger in diameter than bolts being used. Drill straight and true from one side only.
 - 4. Bolt threads shall not bear on wood. Use washers under head and nut where both bear on wood. Use washers under all nuts.
 - 5. For lag screws, and wood screws, pre-bore holes same diameter as root of threads; enlarge holes for shank diameter for length of shank.
 - 6. Screw, do not drive, all lag screws and wood screws.
 - 7. Retighten bolts before closing.

3.08 REPAIR/RESTORATION

- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

ROUGH CARPENTRY 06 10 00 - 6
SECTION 06 41 16 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Plastic-Laminate-Clad Architectural Cabinets
 - 2. Factory finishing
 - 3. Cabinet, drawer, countertop hardware
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 06 10 00 Rough Carpentry
 - 2. 07 92 00 Joint Sealants
 - 3. 12 36 23.13 Plastic-Laminate-Clad Countertops
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. Architectural Woodwork Standards, Current Edition
 - B. C.C.R., Title 24, 2016 edition
 - C. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - Performance shall comply with grade requirements specified of Architectural Woodwork Standards, Current Edition, Section 10 -Casework.
- 1.05 SUBMITTALS

- 1. Submit manufacturers' plastic laminate data sheets.
- 2. Submit manufacturer's product data for adhesives and finishes that indicate VOC limits for each product.
- 3. Submit manufacturer's product data sheets for each piece of specified hardware.
- B. Shop Drawings
 - 1. Submit shop drawings in conformance with the requirements of the Architectural Woodwork Standards, Section 1 Submittals.
 - 2. The first page of the shop drawing shall include a WI Certified Compliance Label.
 - 3. Submit shop drawings of casework indicating materials and hardware, details for construction, dimensions, fastening and installation details. Shop drawings shall indicate grounds, backing, blocking, sleepers, countertop configurations, edge details, splash details, and configuration options.
- C. Samples

A. Product Data

- 1. Submit manufacturers' laminate full range of laminate samples
- 2. Submit one (1) sample of each piece of specified hardware.
- D. Quality Assurance/Control Submittals
 - . Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Provide WI Certified Compliance Certificate certifying that materials, fabrication and installation will comply with the specified requirements.
- E. Closeout Submittals
 - 1. Provide WI Certified Compliance Certificate for Installation.
 - 2. Self-certification will not be accepted.
- 1.06 QUALITY ASSURANCE

1.

- A. Qualifications
 - 1. Woodwork manufacturer with no less than five years of production experience similar to a specific project, whose qualifications indicate the ability to comply with the requirements of this section.
 - 2. A single manufacturer shall provide and install the work of described in this section.
 - 3. Bidders will be Woodwork Association program participants.
- B. Regulatory Requirements
 - Fire-Test-Response Characteristics
 - a. Plastic laminate shall comply with the following surfaceburning characteristics as determined by testing identical products per ASTM E84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Flame-Spread Index: 75 or less (Class B)
 - Smoke-Developed Index: 450 or less
 - 2. Operable parts for all accessible casework shall comply with CBC Section 11B-309
- C. Certifications

Α.

- 1. Work shall be in accordance with the Grade or Grades specified of the Architectural Woodwork Standards.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - Packing, Shipping, Handling, and Unloading

2.

- 1. Comply with Woodwork Institute Architectural Woodwork Standards, latest edition, Section 2 – Care & Storage.
- 2. Deliver materials only when the project is ready for installation and the contractor has provided a clean storage area
- B. Acceptance at Site
 - 1. Delivery of millwork shall be made only when the area of operation is enclosed, all plaster and concrete work is dry and the area broom clean.
- C. Storage and Protection
- D. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements

- 1. Maintain indoor temperature and humidity within the range recommended by the Architectural Woodwork Standards for the location of the project.
- B. Existing Conditions
- 1.09 SEQUENCING
 - A. Coordinate fabrication, delivery, and installation with the contractor and other applicable trades.
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Plastic Laminate
 - 1. Formica Corporation, 10155 Reading Road, Cincinnati, OH 45241, or equal.
 - Wilsonart Americas, 2501 Wilsonart Drive, P.O. Box 6110, Temple, TX 76503
 - B. Hardware
 - 1. Knape & Vogt Manufacturing Company, 2700 Oak Industrial Dr., NE Grand Rapids, MI 49505, or equal.
 - Pride Industrial, 10825 7th Street, Suite B, Rancho Cucamonga, CA 91730
 - 3. Rockford Process Control, 2020 Seventh Street Rockford, IL 61104

2.02 EXISTING PRODUCTS

2.03 MATERIALS

- A. Veneers
 - 1. Shall be in accordance with the Architectural Woodwork Standards requirements for its use and the grades.
- B. Lumber
 - 1. Shall be in accordance with the Architectural Woodwork Standards Grade specified for the product being fabricated. Moisture content shall be 6% to 12% for boards up to 2-inches nominal thickness and shall not exceed 19% for thicker pieces.
- C. Core
 - 1. Shall be MDF meeting the requirements of Architectural Woodwork Standards.
- D. Cabinet liner
 - 1. Shall be type CLS.
- E. Adhesives
 - 1. Shall be type II
- F. Hardware
 - 1. Pulls:
 - a. (Pride) Wire Pull SN
 - b. Finish: Satin Nickel
 - c. Size: 4-inch

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- 2. Drawer Guides: Full extension
 - a. (K&V) Heavy-duty (120lbs-200lbs) capacity, per manufacturer's requirements match capacity to drawer size and weight
 - Hinges: Five-Knuckle Hinge, Flush Overlay Mounting
 - a. (RPC) five knuckle hinge, 270 degree open angle, nonremovable pin
 - b. Finish: 26D Plated Dull Chrome
 - c. Size: 2-3/4"
 - d. Tips and Corners: Hospital
- 4. Door Catches:
 - a. (K&V) 918 Aluminum Heavy-Duty Aluminum Magnetic Catch
 - b. Finish: Aluminum
- 5. Shelf Supports: Self supports for adjustable shelves in wall-hung cabinets and the upper half of tall cabinets shall be designed to prevent shelves from sliding forward in a seismic event.
 - a. (K&V) 255/256 Steel Series Mortise-Mount Pilaster Shelving System
 - b. Finish: As selected by architect from full range of options.
- 6. Drawer Locks: All casework drawers to receive locks
 - a. (K&V) 986 Series Drawer Lock
 - b. Finish: Nickel
 - c. Keyed: Alike
- 7. Door Locks: All casework doors to receive locks
 - a. (K&V) 984 Plunger Door Lock
 - b. Finish: Nickel
 - c. Keyed: Alike
- 2.04 MANUFACTURED UNITS

3.

- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
 - A. Laminate
 - 1. (Formica) Formica Laminate, See 3.15 Schedules
 - 2. (Wilsonart) High Pressure Laminate, See 3.15 Schedules
 - B. Shall be Architectural Woodwork Standards: Premium Grade
 - C. Exposed interior surfaces shall be: Laminate matching exposed surfaces
 - D. Semi-exposed surfaces shall be: Cabinet Liner
 - E. Doors, drawer fronts, and false fronts shall be: Flush Overlay.
 - F. Drawers shall meet the requirements of the AWS for Grade specified.
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
 - a. All hardware shall be installed by casework fabricator.
- 3.02 EXAMINATION
 - A. Site Verification of Conditions

- 1. Verify the adequacy and proper location of any required or support framing.
- 2. Verify that mechanical, electrical, plumbing, and other building components affecting work in this section are in place and ready.
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Install all work in conformance with the Architectural Woodwork Standards, latest edition.
 - B. Installation shall conform to the AWS Grade of the items being installed
 - C. All work shall be secured in place, square, plumb, and level.
 - D. All work abutting other building components shall be properly scribed.
 - E. Mechanical fasteners used at exposed and semi-exposed surfaces, excluding installation attachment screws shall be countersunk
 - F. Equipment cutouts shown on plans shall be cut by the countertop installer.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
 - A. Before completion of the installation, the installer shall adjust all moving operating parts to function smoothly and correctly.
 - B. All nicks, chips, and scratches in the finish shall be filled and retouched. Damaged items that cannot be repaired shall be replaced.
- 3.12 CLEANING
 - A. Upon completion of installation, the installer shall clean all installed items of pencil and ink marks and broom clean the area of operation, depositing debris in containers provided.
- 3.13 DEMONSTRATION
- 3.14 PROTECTION

3.15 SCHEDULES

- A. Laminate
 - 1. Color/Pattern Number & Color Pattern Name: TBD
 - As selected by architect from manufacturer's full range of options, including premium selections
 - 2. Grade (Name/Number): TBD
 - b. As selected by architect from manufacturer's full range of options, including premium grades
 - 3. Finish (Name/Number): TBD
 - c. As selected by architect from manufacturer's full range of options, including premium finishes

SECTION 07 21 00 BATT INSULATION

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Sound Attenuation Batt Insulation
 - 4. Accessories
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

- A. CCR, Title 24, Part 2, 2013 Edition
- B. ASTM C423 Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- C. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- D. ASTM C553 Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- E. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
- G. ASTM E814 Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit manufacturer's product data for materials specified.
 - B. Shop Drawings
 - C. Samples
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Submit manufacturer's storage and handling requirenments and recommendations.
 - b. Submit manufacturer's preparation instructions and recommendations.
 - c. Submit manufacturer's installation methods.
 - d. Submit manufacturer's certifications that products meet or exceed specified requirenments.
 - E. Closeout Submittals

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. Manufacturer shall have a minimum of ten (10) years experience manufacturing products specified.
 - Installer shall have a minumum five (5) years experience successfully installing insulation on projects of simular type and scope.
- B. Regulatory Requirements
- C. Certifications
- D. Field Samples
- E. Mock-ups
 - 1. Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 2. Mock-up areas shall be designated by Architect.
 - 3. Installer shall not proceed with remaining work until workmanship is reviewed and approved by Architect.
 - 4. Refinish mock-up areas as required to produce accectable work.
- F. Pre-installation Meetings
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - 1. Deliver products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
 - 2. Handle materials to avoid damage.
 - B. Acceptance at Site
 - C. Storage and Protection
 - 1. Store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
 - 2. Store materials in dry locations with adequate ventilation, free from water, and in such manner to permit easy access for inspection and handling.
 - D. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - 1. Maintain temperature, humidity, and ventilation within limits recommeded by manufacturer.
 - 2. Do not install products under environmental conditions outside manufacturer's absolute limits.
 - B. Existing Conditions
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Sound Attenuation Batt Insulation
 - 1. CertainTeed Corp., 750 E. Swedesford Rd., P.O. Box 860, Valley Forge, PA 19482, or equal.
 - 2. Owens Corning Insulating Systems, LLC, One Owens Corning Parkway, Toledo, OH, 43659
 - 3. Johns Manville, P.O. Box 5108, Denver, CO 80217
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Sound Attenuation Batt Insulation
 - 1. (CertainTeed) NoiseReducer
 - a. Facing: Unfaced
 - b. Thickness: 3 ½"
 - 2. (Owens Corning) Sound Attenuation Batt
 - a. Facing: Unfaced
 - b. Thickness: 3 ½"
 - 3. (JM) MinWool Sound Attenuation Fire Batt (SAFB)
 - a. Facing: Unfaced
 - b. Thickness: 3 ½"
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Insulation Accessories
 - 1. Sag Wires
 - a. Minimum 18 gauge galvanized wire
 - b. 16-inches on center spacing
 - 2. Impaling Pins and Self-Locking Washers
 - a. Perforated Base Insulation Hanger
 - 1. Material: 12 gauge galvanized steel
 - 2. Pin Length: As required
 - 3. Washer Size: 1-1/2-inch minimum diameter
 - 4. Adhesive: As recommended by manufacturer
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

3.01 INSTALLERS

Α.

- 3.02 EXAMINATION
 - Site Verification of Conditions
 - 1. Do not begin installation until substrates have been properly prepared.
 - 2. Verify that all exterior and interior wall, partition, and floor/ceiling assembly construction has been completed to the point where the insulation may correctly be installed.

- 3. Verify that mechanical and electrical services in ceilings, walls and floors have been installed and tested and, if appropriate, verify that adjacent materials are dry and ready to receive insulation.
- 4. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- 3.03 PREPARATION
 - A. Protection
 - B. Surface Preparation
 - 1. Vacuum clean surfaces thoroughly prior to installation.
 - 2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- 3.04 ERECTION

3.05 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in spaces without gaps or voids.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.
- E. Ensure secure attachment so that insulation will not sag over time.
- F. Where insulated walls are being left unfinished, install sag wires to support insulation.
- G. Where insulation is being installed using impaling pins, ensure that washers are installed over pins after insulation is in place. Space pins as necessary to provide insulation installation which will not sag over time, and as recommended in writing by insulation manufacturer.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
 - A. Protect installed products until completion of project.
 - B. Touch-up, repair or replace damaged products before Substantial Completion.
- 3.15 SCHEDULES

SECTION 07 65 26 SELF-ADHERING SHEET FLASHING

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Flexible rubberized asphalt adhesive based self sealing flashing tape
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 06 10 00 Rough Carpentry
 - 2. 08 41 13 Aluminum-Framed Entrances and Storefronts
 - 3. 09 24 00 Portland Cement Plaster
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. ASTM E96 Test Methods for Water Vapor Transmission of Materials
 - B. ASTM D570 Test Method for Water Absorption of Plastics
 - C. ASTM E2112 Standard Practice for Installation of Exterior Windows, Doors, and Skylights
 - D. ASTM D1970 Standard Specifications for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 - E. ASTM D412 Test Methods for Vulcanized Rubber & Thermoplastic Rubbers and Thermoplastic Elastomers Tension
 - F. ASTM D3652 Standard Test Method for Thickness of Pressure Sensitive Tapes
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Meets or exceeds the requirements set forth in AAMA 711-13 voluntary specification for self adhered flashing Level 3 requirement for elevated temperature exposure.
 - 2. Meets or exceeds the requirements set forth in ASTM E2112 for Flashing Exterior Windows and Doors
 - 3. Water Penetration around Nails: ASTM D1970 Section 7.9, modified per section 5.2.1 of AAMA 711 voluntary specification Pass 1.2 in head of water
 - 4. Tensile Strength: ASTM D412, Die C Modified Min. 985 kPa (143 psi)
 - 5. Thickness: ASTM 3652 Min 40 mils
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit each product specified
 - B. Shop Drawings
 - C. Samples
 - 1. Submit min 6-inch x 6-inch sample of products specified

SELF-ADHERING SHEET FLASHING

- D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Submit manufacturer's details and installation procedures
 - b. Submit manufacturer's test reports indicating compliance with the performance requirements of this section.
 - c. Submit manufacturer's standard product warranty that flashing and accessories are free of defects at time of delivery, and are manufactured to meet manufacturer's published physical properties and material specifications.
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - B. Regulatory Requirements
 - C. Certifications
 - D. Field Samples
 - E. Mock-ups
 - F. Pre-installation Meetings
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - 1. Comply with manufacturer's recommendations for handling of each product.
 - B. Acceptance at Site
 - C. Storage and Protection
 - 1. Comply with manufacturer's recommendations for storage of each product.
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - B. Existing Conditions
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. Warranty period shall be five (5) years from date of completion of the flashing installation.
 - B. Installer to warrant that flashing and accessories have been installed in accordance with manufacturer's recommendations.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - B. Maintenance Service

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. W.R. Grace & Co., 62 Whittemore Avenue, Cambridge, MA 02140
- 2.02 EXISTING PRODUCTS

- 2.03 MATERIALS
 - A. (Grace) Vycor V40 Flashing
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Primer
 - 1. (Grace) Perm-A-Barrier WB Primer
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Examine conditions for compliance with manufacturer's requirements for installation, tolerances and other specific conditions affecting performance of flashing.
- 3.03 PREPARATION
 - A. Protection
 - B. Surface Preparation
 - 1. Remove all deleterious materials from surfaces to be flashed.
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Install flashing to dry clean surfaces at air and surface temperatures of 25°F and above in accordance with manufacturer's recommendations at locations indicated on Construction Documents.
 - B. Primer
 - 1. When required by dirty or dusty site conditions or by surfaces having irregular or rough texture, apply primer by air spray, brush or roller or apply primer by brush or roller at the rate recommended by manufacturer, prior to flashing installation. Allow the primer to dry completely before flashing application.
 - a. Not required for most wood substrates including plywood and OSB provided if they are clean and dry.
 - b. Required for concrete, masonry, and gypsum sheathing prior to flashing.
 - C. Self-Adhering Sheet Flashing
 - 1. Precut pieces of flashing to easily handled lengths for each location.
 - 2. Remove silicone-coated release paper and position flashing carefully before placing it against the surface.
 - 3. When properly positioned, place against surface by pressing firmly into place by hand roller. Fully adhere flashing to substrate to prevent water from migrating under flashing.
 - 4. Overlap adjacent pieces 2 in. and roll all seams with a steel hand roller.

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- 5. Trim bottom edge 1/2 in. back from exposed face of the wall. Flashing shall not be permanently exposed to sunlight.
- 6. At heads, sills and all flashing terminations turn up ends a minimum of 2 in. and make careful folds to form an end dam, with the seams sealed.
- 7. Do not expose flashing membrane to sunlight for more than one hundred and twenty (120) days prior to enclosure.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 07 92 00 JOINT SEALANTS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Joint sealants
 - 2. Preparation for application of sealants
 - 3. Back-up material
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - 1. Field-Molded Concrete Paving Joint Sealant; See 32 16 00 Curbs, Gutters, Sidewalks, and Driveways
 - 2. Filed-Molded Concrete Unit Masonry Joint Sealant; See 04 22 00 Concrete Unit Masonry
 - D. Related Sections
 - 1. 04 22 00 Concrete Unit Masonry
 - 2. 32 16 00 Curbs, Gutters, Sidewalks, and Driveways
- 1.02 REFERENCES
 - A. SCAQMD Rule 1168 VOC Limits
 - B. CCR, Title 24, Part 11, Table 5.504.4.1- Adhesive VOC Limit and Table 5.504.4.2 Sealant VOC Limit
- 1.03 DEFINITIONS
 - A. SCAQMD: South Coast Air Quality Management District
 - B. VOC: Volitile Organic Compound

1.04 SYSTEM DESCRIPTIONS

1.05 SUBMITTALS

- A. Product Data
 - 1. Submit manufacturer's literature for each sealant material.
- B. Shop Drawings
 - 1. Submit Shop Drawings indicating sealant joint locations, with fullsize sealant joint details.
- C. Samples
 - 1. Submit Samples indicating color range available for each sealant material intended for installation in exposed locations.
- D. Quality Assurance/Control Submittals
 - 1. Submit manufacturer's certification materials comply with requirements specified.
 - 2. Submit manufacturer's adhesion compatibility test reports according to ASTM C794 for each substrate.
- E. Closeout Submittals

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. The Work of this section shall be installed by a firm which has been in the business of installing similar materials for at least five consecutive years; and can show evidence of satisfactory completion of five projects of similar size and scope.
 - 2. Installer shall have applicators trained and approved by manufacturer for performing this Work.
- B. Regulatory Requirements
 - 1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in CCR, Title 24, Part 11, Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with Rule 1168 prohibition on the use of certain toxic compounds (Chlorofoam, ethylene dichloride, methylene chloride, perchloroethylene, and trichloroethylene), except for aerosol products as specified in Subsection 2, below.
 - 2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.
- C. Certifications
- D. Field Samples
 - 1. At locations required, provide a Sample of sealant for each typical installation, approximately 24 inches long, including joint preparation, backing, sealant and tooling. Allow backing to extend 6 inches beyond end of sealant for inspection of substrate.
- E. Mock-ups
- F. Pre-installation Meetings

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading
- B. Storage and Protection
 - 1. Sealants shall be stored and installed at temperatures as recommended by manufacturer.
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - B. Site Conditions
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - 1. Five year material warranty, two year installation/application warranty.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Tremco Commercial Sealants & Waterproofing, 3735 Green Rd., Beachwood, OH, 44122
 - B. Pecora Corporation, 165 Wambold Road, Harleysville, PA 19438
 - C. Dow Corning Corporation, P.O. Box 994, Midland, MI 48686
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Sealants

Sealants shall have normal curing schedules, shall be nonstaining, color fast and shall resist deterioration due to ultraviolet radiation.

- 1. Sealant 1: Acrylic Latex, Non-Sag, Single-Component
 - a. (Tremco) Tremflex 834
 - b. (Pecora) AC-20+Silicone
- 2. Sealant 2: Butyl, Non-Sag, Single-Component
 - a. (Tremco) Butyl Sealant
 - b. (Pecora Corp) BC-158.
- 3. Sealant 3: Butyl, Non-Sag, Single-Component, Acoustical
 - a. (Tremco) Acoustical Sealant
 - b. (Pecora) BA-98
- 4. Sealant 4: Silicone, Non-Sag, Single-Component
 - a. (Tremco) Spectrem 1
 - b. (Pecora) 864 NST
- 5. Sealant 5: Silicone, Non-Sag, Single Component, Mildew-Resistant
 - a. (Pecora) 898 NST, Color selected by architect
 - b. (Dow Corning) 786, Color selected by architect
- 6. Sealant 6: Polyurethane, Non-Sag, Single Component
 - a. (Tremco) Dymonic 100
 - b. (Pecora) DynaTrol I-XL
- 7. Sealant 7: Polyurethane, Non-Sag, Multi-Component
 - a. (Tremco) Dymeric 240FC
 - b. (Pecora) DynaTrol II
- B. Fire Rated Sealants
 - 1. See Section 07 84 43 Joint Firestopping
- C. Joint Backing
 - 1. ASTM D1056; round, closed cell Polyethylene Foam Rod; oversized 30
 - to 50 percent larger than joint width, reticulated polyolefin foam.
- D. Primer:
 - 1. Provide primer as required. Non-staining Type.
 - 2. Primer shall be a product of manufacturer of installed sealant.
 - 3. Primer shall be compatable with not only sealant, but substrate and finish on which to be applied.
 - 4. Primer must have been tested for durability on the surfaces to be sealed and specifically recommended for this installation by the manufacturer.
- E. Bond Breaker:
 - 1. Pressure sensitive tape recommended by sealant manufacturer.

- Polyethylene tape, pressure sensitive adhesive, with the adhesive required only to hold tape to the construction material.
- b. Aluminum foil conforming to MIL-SPEC-Mil-A-148E.
- c. Wax paper conforming to Federal Specification UU-P-270

2.04 MANUFACTURED UNITS

- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
 - A. Sealants shall be installed by experienced mechanics using specified materials and proper tools.
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Verify that joint openings are ready to receive Work and field tolerances are within the guidelines recommended by sealant manufacturer.

3.03 PREPARATION

- A. Protection
 - 1. Protect elements surrounding Work of this section from damage or disfiguration.
- B. Surface Preparation
 - 1. Joints and spaces to be sealed shall be completely cleaned of all dirt, dust, mortar, oil, and other foreign materials which might adversely affect sealing Work. Where necessary, degrease with a solvent or commercial degreasing agent. Surfaces shall be thoroughly dry before application of sealants.
 - 2. If recommended by manufacturer, remove paint and other protective coatings from surfaces to be sealed before priming and installation of sealants.
 - 3. Preparation of surfaces to receive sealant shall conform to the sealant manufacturer's specifications. Provide air pressure or other methods to achieve required results. Provide masking tape to keep sealants off surfaces that will be exposed in finished Work.
 - 4. Etch concrete or masonry surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.
 - 5. Perform preparation in accordance with ASTM C804 for solvent release sealants, and ASTM C962 for elastomeric sealants.

- 6. Concrete, masonry, and other porous surfaces, and any other surfaces if recommended by manufacturer, shall be primed before installing sealants. Primer shall be installed with a brush that will reach all parts of joints to be filled with sealant.
- 3.04 ERECTION

3.05 INSTALLATION

- 3.06 APPLICATION
 - A. Provide sealant around all openings in exterior walls, and any other locations indicated or required for structure weatherproofing and/or waterproofing.
 - B. Sealants shall be installed with guns furnished with proper size nozzles. Sufficient pressure shall be furnished to fill all voids and joints solid. In sealing around openings, include entire perimeter of each opening, unless indicated or specified otherwise. Where gun installation is impracticable, suitable hand tools shall be provided.
 - C. Sealed joints shall be neatly pointed on flush surfaces with beading tool, and internal corners with a special tool. Excess material shall be cleanly removed. Sealant, where exposed, shall be free of wrinkles and uniformly smooth. Sealing shall be complete before final coats of paint are installed.
 - D. Partially fill joints with joint backing material, furnishing only compatible materials, until joint depth does not exceed 1/2 inch joint width. Minimum joint width for metal to metal joints shall be 1/4 inch. Joint depth, shall be not less than 1/4 inch and not greater than 1/2 inch.
 - E. Install sealant under sufficient pressure to completely fill voids. Finish exposed joints smooth, flush with surfaces or recessed as indicated. Install non-tracking sealant to concrete expansion joints subject to foot or vehicular traffic.
 - F. Where joint depth prevents installation of standard bond breaker backing rod, furnish non-adhering tape covering to prevent bonding of sealant to back of joint. Under no circumstances shall sealant depth exceed 1/2 inch maximum, unless specifically indicated on Drawings.
 - G. Sealants shall cure in accordance with manufacturer's printed recommendations. Do not disturb seal until completely cured.
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
 - A. Site Test, Inspection
 - 1. Sealants shall not be installed when they become too jelled to be discharged in a continuous flow from gun. Modification of sealants by addition of liquids, solvents, or powders is not permitted.

3.11 ADJUSTING

- 3.12 CLEANING
 - A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
 - A. Protect the Work of this section until Substantial Completion.

3.15 SCHEDULES

A. Application

Location	Туре
Interior gypsum board, all interior joints not scheduled	Sealant 1
Under thresholds	Sealant 2
Interior door/window frames -Heads, Jambs, Sills	Sealant 3
Exterior door and window frames.	Sealant 4
Joints within glazed curtain wall system	Sealant 4
Skylight framing system	Sealant 4
Glass and glazing	Sealant 4
Joints in ceramic tile and at plumbing fixtures	Sealant 5
Between metal and concrete, masonry, and mortar	Sealant 6
Exterior and interior vertical joints in concrete and masonry metal flashing	Sealant 6
Interior joints in horizontal surfaces of concrete	Sealant 7

SECTION 08 12 13 HOLLOW METAL FRAMES

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Knocked down, site assembled pre-finished steel interior door frames
 - 2. Knocked down, site assembles prefinished steel interior window frames
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 08 14 16 Flush Wood Doors
 - 2. 08 71 00 Door Hardware
 - 3. 08 80 00 Glazing
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. ASTM A1008M Standard for cold rolled steel material
 - B. ASTM D2197 Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion.
 - C. ASTM D2247 Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
 - D. ASTM D2794 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 - E. ASTM D3361 Standard Practice for Unfiltered Open-Flame Carbon-Arc exposures of Paint and Related Coatings.
 - F. ASTM B117 Standard test for salt spray testing
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Indicate frame material, gage, configuration and finishes
 - B. Shop Drawings
 - 1. Indicate frame elevations, details of frame anchorage,
 - reinforcements required, rough opening requirements, location of hardware embosses, and finishes. Detail each floor of the building separately.
 - C. Samples
 - 1. Submit three (3) standard frame samples, illustrating factory finished frame colors
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements

- a. Provide installation instructions for all products under this section.
- b. Provide manufacturer's standard warranty certificate stating material is warranted for a period of one year from date of building occupancy
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - 1. Material free from defects in material and according to project specifications for pre-engineered opening systems
 - 2. Proven durability of factory finishes allowing for bending and shaping of material after finish is applied
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - Packing, Shipping, Handling, and Unloading
 - 1. Transport, handle, store, and protect products in a dry area off the ground.
 - B. Acceptance at Site
 - 1. Accept frames on site in manufacturer's box packaging with identification labels intact. Inspect for damage.
 - C. Storage and Protection
 - 1. Do not open individual boxes until installation is to begin.
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING

Α.

- A. Install pre-finished frames near end of the project after wall painting and wall coverings are applied.
- B. Coordinate installation of glass and glazing in glazed units.
- C. Coordinate installation of frames with installation of hardware
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Timely Industries, A Division of SDS Industries, Inc., 10241 Norris Avenue, Pacoima, CA, 91331
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Cold rolled steel, for interior frames in normal atmospheric exposures.
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
 - A. Frame Throat Opening
 - 1. As shown on plan details to suit finished wall thickness.
 - B. Door Frame Profile

- 1. Communicator profile, 1-3/4" Door
 - a. "C" Series, 1.2 mm (18 gage) thick
- C. Window Frame Profile
 - 1. Communicator profile, ¼" Glazing
 - a. "C" Series, 1.2 mm (18 gage) thick
- D. Casings
 - 1. Provide steel casings formed to be applied to heat treated clips on frame face after frame is anchored to wall
 - Standard Steel TA-8 with 6 mm (1/4 inch) reveal, on steel frames. Fit factory assembled units with MiterGard corner alignment clips.
- 2.07 ACCESSORIES
 - A. Provide reinforcements shipped loose to project site for hardware application
 - 1. TA-10 Regular arm closers, casing mounted coordinators
 - 2. TA-12 Parallel arm closers, Rim Exit device strikes, other stop mounted surface hardware
 - 3. TA-47 For CK frame, Parallel arm closers, Rim Exit device strikes, other stop mounted surface hardware
 - 4. TA-25 Double acting spring hinges, continuous hinges, other surface mounted hardware on door rabbet or cased opening frame
 - Provide hinge reinforcement (TA-11) of 14 gage steel pierced to create depth of thread for hinge screws equal to or exceeding 7 gage steel.
 - B. Silencers
 - 1. TA-5 vinyl, 2 per frame, clear stick-on type.
 - C. Glass Stops
 - 1. TA-14 removable rolled steel, shape, butted ends. Pre-punch and countersink for flat head tek screws.
 - Adjustable strikes: Emboss frames for TA-1 strike for cylindrical lock.
 Provide TA-1 strike in finish compatible with hardware finish. (ANSI 2 ¾" T strike supplied with cylindrical lock cannot be used with standard frame because of unique strike location and screw piercing method)
 - E. Prepare frames for ASA 4-7/8" strikes where required. Provide minimum ¼" depth of threads in factory tapped screw holes
 - F. Installation fasteners: Locations as shown on drawings
 - 1. #6 Drywall type length sufficient to penetrate studs or structure at least $\frac{1}{2}$ ".

2.08 MIXES

- 2.09 FABRICATION
 - A. Shop Assembly
 - 1. Openings for single swing, pair, borrowed light and sidelight frames to be pre-cut, notched and fabricated at the manufacturer's facility.
 - 2. Provide minimum 14 gage hinge reinforcement plate tapped for machine screws supplied with hinges. Hinge plate to be mechanically attached to hinge emboss on frame
 - 3. Casing Clips
 - 1. Fabricate frames with factory applied, heat treated clips to ensure no deflection in the clip upon application or removal

HOLLOW METAL FRAMES 08 12 13 - 3 of casing. Attachment clips may not be of same material as frame

- 4. Provide notches, tabs and/or stops for positive alignment of frame parts at all corners
- 5. Mullions to be notched as required to provide tight joints
- 6. Provide manufacturer's standard mullion brackets for positive connection of frame and mullion parts
- 7. Provide manufacturer's standard steel glass stop pre-cut to exact length.
- 8. Provide insert channel full width of borrowed lights installed on finish floor. Provide full width head channel for ceiling height units.
- 2.10 FINISHES
 - A. Shop Priming, Shop Finishing
 - 1. Frame Units
 - a. Pre-finished with factory applied impact resistant, polyester baked enamel finish.
 - 2. Casing Finishes
 - a. Prefinished with factory applied impact resistant, polyester baked enamel finish.
 - 3. Colors
 - a. Premium Colors: Black (SC103)

2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
 - A. Install frames using qualified installers familiar with installation of prefinished drywall frames.

3.02 EXAMINATION

- A. Site Verification of Conditions
 - 1. Verify acceptability of existing conditions before starting work.
 - 2. Verify that opening sizes and wall thicknesses are within specified tolerances.
 - 3. Verify that all finished walls are in plane to ensure proper door alignment.

3.03 PREPARATION

- A. Protection
- B. Surface Preparation
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Install frames in accordance with manufacturer's requirements.
 - B. Anchor frames with screws located at every casing clip or every 11" as shown on manufacturer's instructions. Field verify quantity and location of fasteners prior to installing casing.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION

- A. Touch-up blemishes on finished frames with factory prepared touch up paint.
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
 - A. Site Tests, Inspection
 - B. Manufacturers' Field Services
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 08 13 16 ALUMINUM DOORS

PART 1 - GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Aluminum Doors
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 08 41 13 Aluminum-Framed Entrances and Storefronts
 - 2. 08 71 00 Door Hardware
 - 3. 08 80 00 Glazing
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. American Architectural Manufacturers Association (AAMA)
 - B. American Society for Testing and Materials (ASTM)
 - C. Aluminum Association (AA)
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Comply with applicable provisions of AAMA Aluminum Storefront and Entrance Manual for design, materials, fabrication and installation of component parts.
 - 2. Arcadia WS512 Series Wide Stile Entrance is a single source package of door, doorframe and hardware that is engineered for the most severe high-volume traffic conditions.
 - 3. Each assembly tested by a recognized testing laboratory or agency in accordance with specified test methods.
 - a. Tested by the dual moment corner joint strength test.
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit Manufacturer's product data
 - B. Shop Drawings
 - 1. Submit Manifactuer's shop drawings for all specified doors, including interface with aluminum storefront system
 - 2. Custom hardware templates submitted prior to any fabrication.
 - C. Samples
 - 1. Submit finish samples specified
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Provide test reports from AAMA accredited laboratories certifying the performances as specified in 1.04.

ALUMINUM DOORS 08 13 16 - 1

- b. Custom door hardware must be submitted and approved prior to fabrication of door
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. Door warranted against failure and/or deterioration of metals due to manufacturing process for a period of two (2) years.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Arcadia, Inc., 2301 E Vernon, Vernon, CA
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Door members
 - 1. Extruded 6063-T6 aluminum alloy (ASTM B221-Alloy G.S. 10a T6).
 - B. Screws, fastening devices, and internal components
 - 2. Aluminum, stainless steel, or zinc plated steel in accordance with ASTM A-164. Shall be aluminum or steel, providing the steel is properly isolated from aluminum.
 - C. Glazing Gasket
 - 1. Compression-type design.
- 2.04 MANUFACTURED UNITS
 - (Arcadia) WS512 Series, Wide Stile Door 1-3/4".
 - 1. Vertical Stiles: 5 inches.
 - 2. Top Rail: 5-1/8 inches.
 - 3. Bottom Rail: 10 inches.
 - 4. Glazing Stops
 - a. Square snap-in type for ¼" glazing.
 - 1. Model:DS002
 - 5. Major portions of the door stiles a nominal .125 inches and glass stops .050 inches thick.
- 2.05 EQUIPMENT

Α.

- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Door Hardware:
 - 1. Weatherstripping
 - a. Hard-backed poly pile in door and/or frame.
 - 2. Threshold
 - b. Extruded Aluminum with ribbed surface.
 - 1. Model: T507 5"

ALUMINUM DOORS 08 13 16 - 2 3. Sill Sweeps: Brush strip (concealed).

1.

Model: DRB811

- 4. Pivoting/Hinging: See 08 71 00 Door Hardware
- 5. Closers: See 08 71 00 Door Hardware
- 6. Latches/Strike: See 08 71 00 Door Hardware
- 7. Latch Handle: See 08 71 00 Door Hardware
- 8. Electric Release: See 08 71 00 Door Hardware
- 9. Locks/Strike: See 08 71 00 Door Hardware
- 10. Auxiliary Locks: See 08 71 00 Door Hardware
- 11. Cylinders: See 08 71 00 Door Hardware
- 12. Panic Devices: See 08 71 00 Door Hardware
- 13. Push/Pulls: See 08 71 00 Door Hardware
- 14. Cylinder Guard: See 08 71 00 Door Hardware
- 2.08 MIXES
- 2.09 FABRICATION
 - A. Shop Assembly
 - 1. Stiles and rails shall be tubular sections accurately joined, flush and hairline at corners with heavy concealed reinforcement brackets secured with machine bolts, with optional MIG weld. Exposed screws not permitted.
 - 2. Each door leaf equipped with an adjusting mechanism, located in the top rail near the lock stile.
 - 3. Prepare internal reinforcement for door hardware.
 - 4. Custom hardware templates and physical hardware must be submitted prior to any fabrication.
- 2.10 FINISHES
 - A. Shop Priming, Shop Finishing

a.

- 1. Finish all exposed areas of aluminum and components as indicated.
 - An Architectural Class II or I color anodic coating conforming with AA-M12C22A34/AA-M12C22A44.
 - 1. Anodized finish color shall be Colornodic AB8 Black.

2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Examine conditions and verify substrate conditions are acceptable for product installation.
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Install in accordance with approved shop drawings and manufacturers installation instructions.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION

- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
 - A. Make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 08 14 16 FLUSH WOOD DOORS

PART 1 GENERAL

- 1.01 **SUMMARY**
 - Section Includes Α.
 - Flush wood doors 1.
 - 2. Factory pre-fitting, pre-machining for hardware
 - Β. Products Supplied But Not Installed Under This Section C.
 - Products Installed But Not Supplied Under This Section
 - D. **Related Sections**
 - 08 12 13 Hollow Metal Frames 1
 - 2. 08 71 00 Door Hardware
 - E. Allowances
 - Unit Prices F.
 - Measurement Procedures G.
 - Η. **Payment Procedures**
 - Ι. Alternates
- 1.02 REFERENCES
 - Α. WDMA IS 1A - Window and Door Manufacturers Association (WDMA)
 - Β. AWS - Quality Standards of the Architectural Woodwork Institute (AWI) & Woodwork Institute (WI)
 - NFPA 80 Fire Doors and Windows C.
 - D. NFPA 252 - Standard Methods of Fire Tests for Door Assemblies
 - Ε. Underwriters' Laboratories - UL 10B (neutral pressure) and UL 10C (positive pressure) - Fire Tests of Door Assemblies
 - F. ITS (Warnock Hersey) - Certification Listings for Fire Doors
 - G. ASTM E90-90 - Measurement of Airborne Sound Transmission Loss of **Building Partitions**
 - FSC Forest Stewardship Council guidelines for environmentally certified Η. wood doors
- 1.03 **DEFINITIONS**
- SYSTEM DESCRIPTIONS 1.04
 - Δ Design Requirements, Performance Requirements
 - Performance shall comply with Premium grade requirements of 1. Architectural Woodwork Standards, latest edition, Section 9 - Doors
- 1.05 SUBMITTALS
 - Product Data Α.
 - Submit door manufacturer's product construction data, hardware 1 attachment performance data, specifications and installation instructions for each type of wood door, including details of core and edge construction, trim for lite openings and similar components.
 - Β. Shop Drawings
 - Submit shop drawings in conformance to the requirements of the 1. Architectural Woodwork Standards, latest edition.
 - 2 Indicate
 - a. Door type

- b. Door size.
- c. Fire Rating.
- d. Hardware types and locations.
- e. Hardware blocking requirements and location.
- f. Vision panel or louver cutout size and location.
- g. Door undercuts
- C. Samples
 - 1. Submit samples of not less than 6" x 6" size on representative veneer or paintable surface, with sample date indicated.
 - Corner sections with door faces, edges, and core representative of the specified door type(s). Corner samples to be not less than 6" x 6".
 - 3. Samples shall represent the range of color and grain expected to be provided
- D. Quality Assurance/Control Submittals
 - Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Provide WI Certified Compliance Certificate certifying that materials, fabrication and installation will comply with the specified requirements.
- E. Closeout Submittals
 - 1. Provide WI Certified Compliance Certificate for Installation.

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. Work shall be in accordance with the Grade or the Grades Specified of the Architectural Woodwork Standards, latest edition.
 - 2. Company specializing in manufacturing specified products with a minimum of five years documented experience.
 - 3. All doors must be supplied through one Company.
 - 4. A single manufacturer shall provide and install the work of this section.
- B. Regulatory Requirements
 - 1. Fire-rated wood doors to comply with NFPA-80 requirements
 - according to building code standards having local jurisdiction.
 - a. Neutral Pressure Testing UL10B.
 - b. Positive Pressure Testing UL10C.
 - 2. Automatic and power-assisted doors and gates shall comply with CBC Section 11B-404.3.
- C. Certifications
 - Doors to comply with Architectural Woodwork Institute (AWS) Section 9, latest edition.
 - 2. Work shall be in accordance with the Grade or Grades specified of the Architectural Woodwork Standards.
 - 3. All doors requiring fire-rating will carry UL label.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading
 - 1. Delivery of architectural millwork shall be made only when the area of operation is enclosed, all plaster and concrete work is dry and the area broom clean.

FLUSH WOOD DOORS 08 14 16 - 2

- 2. When handling doors, always lift and carry. Do not drag across other doors or surfaces. Handle with clean hands or gloves.
- B. Acceptance at Site
- C. Storage and Protection
 - 1. Store and protect doors in accordance with manufacturer's recommendations AWS Standards.
 - 2. Store doors flat and off the floor on a level surface in a dry, wellventilated building. Do not store on edge. Protect/cover doors from dirt, water and abuse.
 - 3. Certain wood species are light sensitive. Protect doors from exposure to light (artificial or natural) after delivery.
 - 4. Each door shall be marked on top rail with opening number.
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - Do not subject interior doors to extremes in either heat or humidity. HVAC systems must be operational and balanced, providing a temperature range of 50 to 90 degrees Fahrenheit and 25% to 55% relative humidity.
- 1.09 SEQUENCING
 - A. Deliver materials only when the project is ready for installation and the contractor has provided a clean storage area.
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. The interior doors shall be warranted by the manufacturer to be free of manufacturing defects for the life of the original installation.
 - B. Warranty shall provide for repair or replacement of the defective door(s) as originally furnished at manufacturer option. Manufacturer will assume reasonable costs associated with same, including rehanging. Manufacturer may, per its discretion, elect to use either its own or third party resources to resolve warranty claims.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Algoma Hardwoods, Inc., 1001 Perry Street, Algoma, Wisconsin, 54201, or equal.
 - B. VT Industries, Inc., 16222 Phoebe Ave, La Mirada, CA 90638
- 2.02 EXISTING PRODUCTS

2.03 MATERIALS

Β.

- A. Thickness: 1-3/4-inch
 - Grade (Per Architectural Woodwork Standard)
 - 1. Aesthetic Grade: Custom
 - 2. Performance Grade (Duty Level): Extra Heavy Duty
- C. Hardware Blocking

FLUSH WOOD DOORS

- 1. Not Required
- D. Veneers
 - 1. Face Grade: A
 - 2. Veneer Cut: Plain Sliced
 - 3. Veneer Species: Select White Maple
 - 4. Veneer Match: Book Match
 - 5. Veneer Assembly: Pair Match
- E. Glazing and Staining
 - 1. Factory glazed
 - 2. Factory stained, color as selected as by Architect from manufacturer's full range of standard colors.
- 2.04 MANUFACTURED UNITS
 - A. Non Rated or 20 min. Fire Rated Doors
 - 1. (Algma Hardwoods) SLC-5 Stave Lumber Core FD 1/3 Hour
 - 2. (VT Industries) Heritage 5507H
 - B. 45 min., 60 min., or 90 min. Fire Rated Doors
 - 1. (Algma Hardwoods) FD 1-1/2 Hour Door
 - 2. (VT Industries) Heritage 5P11H
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
 - A. Factory-prefit and bevel doors (3°) to suit frame sizes indicated, with 1/4" prefit in width, +/- 1/32", tolerances. Prefit top of door 1/8" +/- 1/16", and undercut as designated by floor condition. For fire-rated doors comply with NFPA 80 for prefits and undercuts.
 - B. Factory pre-machine doors for hardware that is not surface applied. Locations and hole patterns to comply with specified hardware requirements as per NFPA 80 standards for doors specified; and to maintain door manufacturer's warranty.
 - 1. Specific locations for hardware will be coordinated between frame and door manufacturers.
 - 2. Specific hardware preps will be per hardware schedule(s) provided. Hardware preps to be neatly and cleanly squared as required per hardware templates.
 - 3. Metal astragals and channels to be supplied where fire-ratings will not allow metal-free edge(s).
 - C. Factory Preparation for Light Openings and Louvers
 - 1. Cut and trim openings through doors to comply with NFPA 80 requirements where indicated; and to maintain door manufacturer's warranty.
 - 2. Wood beads and wood louvers to be compatible with face veneer. Profiles and installation per door manufacturer's standard(s).
 - D. Blocking
 - 1. Non-Rated or 20 min. Fire Rated Doors
 - a. Not Required
 - 2. 45 min., 60 min., or 90 min. Fire Rated Doors
 - a. Top Rail
 - b. Mid-Rail
 - c. Bottom Rail

- d. Lock Blocks
- 2.10 FINISHES
 - A. Finish Location
 - Factory Finishing All doors to be factory finished. Proper procedures are critical to ensure satisfactory results. Additional preparatory work is required and should be in compliance with Industry Standards.

2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

3.01 INSTALLERS

3.02 EXAMINATION

- A. Site Verification of Conditions
 - 1. Verify that frames are set square, plumb, level, and in plane.
 - 1. Confirm that frames comply with type, size, location and swing requirements and that they are installed plumb and square.
 - 2. Inspect doors for any damage, manufacturing defects or pre-finish inconsistency prior to installation, e.g. wrong color or poor finish.
 - 3. If frames and doors pass inspections (see 1 and 2 above), proceed to installation. If there are any issues in either frames or doors, do not proceed to installation. Contact appropriate supplier to correct unsatisfactory conditions, and proceed with installation only after corrections have been made.
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Installation of wood doors to comply with Architectural Woodwork Standards, latest edition; specific door manufacturer's instructions; and NFPA 80.
 - B. Installation shall conform to the AWS Grade of the items being installed.
 - C. Doors shall be secured in place, square, plumb, and level.
 - D. Hardware shall be installed complete and as recommended by the manufacturer.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
 - A. All nicks, chips, and scratches shall be filled and retouched.
 - B. Damaged items which cannot be repaired to the satisfaction of the architect shall be replaced at no additional cost.
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
 - A. Before completion of the installation, the installer shall adjust all moving and operating parts to function smoothly and correctly.
- 3.12 CLEANING

- A. Upon completion of installation, the installer shall clean all installed items of pencil and ink marks, and broom clean the area of operation, depositing debris in containers provided by the contractor.
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
 - A. If required, protect doors following installation from damage that may occur as a result of project completion.
- 3.15 SCHEDULES

SECTION 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Aluminum Storefronts
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 08 13 16 Aluminum Doors
 - 2. 08 80 00 Glazing
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. American Architectural Manufacturers Association (AAMA)
 - B. American Society for Testing and Materials (ASTM)
 - C. Aluminum Association (AA)
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Comply with applicable provisions of AAMA Aluminum Storefront and Entrance Manual for design, materials, fabrication and installation of component parts.
 - 2. Arcadia AG451 Series is a framing system suitable for outside or inside glazing.
 - 3. Limit air leakage through assembly to 0.06 CFM/min/sq. ft. of wall area at 6.24 PSF as measured in accordance with ASTM E283.
 - 4. Water Resistance
 - a. No water leakage when measured in accordance with ASTM E331 with a static test pressure of 10 PSF.
 - 5. Dynamic Water Resistance
 - a. No water leakage, when measured in accordance with AAMA 501.1-94 with a dynamic test pressure of 10 PSF.
 - 6. Limit mullion windload deflection of L/175 with full recovery of glazing materials, when measured in accordance with ASTM E 330.
 - 7. System shall not deflect more than 1/8" at the center point, or 1/16" at the center point of a horizontal member, once deadload points have been established.
 - 8. System shall accommodate expansion and contraction movement due to surface temperature differential of 180 degrees F.
 - 9. Seismic testing shall conform to AAMA recommended static test method for evaluating performance of curtain walls and storefront wall systems due to horizontal displacements associated with seismic movements and building sway.

- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit Manufacturer's product data
 - B. Shop Drawings
 - Submit Manifactuer's shop drawings for all specified storefronts, including interface with aluminum doors
 - 2. Custom hardware templates submitted prior to any fabrication.
 - C. Samples

1

- 1. Submit finish samples specified
- D. Quality Assurance/Control Submittals
 - . Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Custom door hardware must be submitted and approved prior to fabrication of door
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - B. Regulatory Requirements
 - C. Certifications
 - 1. Provide test reports from AAMA accredited laboratories certifying the performances as specified in 1.04.
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. System shall be warranted against failure and/or deterioration of metals due to manufacturing process for a period of two (2) years
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Arcadia, Inc., 2301 E Vernon, Vernon, CA.
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Framing members, transition members, mullions, adaptors, and mounting
 1. Extruded 6063-T6 aluminum alloy (ASTM B221 Alloy G.S. 10a T6).
 - B. Screws, fastening devices, and internal components
 - 1. Aluminum, stainless steel, or zinc-plated steel in accordance with ASTM.A-164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from aluminum.
 - C. Glazing Gasket
- 1. Compression-type design, replaceable, molded or extruded santoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).
- 2. Shall be of type that locks securely into the glazing reglet to prevent glazing gaskets from disengaging.
- 2.04 MANUFACTURED UNITS
 - A. Arcadia, Inc., AG451 Series.
 - 1. 2" x 4½" Non-Thermal
 - 2. Center glazed
 - 3. Compensating stick for 1/4" glass.
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Center Glazed Adaptor For ¼" Glazing Model: TG250
- 2.08 MIXES
- 2.09 FABRICATION
 - A. Shop Assembly
 - 1. Continuous sub-sill shall be provided under sill members to collect water infiltration and divert from the interior of the system.
 - 2. Framing members shall be internally reinforced and secured at head and sill as necessary for structural performance requirements, for hardware attachment, and as indicated.
 - 3. Fasteners shall be so located as to ensure concealment from view in the final assembly.

2.10 FINISHES A. Sh

- Shop Priming, Shop Finishing
 - 1. Finish all exposed areas of aluminum and components as indicated.
 - a. An Architectural Class II or I color anodic coating conforming with AA-M12C22A34/AA-M12C22A44. Anodized finish color shall be Colornodic AB8 Black.
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Examine conditions and verify substrate conditions are acceptable for product installation.
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Install in accordance with approved shop drawings and manufacturers installation instructions
- 3.06 APPLICATION

- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
 - A. Site Tests, Inspection
 - Test the storefront for water leaks in accordance with AAMA 501.2. Conduct test in the presence of the Architect. Correct deficiencies observed as a result of this test.
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

Section 08 71 00 Door Hardware

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.2 SUMMARY

- A. Section Includes: Finish hardware except as otherwise specified or specifically omitted herein.
- B. Related Sections:
 - 1. Section 06 20 00 Finish Carpentry.
 - 2. Section 08 11 00 Steel Doors and Frames.
 - 3. Section 08 14 00 Wood Doors.
 - 4. Section 08 41 00 Aluminum Storefronts and Entrances.
- C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.
 - 1. Windows.
 - 2. Cabinets and locks.
 - 3. Signs.
 - 4. Toilet accessories.
 - 5. Installation.
 - 6. Rough hardware.

1.3 REFERENCES

- A. Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to Work of this Section where cited by abbreviations noted below (latest editions apply unless noted otherwise).
- B. ADA Americans with Disabilities Act Standards for Accessible Design.
- C. ANSI American National Standards Institute.
- D. BHMA Builders Hardware Manufacturers Association.
- E. CBC California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.
- F. NFPA 80 Fire Doors and Windows.
- G. UL Underwriters Laboratories
- 1.4 SUBSTITUTIONS & SUBMITTALS

- A. Requests for substitutions must be made in writing 10 days prior to bid date to allow architect to issue an addendum. If proposing a substitute, submit that product data attached to one showing specified item and indicate savings to be made. Provide sample if requested. No other substitutions will be allowed.
 - 1. Items listed with no substitute manufacturers have been requested by the Owner to match existing.
- B. SUBMITTALS: Submit six copies of schedule within 4 weeks after project has been awarded. Organize schedule into "Hardware Sets" with an index of doors and heading, indicating complete designations of every item required for each door or opening. Include the following information:
 - 1. Type, style, function, size, quantity and finish of each hardware item. Use BHMA Finish codes as per ANSI A156.18.
 - 2. Name, part number and manufacturer of each item.
 - 3. Fastenings and other pertinent information.
 - 4. Location of hardware set cross referenced to indications on drawings both on floor plans and in door schedule.
 - 5. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 6. Mounting locations for hardware.
 - 7. Door and frame sizes and materials.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Obtain each kind of hardware (latch and lock sets, exit devices, hinges, and closers) from only one manufacture, although several may be indicated as offering products complying with requirements.
 - 2. Hardware supplier shall be a direct factory contract supplier who has in his employment a certified hardware consultant (AHC) who is available at all reasonable times during the course of the work for project hardware consultation to the Owner, Architect, and Contractor.
- B. Schedule Designations: Except as otherwise indicated, the use of one manufacturer's numeric designation system in schedules does not imply that another manufacturer's products will not be acceptable, unless they are not equal in design, size, weight, finish, function, or other quality of significance. See 1.4.A for substitutions.

1.6 REGULATORY REQUIREMENTS

- A. Fire-Rated Openings: Comply with CBC Section 716 and NFPA Standard No. 80. Provide only hardware tested and listed by UL for the type and size of each door required, which complies with the requirements of the door and frame labels.
 - 1. Where exit devices are required on fire rated doors, provide supplementary marking on door UL label indicating "Fire Door to be Equipped with Fire Exit Hardware", and provide UL label on exit device indicating "Fire Exit Hardware".
- B. Conform to applicable requirements of the Americans with Disabilities Act Standards for Accessible Design regarding accessibility requirements for door and entrance hardware.

- C. Doors and doorways that are part of an accessible route shall comply with CBC Section 11B-404.
- D. The clear opening width for a door shall be 32 inches minimum. For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees. The shall be no projections into the opening below 34 inches and 4 inches maximum projections into the opening between 34 inches and 80 inches above the finish floor or ground. Door closers and stops shall be permitted to be 78 inches minimum above the finish floor or ground. CBC Section 11B-404.2.3.
- E. Handles, pulls, latches, locks, and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Operable parts of such hardware shall be 34 inches minimum and 44 inches maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides. CBC Section 11B-404.2.7.
- F. The force for pushing or pulling open a door shall be as follows: CBC Section 11B-404.2.9.
 - 1. Interior hinged doors, sliding or folding doors, and exterior hinged doors: 5 lbs. (22.2N) maximum.
 - 2. Required fire doors: the minimum opening force allowable by the DSA Authority, not to exceed 15 lbs. (67N) maximum.
 - 3. The force required to activate any operable parts, such as retracting latch bolts or disengaging other devices shall be 5 lbs. (22.2N) maximum to comply with CBC Section 11B-309.4.
- G. Door closing speeds shall be as follows: CBC Section 11B-404.2.8.
 - 1. Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum.
 - 2. Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
- H. Thresholds shall comply with CBC Section 11B-404.2.5.
- I. Pair of doors: Limit swing of one leaf to 90 degrees so that a clear floor space is provided beyond the arc of the swing for the wall-mounted tactile sign. CBC Section 11B-703.4.2.1.
- J. Exit device touchpad shall be compliant with State Fire Marshall Standard 12-10-3, Section 12-10-302.
- 1.7 DELIVERY, STORAGE, AND HANDLING
 - A. Acceptance at Site: Individually package each unit of finish hardware complete with proper fastening and appurtenances, clearly marked on the outside to indicate contents and specific locations in the Work.
 - B. Deliver packaged hardware items at the times and to the locations (shop or field) for

installation, as directed by the Contractor.

1.8 PROJECT CONDITIONS

- A. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
- B. Upon request, check the Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.9 WARRANTY

- A. Provide guarantee from hardware supplier as follows:
 - 1. Closers: Five years, except electronic closers, two years.
 - 2. Exit Devices: Two years.
 - 3. All other Hardware: Two years.

PART 2 - MATERIALS

2.1 MANUFACTURERS

A. Approval of manufacturers other than those listed below shall be in accordance with paragraph 1.4.A.

Item:	Manufacturer:	Acceptable Substitute:
Continuous Hinges	Pemko	McKinney, Ives
Butt Hinges	Stanley	McKinney, Ives
Locksets	IDN	Best 9K3 series
Cylinders	Best	Owners standard
Armor Collars	Keedex	Or equal
Exit Devices	Von Duprin	Owners standard
Surface Closers	IDN	Owners standard
Protection Plates	Trimco	Rockwood, Ives
Door Stops	Trimco	Rockwood, Ives
Silencers	Timely	Rockwood, Ives
Thresholds/Sweeps/Seals	Pemko	Reese, NGP

- B. Furnish items of hardware required to complete the work in accordance with these specifications and the manufacturers' instructions. Items of hardware not specified shall be provided even though inadvertently omitted from this specification. Items shall be of equal quality and type.
- C. Where the exact types of hardware specified are not adaptable to the finished shape or size of the members requiring hardware, furnish suitable types having as nearly as practicable the same operation and quality as the type specified, subject to Architect's approval.
- 2.2 MATERIALS

- A. Locksets: Locksets and latchsets shall be as specified. Strikes shall be 16 gage curved steel, bronze or brass with 1" deep box construction, and have lips of sufficient length to clear trim and protect clothing.
 - 1. Comply with requirements of local security ordinances.
 - 2. Provide approved fusible links at levers for labeled doors.
 - 3. Lock Series and Design: IDN LF2000 series Standard lever.
- B. Continuous Hinges: Hinge open widths shall be minimum, but of sufficient size to permit door to swing 180 degrees. Where necessary to maintain door clearance at jamb trim, frame conditions, door revelas and similar conditions, furnish wide throw hinges as approved by the Architect.
- C. Butt Hinges: Outswinging exterior doors shall have nonremovable (NRP) pin. Hinge open widths shall be minimum, but of sufficient size to permit door to swing 180 degrees.
 - 1. Furnish 3 hinges per leaf to 7 foot, 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
 - 2. Provide 5 inch heavy weight hinges on doors over 3 feet, 5 inches width.
- D. Exit Devices: Furnish devices with sex bolts unless otherwise specified. Lever handle trim shall match locksets.
 - 1. Provide glass bead kits of proper thickness where the rail assembly of the exit device crosses a lite.
- E. Surface Door Closers: Full rack and pinion type with removable non-ferrous case. Furnish closers with sex bolts unless otherwise specified. Place closers inside building, stairs, and rooms. Closers shall be non-handed, non-sized, and installed to permit door to swing 180 degrees.
 - 1. Flush transom offset brackets shall be used where parallel arm closers are listed for doors with fixed panels over.
 - 2. Provide drop brackets, shoe supports, and blade stop spacers as required at narrow top rails
- F. Protection Plates: Provide kick, armor, or mop plates with four beveled edges, .050 inches minimum thickness, height called for in schedule by width less 2-inches. Furnish with machine or wood screws of bronze or stainless steel to match other hardware.
- G. Floor Stops: Floor mounted door stops are prohibited where located in the path of travel. Where provided, install maximum 4 inches from wall surface.
- H. Seals: Seals shall be finished to match adjacent frame color. UL label shall be applied on all rated doors.
- I. Screws: Exposed screws shall be Phillips head. Do not use self-drilling, self-tapping screws, unless furnished by hardware manufacturer for the specific condition or for mounting flat-goods such as push plates and kick plates.
- J. Thresholds: Change in level between 1/4 inch and 1/2 inch shall be beveled with a slope no greater than 1 unit vertical to 2 units horizontal (50 percent slope). The floor or landing shall not be more than 1/2 inch lower than the threshold of the doorway.

2.3 FINISH

- A. Generally interior doors to be BHMA 626 Satin Chromium.
 - 1. Areas using BHMA 626 shall have push, pulls and kick plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.
- B. Aluminum storefront doors 208.1, 225.1, and 235.1 to be BHMA 711 Black Anodized.
- C. Factory paint door closers to match other hardware, unless otherwise noted.
- D. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYING REQUIREMENTS

- A. Contact the District Locksmith with Perris Union High School District (951-940-5302) for keying requirements. Keying system shall be approved by Owner's representative in writing. Furnish construction key system in accordance with lock manufacturers' standard. Where interchangeable core systems are used, provide temporary cores for construction keying.
 - 1. Key system shall be Best I/C core cylinder, 7-pin.
- B. For protection of the Owner, key cylinders at the factory of the cylinder manufacturer where permanent records are maintained. Permanently inscribe each key with number that identifies cylinder manufacturer key symbol, and notation "DO NOT DUPLICATE".
- C. Permanent keys and cylinder cores shall be delivered only to Owner's representative. Permanent cores to be installed by the Owner.
- D. Keying Schedule: Submit three copies of separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks have been fulfilled.

PART 3 - EXECUTION

3.1 HARDWARE LOCATIONS:

- A. Lockset: 34 to 44 inches above finished floor. Verify manufacturers' template with door design.
- B. Exit Device: 36 to 44 inches above finished floor. Verify manufacturers' template with door design.
- C. Floor Stop: Installed at a maximum of 4 inches from the face of the wall or partition.
- D. Conform to CCR, Title 24, Part 2, and ADA for positioning requirements for accessibility.

3.2 INSTALLATION

A. Pre-Installation Meetings: Initiate and conduct with supplier, installer, and related trades,

coordinate materials and techniques, and sequence complex hardware items and systems installation. Include manufacturers' representatives of locks, panic hardware, and door closers in the meetings.

Β. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

3.3 ADJUSTING

- Α. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly.
- Β. Inspection: Hardware supplier shall inspect hardware furnished within 10 days of contractors request and include with his guarantee a statement that this has been accomplished. Inspector or Contractor will sign off the hardware as being complete and correctly installed and adjusted. Further corrections of defective material shall be the responsibility of his representative.

3.4 SCHEDULE OF DOOR HARDWARE

- Α. Legend of listed manufacturers:
 - BES Best
 - IDN International Distribution Network
 - KEE Keedex
 - PEM Pemko
 - STA Stanley
 - TIM Timelv
 - TRI Trimco
 - VON Von Duprin
- B. The last column in the Hardware Schedule refers to the manufacturer listed above.
- C. The Door Schedule on the Drawings indicates which Hardware Set is used with each door.
- D. Schedule of Door Hardware:

HW-1 Each door to have

3	HINGE	FBB179 - 4.5 x 4.5	652	STA
1	LOCKSET	LFC2800IC x STD LEVER	626	IDN
2	PERMANENT CORE	1C-7	626	BES
1	KICK PLATE	KO050 - 10 x 2 LDW B4E	630	TRI
1	FLOOR STOP	1214	626	TRI
3	SILENCERS	TA-5	CLR	TIM
	Rework existing frame as r	equired for new hardware		

HW-2

Each door to have

3	HINGE	FBB179 - 4.5 x 4.5	652	STA
1	PRIVACY LOCK	LF2200 x STD LEVER	626	IDN
1	SURFACE CLOSER	DC6816BC x REGULAR ARM	689	IDN
1	KICK PLATE	KO050 - 10 x 2 LDW B4E	630	TRI
1	MOP PLATE	KM050 - 6 x 1 LDW B4E	630	TRI
1	WALL BUMPER	1270CVPV	626	TRI
1	COAT HOOK	3071	626	TRI
3	SILENCERS	TA-5	CLR	TIM
	Device de contestino e forence e con	a an dua al fan a ann la analunana		

Rework existing frame as required for new hardware

HW-3

Each door to have

1	CONTINUOUS HINGE	FM-HD1	711	PEM
1	EXIT DEVICE	CD98NL-OP x PA x 110NL x 1439 STK	711	VON
1	MORTISE CYLINDER	1E74	622	BES
1	RIM CYLINDER	12E72	622	BES
2	PERMANENT CORE	1C-7	626	BES
1	ARMOR COLLAR	K-24	711	KEE
1	DOOR PULL	7196-3	711	TRI
1	SURFACE CLOSER	DC6816BC x CUSH-STOP ARM	693	IDN
1	DROP PLATE	DP18A	693	IDN
1 SET	DOOR SEALS	BY FRAME MFR		
1	DOOR SWEEP	57V	711	PEM
1	THRESHOLD	PER SILL DETAIL	711	PEM

HW-4

Each door to have

3	HINGE	FBB179 - 4.5 x 4.5	652	STA
1	PUSH PLATE	1001-3 - 4 x 16	630	TRI
1	PULL PLATE	1014-3 - 4 x 16	630	TRI
1	SURFACE CLOSER	DC6816BC x REGULAR ARM	689	IDN
1	KICK PLATE	KO050 - 10 x 2 LDW B4E	630	TRI
1	MOP PLATE	KM050 - 6 x 1 LDW B4E	630	TRI
1	FLOOR STOP	1214	626	TRI
3	SILENCERS	TA-5	CLR	TIM
		a an sha al ƙala a ar a la anal sha a		

Rework existing frame as required for new hardware

HW-5

Each door to have

3	HINGE	FBB179 - 4.5 x 4.5	652	STA
1	LOCKSET	LFC2500IC x STD LEVER	626	IDN
1	PERMANENT CORE	1C-7	626	BES
1	KICK PLATE	KO050 - 10 x 2 LDW B4E	630	TRI
1	FLOOR STOP	1214	626	TRI
3	SILENCERS	TA-5	CLR	TIM

Rework existing frame as required for new hardware

HW-6

Each door to have

3	HINGE	FBB179 - 4.5 x 4.5	652	STA
1	LOCKSET	LFC2800IC x STD LEVER	626	IDN
2	PERMANENT CORE	1C-7	626	BES
1	SURFACE CLOSER	DC6816BC x CUSH-STOP ARM	689	IDN
1	KICK PLATE	KO050 - 10 x 2 LDW B4E	630	TRI
3	SILENCERS	TA-5	CLR	TIM
	Rework existing frame as required for new hardware			

HW-7

Each door to have

3	HINGE	FBB179 - 4.5 x 4.5	652	STA
1	LATCHSET	LF2100 x STD LEVER	626	IDN
1	SURFACE CLOSER	DC6816BC x HOLD-OPEN ARM	689	IDN
1	KICK PLATE	KO050 - 10 x 2 LDW B4E	630	TRI
1	FLOOR STOP	1214	626	TRI
3	SILENCERS	TA-5	CLR	TIM
	Rework existing frame as required for new hardware			

END OF SECTION

SECTION 08 80 00 GLAZING

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. High-performance architectural glass
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 07 92 00 Joint Sealants
 - 2. 08 12 13 Hollow Metal Frames
 - 3. 08 13 16 Aluminum Doors
 - 4. 08 41 13 Aluminum-Framed Entrances and Storefronts
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

- A. ANSI Z97.1 American National Standard for Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test
- B. ASCE 7 Minimum Design Loads for Buildings and Other Structures
- C. ASTM C 162 Standard Terminology of Glass and Glass Products
- D. ASTM C 1036 Standard Specification for Flat Glass
- E. ASTM C 1048 Standard Specification for Heat-Treated Flat Glass Kind HS, Kind FT Coated and Uncoated Glass
- F. ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass
- G. ASTM C 1376 Standard Specification for Pyrolitic and Vacuum Deposition Coatings on Flat Glass
- H. ASTM E 2188 Standard Test Method for Insulating Glass Unit Performance
- I. ASTM E 2189 Standard Test Method for Testing Resistance to Fogging in Insulating Glass Units
- J. ASTM E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation
- 1.03 DEFINITIONS
 - A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications
 - B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036
 - C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or other specified gas
 - D. Sealed Insulating Glass Unit Surface Designations:
 - 1. Surface 1 Exterior surface of the outer glass lite
 - 2. Surface 2 Interspace surface of the outer glass lite
 - 3. Surface 3 Interspace surface of the inner glass lite
 - 4. Surface 4 Interior surface of the inner glass lite

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- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Provide glass capable of withstanding thermal movement and wind and impact loads (where applicable) as specified.
 - 2. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat-treated) required to meet or exceed the following criteria:
 - a. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
 - Design Wind Loads: Determine design wind loads applicable to the Project according to ASCE 7, Minimum Design Loads for Buildings and Other Structures: Section 6.5, Method 2–Analytical Procedure, based on mean roof heights above grade indicated on Drawings. Basic Wind Speed: _____ mph Importance Factor: _____ Exposure Category: _____
 - Specified Design Snow Loads: As indicated on Drawings, but not less than snow loads applicable to Project as required by ASCE 7, Minimum Design Loads for Buildings and Other Structures: Section 7.0, Snow Loads
 - Probability of Breakage for Vertical Glazing: _____ lites per 1000 for lites set vertically or not more than 15 degrees off vertical
 - 1. Wind Load Duration: Short duration, as defined in ASTM E 1300 or _____ seconds or less
 - d. Probability of Breakage for Sloped Glazing: _____ per 1000 for lites set greater than 15 degrees off vertical
 - Wind Load Duration: Short duration, as defined in ASTM E 1300 or _____ seconds or less Snow Load Duration: Long duration, as defined in ASTM E 1300 or _____ days
 - e. Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to ______ times the short side length or 1 inch, whichever is less.
 - 1. For monolithic-glass lites heat treated to resist wind loads
 - 2. For insulating glass
 - f. Thermal Movements: Provide glazing that allows for thermal movements resulting from ambient and surface temperatures changes acting on glass framing members and glazing components.
 - g. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

- 1. For monolithic-glass lites, properties are based on units with lites 1/4 inch (6.0 mm) thick.
- 2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
- Center-of-Glass Values: Based on using LBNL WINDOW 6.3 computer program for the following methodologies:
 - a. U-Factors: NFRC 100 expressed as Btu/sq. ft. per h per degree F
 - b. Solar Heat Gain Coefficient: NFRC 200
 - c. Solar Optical Properties: NFRC 300

- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit for each glass product and glazing material indicated
 - B. Shop Drawings
 - 1. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
 - C. Samples
 - 1. Submit for all specified products:
 - a. 12-inch square samples for insulating glass units
 - b. Manufacturer's standard sample size for monolithic glass lites
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
 - For solar-control low-e-coated glass, provide documentation demonstrating that fabricator of coated glass is certified by coating manufacturer.
 - b. Qualification Data for installers
 - c. Product Test Reports: For each of the following types of glazing products: Tinted float glass Coated float glass Insulating glass
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - 1. Fabricator Qualifications: Certified Fabricator as acceptable to the manufacturer
 - 2. Installer Qualifications: An experienced installer who has completed glazing similar in material, design and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level-2 (Senior Glaziers) or Level-3 (Master Glaziers).

- 3. Source Limitations for Glass: Obtain the following through one source from a single manufacturer for each glass type: clear float glass, coated float glass and insulating glass.
- B. Regulatory Requirements
- C. Certifications
 - 1. Glass Product Testing: Obtain glass test results for product test reports in Submittals Article from a qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
 - 2. Glazing Publications: Comply with published recommendations of glass product manufacturers and industry organizations, including but not limited to those below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - a. IGMA Publication for Insulating Glass: IGMA TM-3000, Glazing Guidelines for Sealed Insulating Glass Units
 - GANA Publications: Laminated Glazing Reference Manual; Glazing Manual
 - c. AAMA: Sloped Glazing Guidelines
 - d. IGMA: Guidelines for Sloped Glazing
 - 3. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:
 - a. Insulating Glass Certification Council Associated Laboratories, Inc. Insulating Glass Manufacturers Alliance
 - 4. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201 and, Insulating Glass Manufacturers Alliance ANSI Z97.1.
 - a. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.
 - c. Lites more than 9 square feet in area are required to be Category II materials
 - d. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sf in area, provide glazing products that comply with Category II materials, and for lites 9 sf or less in area, provide glazing products that comply with Category I or II materials.
- D. Field Samples
- E. Mock-ups
- F. Pre-installation Meetings
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - B. Acceptance at Site
 - C. Storage and Protection
 - 1. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

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- 2. For insulating glass units that will be exposed to substantial altitude changes, comply with insulating glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.
- D. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. Coated-Glass Products: Manufacturer's standard form, made out to the glass fabricator, in which the coated glass manufacturer agrees to replace coated glass units that deteriorate during normal use within the specified warranty period. Deterioration of the coated glass is defined as peeling and/or cracking, or discoloration that is not attributed to glass breakage, seal failure, improper installation or cleaning and maintenance that is contrary to the manufacturer's written instructions.
 - 1. Warranty Period: _____ years from date of Substantial Completion
 - B. Insulating Glass: Manufacturer's standard form in which the insulating glass unit manufacturer agrees to replace insulating glass units that deteriorate during normal use within the specified warranty period. Deterioration of insulating glass units is defined as an obstruction of vision by dust, moisture or a film on the interior surfaces of the glass caused by a failure of the hermetic seal that is not attributed to glass breakage, improper installation or cleaning and maintenance that is contrary to the manufacturer's written instructions.
 - 1. Warranty Period: _____ years from date of Substantial Completion
 - C. Laminated Glass: Manufacturer's standard form in which the laminated glass manufacturer agrees to replace laminated glass units that deteriorate during normal use within the specified warranty period. Deterioration of laminated glass is defined as defects, such as discoloration, edge separation or blemishes exceeding those allowed by ASTM C 1172 that are not attributed to glass breakage, improper installation or cleaning and maintenance that is contrary to the manufacturer's written instructions.
 - 1. Warranty Period: _____ years from date of Substantial Completion
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - B. Maintenance Service

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- A. PPG Industries, Inc., Glass Business & Discovery Center, 400 Guys Run Rd., Cheswick, PA 15024
- 2.02 EXISTING PRODUCTS

- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
 - A. (PPG) Monolithic Clear Class
 - 1. Type: Uncoated Clear Float Glass
 - 2. Thickness: ¼-inch (6mm) Glass
 - 3. Heat Treatment: Tempered, Herculite brand
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
 - A. Shop Assembly
 - Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Before the shop or field pre-glazing of the curtain wall units, openings will be checked to see that they are square, plumb and in true plane. If found otherwise, glazing shall not proceed until proper corrections are made.
 - 2. Perimeter clearance must be sufficient to avoid point loading and provide for jamb and seismic blocking.
- 3.03 PREPARATION
 - A. Protection
 - B. Surface Preparation
 - 1. Remove lacquer and other coatings from glazing rebates. Thoroughly clean areas to receive glass and glazing materials. The installation shall be in strict accordance with recommendations of window, glass and sealant manufacturers. Glass shall be installed so that no metal-to-glass contact occurs.
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Installation shall be in accordance with applicable requirements of the latest edition of the "Glazing Manual" of the Flat Glass Marketing Association. Where vinyl or neoprene glazing beads or channels are used, they shall be in one piece for each edge of glass, with corners neatly mitered and tightly fitted together.

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- B. Glass in exterior frames unless otherwise specified shall be "wet-set" with appropriate sealant to ensure a weather tight installation. Channels shall be installed so that no metal-to-glass contact occurs. Corners shall be neatly mitered to hairline joint. Channels shall be installed so that top of channel is flush with top of glazing stops and forms a neat, straight line.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
 - A. Special Techniques
 - B. Interface With Other Work
 - C. Sequences of Operation
 - D. Site Tolerances
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
 - A. Site Tests, Inspection
 - 1. Upon completion of installation of glass and glazing, perform water tests in accordance with industry standards for such tests, and ASTM E331, AAMA FC-1-76, and NAAMM. Repair leaks and retest. Continue with tests and repairs or replacements until such time as entire installation has been tested and certifiably exhibits no water intrusion, thereby instituting five year guarantee against such water intrusion.
 - B. Manufacturers' Field Services
- 3.11 ADJUSTING
- 3.12 CLEANING
 - A. Immediately prior to scheduled acceptance of work, remove protective materials and clean all glass members, being careful not to use abrasives or harmful cleaning agents.
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
 - 1. Maintain glass is a reasonably clean condition during construction so that it will not be damaged by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other surfaces.
- 3.15 SCHEDULES

END OF SECTION

SECTION 09 24 00 PORTLAND CEMENT PLASTER

PART 1 GENERAL

- 1.01 **SUMMARY**
 - Section Includes Α.
 - Three-coat Portland Cement Plaster 1.
 - 2. Metal Lath
 - Β. Products Supplied But Not Installed Under This Section C.
 - Products Installed But Not Supplied Under This Section
 - D. **Related Sections**
 - 09 91 13 Exterior Painting 1.
 - Ε. Allowances
 - F. Unit Prices
 - **Measurement Procedures** G.
 - **Payment Procedures** Η.
 - Ι. Alternates

1.02 REFERENCES

- ASTM C150 Portland Cement Α.
- ASTM C144 Standard Specification for Aggregate for Masonry Mortar Β.
- C. ASTM C847 Standard Specification for Metal Lath
- D. ASTM C897 Standard Specification for Aggregate for Job-Mixed Portland **Cement-Based Plaster**
- Ε. ASTM C926 Standard Specification for Application of Portland Cement-**Based Plaster**
- F. ASTM C933 Standard Specification for Welded Wire Lath
- G. ASTM C1063 Standard Specification for Installation of Lathing and Furring for Portland Cement Based Plaster
- Η. ASTM E84 Test Method for Surface Burning Characteristics of Building Materials
- Ι. ASTM E119 Method for Fire Tests of Building Construction and Materials
- **Technical Service Information Bureau Plaster Textures** J.
- Κ. PCA (Portland Cement Association) - Plaster (Stucco) Manual
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - Design Requirements, Performance Requirements Α.
 - **Three-Coat Portland Cement Plaster Assembly** 1
 - a. Self-furred metal lath
 - b. Scratch and brown coat
 - Finish coat. d.
 - 2. Portland cement plaster Functional Criteria
 - Portland cement plaster application shall be to vertical a. substrates or to substrates sloped for positive drainage. Substrates sloped for drainage shall have additional protection from weather exposure that might be harmful to coating performance.
 - b. Substrate materials and construction shall conform to the building code having jurisdiction.
 - Substrates shall be sound, dry and free of dust, dirt, c. laitance, efflorescence and other harmful contaminants.

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- d. Substrate Dimensional Tolerances: Flat with 1/8 in within any 10 ft.
- e. Maximum deflection of substrate system under positive or negative design loads shall not exceed L/360 of span.
- 3. Expansion and Control Joints
 - a. Continuous expansion and control joints shall be installed at locations in accordance with ASTM C1063 and ASTM C926.
 - b. Substrate movement, and expansion and contraction of Portland cement plaster and adjacent materials shall be taken into account in design of expansion joints, with proper consideration given to sealant properties, installation conditions, temperature range, coefficients of expansion of materials, joint width to depth ratios, and other material factors. Minimum width of expansion joints shall be as shown on the project drawings.
 - c. In accordance with ASTM C1063, expansion or control joints shall be installed in walls not more than 144 ft² in area, and not more than 100 ft² in area for all non-vertical applications. The distance between joints shall not exceed 18 ft in either direction or a length-to-width ratio of 2-½ to 1.
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Evaluation Reports and manufacturer's product data sheets.
 - B. Shop Drawings
 - C. Samples
 - 1. Submit samples for approval. Samples shall be of materials specified and of suitable size as required to accurately represent each color and texture used on project.
 - 2. Prepare each sample using same tools and techniques for actual project application. Maintain and make available, at job site, approved samples.
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - E. Closeout Submittals
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - 1. Manufacturer shall have marketed Portland cement plaster assemblies in California for at least ten years and shall have completed projects of same general scope and complexity.
 - 2. Applicator shall be experienced and competent in installation of Portland cement plaster materials, and shall provide evidence of a minimum of five years experience in work similar to that required by this section.
 - 3. Products manufactured under ISO 9001:2000 Quality System.
 - B. Regulatory Requirements
 - C. Certifications
 - D. Field Samples
 - 1. Provide (3) 2 ft. x 2 ft. sample boards of the Portland cement plaster assembly that shows texture and color prior to job mock-up

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- E. Mock-ups
 - 1. Furnish a complete 20 ft. long x 9 ft. high sample of each plaster system required on the project. Once the sample is installed and approved, it shall become the standard of quality expected for the systems throughout the project, and will be allowed to incorporated into the final work. Mock-up not required for repair/patching scope of work.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - Packing, Shipping, Handling, and Unloading
 - 1. Deliver Portland cement plaster assembly materials in original packaging with manufacturer's identification.
 - B. Acceptance at Site
 - 1. Inspect materials upon delivery to assure that specified products have been received. Report defects or descrepancies to the constuction manager.
 - C. Storage and Protection
 - 1. Store Portland cement plaster assembly materials in a dry location, out of direct sunlight, off the ground, and protected from moisture.
- 1.08 PROJECT CONDITIONS

Α.

- A. Project Environmental Requirements
 - 1. Substrate Temperature: Do not apply Portland cement plaster assembly materials to substrates whose temperature are below 40°F or contain frost or ice.
 - 2. Inclement Weather: Do not apply Portland cement plaster assembly materials during inclement weather, unless appropriate protection is employed.
 - 3. Sunlight Exposure: Avoid, when possible, installation of the Portland cement plaster assembly materials in direct sunlight. Application of finishes in direct sunlight in hot weather may adversely affect aesthetics.
 - 4. Do not apply Portland cement plaster base coats or Stucco finishes if ambient temperature falls below 40°F within 24 hours of application. Protect Portland cement plaster materials from uneven and excessive evaporation during dry weather and strong blasts of dry air.
 - 5. Prior to installation, the substrate shall be inspected for surface contamination, or other conditions that may adversely affect the performance of the Portland cement plaster assembly materials, and shall be free of residual moisture.

1.09 SEQUENCING

- A. Coordinate Portland cement plaster assembly installation with other construction operations.
- 1.10 SCHEDULING
 - A. Provide sufficient manpower to ensure continuous operation, free of cold joints, scaffolding lines, variations in texture, etc.
- 1.11 WARRANTY

- A. Provide manufacturer's Standard Warranty for products specified.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. The following materials shall be presented to the owner following the application of the work.
 - 1. One container of finish for each color and texture utalized on the project.
 - 2. A maintenance program for finishes as required.

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Parex USA, Inc. (LaHabra), 4125 E. La Palma Ave., Suite 250, Anaheim, CA 92807, or equal.
 - B. Omega Products International, Inc., 1681 California Ave., Corona, CA 92881
 - C. Merlex Stucco, 2911 Orange-Olive Rd., Orange, CA 92865
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Lath and Accessories: Conform to ASTM C847, ASTM C933, ASTM C1032, ASTM C1063 and Appendix.:
 - 1. Metal Lath: Minimum 3.4 lb/yd2 expanded metal diamond lath, Self-Furred.
 - 2. Accessories: Manufacturer's standard steel products with minimum G60 galvanizing unless otherwise indicated
 - 3. Lath Locks: Wind-lock "Lath-lock" steel washer. 1 ¼" diameter, 24 gauge, galvanized steel mechanical fastening washer, having a countersunk central through-hole, and four (4) down-turned legs that prevent rotation during installation and keep the mesh from slipping out from under the plate, or equal.
 - 4. Seals, Sealants and Bond Breakers: Sealants shall conform to ASTM C 920, Grade NS, Class 25, Use NT. Backer rod shall be closed-cell polyethylene foam.

2.08 MIXES

- A. Water
 - 1. Clean and free from injurious amounts of acid, alkali, and organic matter.
- B. Sand
 - 1. Clean and free from organic matter
 - 2. Sampling and testing must comply with ASTM C144 or C897.
- C. Portland Cement Scratch and Brown Coat
 - 1. (Parex) Fiber-47 Armourwall Scratch and Brown Concentrate
 - 2. (LaHabra) Fiber-47 Fastwall Scratch and Brown Concentrate
 - 3. (Omega) Diamond Wall Concentrate
 - 4. (Merlex) PSB

- D. Stucco Finish Coat
 - 1. (Parex) Exterior Stucco Color Coat: Integrally colored with faderesistant pigments, tint base, color as selected by Architect.
 - 2. (LaHabra) Exterior Stucco Color Coat: Integrally colored with faderesistant pigments, tint base, color as selected by Architect.
 - 3. (Omega) ColorTek Exterior Stucco, integrally colored with faderesistant pigments, tint base, color as selected by Architect.
 - 4. (Merlex) Color Coat Stucco, integrally colored with faderesistant pigments, tint base, color as selected by Architect.
- 2.09 FABRICATION
- 2.10 FINISHES
 - A. Finish texture shall be per the "Technical Service Information Bureau" Plaster textures section.
 - 1. Stucco Finish Coat Texture: Match Existing
 - B. Painting
 - 1. All stucco finish coat to receive a paint finish per 09 91 13 Exterior Painting.

2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Substrate Examination
 - a. Substrate shall be of a type approved by Portland cement plaster assembly manufacturer and the building code having jurisdiction.
 - b. Substrate shall be examined for soundness, and other harmful conditions.
 - c. Substrate shall be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.
 - d. Inform Architect of discrepancies preventing proper installation of Portland cement plaster assembly. Do not proceed with the Portland cement plaster assembly work until unsatisfactory conditions are corrected.

3.03 PREPARATION

- A. Protection
- B. Surface Preparation
 - 1. Metal Lath: Install according to ASTM C1063 and Appendix and the Building Code.
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
 - A. Mix products in accordance with manufacturer's instructions, including the applicable Portland cement plaster assembly product data sheets and application guidelines.

- B. Portland cement plaster assembly and its related materials shall conform to the requirements of ASTM C926. Follow manufacturer's current Portland cement plaster Application Guide.
- C. Water Resistive Barrier
 - 1. (2) two layers of water-resistive barrier is placed over all substrates and installed according to manufacturer's instructions.
- D. Portland cement plaster Base
 - 1. Scratch Coat
 - a. Apply scratch coat to a minimum thickness of 3/8 in, using sufficient trowel pressure to key Portland cement plaster into lath or to create bond to substrates as applicable.
 - b. Prior to initial set, scratch horizontally to provide key for bond of brown coat.
 - c. Moist cure scratch coat with clean potable water for at least 48 hours in accordance with ASTM C926 and the building codes following initial application (unless brown coat is applied as soon as the scratch coat has achieved sufficient rigidity to support the brown coat).
 - 2. Brown Coat
 - a. Apply brown coat to a minimum thickness of 3/8 in, using sufficient trowel pressure to key Portland cement plaster into scratch coat.
 - b. Rod surface to true plane and float to densify.
 - c. Trowel to smooth and uniform surface to receive finish coat.
 - Moist cure brown coat with clean potable water for at least 48 hours, in accordance with ASTM C926 and the building codes.
 - 3. Stucco Finish
 - a. Remove surface contaminants such as dust or dirt without damaging the substrate.
 - Ambient and surface temperature must be 40°F or higher during application and drying time. Supplemental heat and protection from precipitation must be provided as needed.
 - c. Use only on surfaces that are sound, clean, dry, unpainted, and free from any residue that might affect the ability of the finish to bond to the surface.
 - After moist curing, allow the Portland cement plaster base to air dry in accordance with Portland cement plaster Application Guide depending on type of finish coat and primer.
 - e. Apply Stucco finish in number of coats thickness recommended by manufacturer to achieve texture indicated, using sufficient trowel pressure or spray velocity to bond finish to base coat.
 - f. Protect finish coats from inclimate weather until completely dry.
- E. Curing
 - 1. Keep Portland cement plaster base coat moist for at least 48 hours (longer in dry weather) by lightly fogging walls. Start light fogging after initial set of 1–2 hours. Allow to dry for a period of (5) days prior to application of finish coat.
 - 2. Air dry finish coats only, do not wet cure.

- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
 - A. Remove and legally dispose of Portland cement plaster component debris material from job site.
- 3.13 DEMONSTRATION

3.14 PROTECTION

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed Portland cement plaster from dust, dirt, precipitation, and freezing during installation.
- C. Provide protection of installed finish from dust, dirt, precipitation, freezing, and continuous high humidity until fully dry.
- D. Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Architect/Owner.
- 3.15 SCHEDULES

END OF SECTION

SECTION 09 29 00 GYPSUM BOARD

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Gypsum Board
 - 2. Gypsum Board Accessories
 - 3. Sound-Deadening Board
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 06 10 00 Rough Carpentry
 - 2. 07 92 00 Joint Sealants
 - 3. 09 72 00 Presentation Dry Erase Wallcovering
 - 4. 09 91 23 Interior Painting
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. ASTM C473 Standard Test Methods for Physical Testing of Gypsum Panel Products.
 - B. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - C. ASTM C630 Standard Specification for Water-Resistant Gypsum Backing Board.
 - D. ASTM C840 Standard Specification for Application and Finishing of Gypsum Board.
 - E. ASTM C1396 Standard Specification for Gypsum Board.
 - F. ASTM C1658 Standard Specification for Glass Mat Gypsum Panels.
 - G. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 - H. ASTM D6329 Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers.
 - I. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - J. GA-214 Recommended Levels of Gypsum Board Finish.
 - K. GA-216 Application and Finishing of Gypsum Panel Products.
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS

1.05 SUBMITTALS

- A. Product Data
 - 1. Submit manufacturer's data sheets on each product to be used, including:
 - a. Gypsum board, joint tape and finish.
 - b. Preparation instructions and recommendations.
 - c. Storage and handling requirements and recommendations.

- d. Installation methods.
- B. Shop Drawings
 - 1. Indicate details associated with fireproofing and acoustical seals, opening locations and details, and opening termination details.
- C. Samples
 - 1. Provide samples of texture finishes for approval.
- D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - Provide fire test reports on fire-rated wallboard assemblies.
 Submit copies of evidence of fire hazard classification for wallboard. Certified test reports of other acceptable testing agencies, which perform testing in accordance with ASTM E84, E90 and E119 are acceptable.
 - b. Provide certification that materials meet these specifications.
 - c. Provide manufacturer's printed instructions for installation of assemblies.
- E. Closeout Submittals
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - 1. Provide adequate numbers of skilled personnel who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
 - B. Regulatory Requirements
 - 1. Provide products labeled with third party certification stamp of fireresistance characteristics, including ITS, UL, cUL, and ULC as applicable.
 - 2. Provide products that comply with the following limits for surface burning characteristics when tested per ASTM E84
 - a. Flame spread: 25 maximum
 - b. Smoke developed: 450 maximum
 - C. Certifications
 - D. Field Samples
 - E. Mock-ups
 - 1. At a location on the site where accepted by the Architect, provide a mock-up gypsum wallboard panel.
 - 2. Make the panel approximately 4'-0" square.
 - 3. Provide one mock-up panel for each gypsum wallboard finish used on the Work.
 - 4. The mock-ups may be used as part of the work, and included in the finished work, when accepted by the Architect.
 - 5. Revise as necessary to secure the Architect's acceptance.
 - 6. The mock-up panels, when accepted by the Architect, will be used as datum points for comparison with the remainder of the work of this section for the purpose of acceptance or rejection.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading

- 1. Deliver materials in manufacturer's unopened containers, packages or bundles identified with manufacturer's name, brand, type, and grade clearly marked.
- 2. Deliver fire rated materials bearing testing agency label and required fire classification number.
- B. Acceptance at Site
- C. Storage and Protection
 - 1. Per GA-801, store products inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other damaging causes.
 - 2. Neatly stack gypsum boards flat to prevent sagging.
 - 3. Handle gypsum boards to prevent damage to edges, ends, and surfaces.
 - 4. Protect adhesives and joint compounds from freezing or overheating per manufacturer's instructions.
 - 5. Protect metal products from rusting.
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - 1. Comply with ASTM C840 and GA-216 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
 - 2. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
 - 3. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 4. Do not install wallboard products unless installation areas comply with minimum temperature and ventilation requirements recommended by manufacturer. As a minimum, provide temperatures above 50 degrees F during and after installation.
 - Under slow drying conditions, allow additional drying time between coats of joint treatment.
 - 6. Protect installed materials from drafts during hot, dry weather.
 - 7. Protect metal products form rusting.
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. Provide products that offer twelve months of coverage against in-place exposure damage (delamination, deterioration and decay).
 - B. Three years against manufacturing defects.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Georgia-Pacific Gypsum, 133 Peachtree Street, Atlanta GA 30303, or equal.
 - B. United States Gypsum Company, 550 West Adams Street, Chicago, IL 60661

2.02 EXISTING PRODUCTS

2.03 MATERIALS

- A. Gypsum Board Moisture and Mold-Resistant
 - 1. (GP) ToughRock Fireguard X Mold-Guard
 - a. Thickness: 5/8-inch, Type X
 - b. Width: 4-feet
 - c. Length: 8-feet min.
 - d. Edges: Tapered
 - 2. (USG) SHEETROCK Mold Tough Firecode Core
 - a. Thickness: 5/8-inch, Type X
 - b. Width: 4-feet
 - c. Length: 8-feet min.
 - d. Edges: Tapered
- B. Sound Deadening Board
 - 1. (GP) HushBoard
 - a. Thickness: 1/2-inch
 - b. Width: 4-feet
 - c. Length: 8-feet min.
 - d. Edges: Square
- C. Fasteners:
 - 1. Metal Framing: ASTM C1002.
 - 2. Wood Framing: ASTM C514.
 - 3. Steel Drill Screws: ASTM C 954.
- D. Joint System
 - 1. Tape, bedding compound, topping compound: ASTM C 475.
- E. Trims
 - 1. Metal Beads: ASTM C1047; formed galvanized steel angle, minimum base steel 0.014 inch thick, sizes as required to suit substrate.
 - 2. Metal Edge/casing bead: ASTM C1047; formed galvanized steel trim, minimum base steel 0.014 inch thick, sizes as required to suit substrate.
 - 3. Metal Control Joints: ASTM C1047; roll-formed zinc control joints with perforations in flanges; center channel with removable tape strip over channel.
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Examine areas and conditions under which Work of this Section will be performed. Correct conditions detrimental to timely and proper

completion of Work. Do not proceed until unsatisfactory conditions are corrected.

- 2. Examine substrates to which gypsum board construction attaches or abuts. Verify pre-set hollow metal frames, cast-in anchors, and structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board construction.
- 3.03 PREPARATION
- 3.04 ERECTION

Α.

3.05 INSTALLATION

- Install and finish gypsum board to comply with ASTM C840 and GA-216.
 - 1. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
 - 2. Install ceiling boards across framing in the manner which minimizes the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints a minimum of 24 inches.
 - 3. Install wall and partition boards vertically unless otherwise noted.
 - 4. Install exposed gypsum board with face side out. Do not install imperfect, damaged, or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/15.9 inch open space between boards. Do not force into place.
 - 5. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board backblocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges, and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
 - 6. Attach gypsum board to studs so that leading edge or end of each board is attached to open (unsupported) edge of stud flange first.
 - 7. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cut-outs.
 - 8. Form control joints and expansion joints at locations indicated on Drawings, and as recommended by Gypsum Association, with space between edges of boards prepared to receive trim accessories.
 - 9. Maximum distance between control joints: 30 linear feet.
 - 10. Cover both faces of stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls that are properly braced internally.
 - 11. Fit gypsum board around ducts, pipes, and conduits.
 - 12. Where partitions intersect open concrete coffers, cut gypsum board to fit profile of coffers and allow 1/4 to 1/2 inch wide joint for sealant.
 - Isolate perimeter of non-load bearing drywall partitions at structural abutments. Provide 1/4 to 1/2 inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant.
 - 14. Where sound-rated drywall construction is indicated on Drawings, seal construction at perimeters, control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with

ASTM C919 and manufacturer's recommendations for location of edge trim, and close off sound-flanking paths around or through construction, including sealing of partitions above acoustical ceilings.

- 15. For double-layer partition systems, construction above acoustical plaster ceilings may be installed with base layer only.
- 16. Space fasteners in gypsum boards per referenced gypsum board application and finishing standard and manufacturer's recommendations.
- 17. Curved Gypsum Partitions and Surfaces: Install gypsum board panels horizontally with wrapped edges perpendicular to metal framing per manufacturer's recommendations.
- B. Spray-Texture Finish
 - 1. Apply spray texture finish on walls and ceiling surfaces per manufacturer's instructions.
- C. Accessories
 - Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.
 - 2. Install metal corner beads at external corners.
 - 3. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, except where plastic trim is indicated on Drawings. Provide type with face flange to receive joint compound except where "U" bead (semi-finishing type) is indicated.
 - 4. Install gypsum board reveals where indicated on Drawings.
 - 5. Install control joints at locations indicated on Drawings, or if not indicated, at spacing and locations required by referenced gypsum board application and finish standard, and approved by Architect for visual effect.
- D. Joint Treatment
 - 1. Inspect areas to be joint treated, verifying that the gypsum board fits snugly against supporting framework.
 - In areas where joint treatment and compound finishing will be performed, maintain a temperature of not less than 55 degrees F for 24 hours prior to commencing the treatment, and until joint and finishing compounds have dried.
 - 3. Apply the joint treatment and finishing compound by machine or hand tool.
 - 4. Provide a minimum drying time of 24 hours between coats, with 5. additional drying time in poorly ventilated areas.
 - 5. Embedding Compounds
 - a. Apply to gypsum board joints and fastener heads in a thin uniform layer.
 - b. Spread the compound not less than 3 inches wide at joints, center the reinforcing tape in the joint, and embed the tape in the compound. Then, spread a thin layer of compound over the tape.
 - After this treatment has dried, apply a second coat of embedding compound to joints and fastener heads, spreading in a thin uniform coat to not less than 6 inches wide at joints. Feather edges.

- d. Sand between coats.
- e. When thoroughly dry, sandpaper to eliminate ridges and high points.
- 6. Finishing Compounds:
 - a. After embedding compound is thoroughly dry and has been completely sanded, apply a coat of finishing compound to joints and fastener heads.
 - b. Feather the finishing compound to not less than 12 inches wide.
 - c. When thoroughly dry, sandpaper to obtain a uniform smooth surface, taking care to not scuff the paper surface of the board.
- E. Level of Finish
 - 1. See 3.15 Schedules
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
 - A. Maximum Variation of Finished Gypsum Board Surface from True Flatness:
 1/8 inch in 10 feet in any direction.
- 3.11 ADJUSTING
- 3.12 CLEANING
 - A. In addition to other requirements for cleaning, use necessary care to prevent scattering gypsum board scraps and dust, and to prevent tracking gypsum and joint finishing compound onto floor surfaces.
 - B. At completion of each segment of installation in a room or space, promptly pick up and remove scraps, debris, and surplus materials of this Section from working area.
- 3.13 DEMONSTRATION

3.14 PROTECTION

- A. Provide final protection and maintain conditions that ensure gypsum board construction being without damage or deterioration at time of Substantial Completion.
- 3.15 SCHEDULES
 - A. Level of finish shall be as per Gypsum Association publication, GA-214 as noted herein.
 - 1. Sand between each coat of compound as required to remove ridges and other imperfections.
 - 2. Where fire resistance rating is required, level of finish shall meet fire rating requirement.
 - 3. Level of finish
 - a. Type 0: **Draft stops**
 - 1. No taping, finishing or accessories required.
 - b. Level of finish Type 1: **Plenum areas above ceilings, areas** concealed and not normally open to view.
 - 1. Tape set in joint compound at joints and interior angles.

2. Tool marks and ridges are acceptable.

c. Level of finish Type 2: Substrate to tiling, acoustic tile.

- 1. Tape embedded in joint compound at joints and interior angles, wiped with joint knife leaving thin coat of compound over tape.
- 2. Accessories covered with one coat of joint compound.
- 3. Fasteners covered with one coat of joint compound.
- 4. Surface shall be free of excess joint compound.
- 5. Tool marks and ridges are acceptable.

d. Level of finish Type 3: Substrate to wall coverings, except presentation dry erase wallcoverings

- 1. Tape embedded in joint compound at joints and interior angles, wiped with joint knife leaving thin coat of compound over tape.
- 2. Cover tape with one separate coat of joint compound.
- 3. Accessories covered with two separate coats of joint compound.
- 4. Fasteners covered with two separate coats of joint compound.
- 5. Joint compound shall be smooth and free of tool marks and ridges.
- 6. Sand to achieve a smooth paint-ready surface.

e. Level of finish Type 4: **Typical walls/ceilings to receive paint finish**

- Tape embedded in joint compound at joints and interior angles, wiped with joint knife leaving thin coat of compound over tape.
- 2. Cover tape with two separate coats of joint compound.
- 3. Accessories covered with three separate coats of joint compound.
- 4. Fasteners covered with three separate coats of joint compound.
- 5. Joint compound shall be smooth and free of tool marks and ridges.
- 6. Sand to achieve a smooth paint-ready surface.

f. Level of finish Type 5: **Restroom walls, Restroom/Shower Ceilings, Substrate to presentation dry erase wallcoverings**

- Tape embedded in joint compound at joints and interior angles, wiped with joint knife leaving thin coat of compound over tape.
- 2. Cover tape with two separate coats of joint compound.
- 3. Accessories covered with three separate coats of joint compound.
- 4. Fasteners covered with three separate coats of joint compound.

- 5. A skim coat of joint compound shall be applied to entire surface.
- 6. The surface shall be smooth and free of ridges and defects. Sand the surface to a smooth, paint-ready condition.

END OF SECTION

SECTION 09 51 13 ACOUSTICAL CEILINGS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Acoustical ceiling panels for exposed grid suspension system
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 09 53 23 Metal Acoustical Ceiling Suspension Assemblies
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

- D. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- E. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- F. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- G. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- H. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
- I. ASTM E 1264 Classification for Acoustical Ceiling Products
- J. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems
- K. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
- L. ASTM E 1264 Classification for Acoustical Ceiling Products
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
- 1.05 SUBMITTALS A. Produ
 - Product Data
 - 1. Submit manufacturer's technical data for each type of acoustical ceiling unit required.
 - B. Shop Drawings
 - Submit ceiling layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings.
 - C. Samples
 - 1. Submit minimum 6-inch x 6-inch sample of specified acoustical panel.
 - D. Quality Assurance/Control Submittals

- 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Submit manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.
- 1.06 QUALITY ASSURANCE

1

Α.

- Qualifications
 - 1. Provide acoustical panel units and grid components by a single manufacturer.
- B. Regulatory Requirements
 - Fire Performance Characteristics
 - a. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
 - b. Surface Burning Characteristics tested per ASTM E 84 and complying with ASTM E 1264 Classification.
 - c. Fire Resistance tested per ASTM E119 and listed in the appropriate floor or roof design in the Underwriters Laboratories Fire Resistance Directory
 - 2. Acoustical Panels
 - a. As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading
 - Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
 - 2. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
 - 3. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
 - A. Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. Suspension
 - Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:
 - 1. Grid System: Sagging and warping
 - B. Warranty Period
 - 1. Acoustical panels: Ten (10) years from date of substantial completion.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - 1. Deliver extra materials to Owner.
 - 2. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - a. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Match existing installed product manufacturer. If unable to determine manufacturer, provide one of the following:
 - 1. Armstrong World Industries, P.O. Box 3001 Lancaster, PA 17604
 - 2. USG Interiors, 550 West Adams Street, Chicago, IL 60661
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Match existing installed product model. If unable to determine model, provide one of the following:
 - 1. (Armstrong) Ultima Lay-In
 - a. Size: 24-inch x 24-inch
 - b. Edge: Tegular
 - c. Color: White
 - 2. (USG) Astro ClimaPlus Performance
 - a. Size: 24-inch x 24-inch
 - b. Edge: Shadowline Tapered
 - c. Color: White
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

3.03 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Follow manufacturer installation instructions.
 - B. Install panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.
 - E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
 - F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
 - A. Replace damaged and broken panels.
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
 - Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

ACOUSTICAL CEILINGS 09 51 13 - 4

SECTION 09 53 23 METAL ACOUSTICAL CEILING SUSPENSION ASSEMBLIES

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Exposed grid suspension system
 - 2. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
 - 3. Perimeter Trim
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 09 51 13 Acoustical Ceilings
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

- A. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
- B. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
- C. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
- D. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- E. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- F. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- G. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- H. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
- I. ASTM E 1264 Classification for Acoustical Ceiling Products
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit manufacturer's technical data for each type of suspension system required.
 - B. Shop Drawings
 - 1. Submit ceiling layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings.

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- C. Samples
 - Submit minimum 8 inch long samples of exposed wall molding and 1. suspension system, including main runner and 4 foot cross tees.
- D. Quality Assurance/Control Submittals
 - Design Data, Test Reports, Certificates, Manufacturers' 1. Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Submit manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.
- 1.06 QUALITY ASSURANCE
 - Α. Qualifications
 - Provide acoustical panel units and grid components by a single 1. manufacturer.
 - Β. **Regulatory Requirements**
 - **Fire Performance Characteristics** 1.
 - Identify acoustical ceiling components with appropriate a. markings of applicable testing and inspecting organization.
 - b. Surface Burning Characteristics tested per ASTM E 84 and complying with ASTM E 1264 Classification.
 - Fire Resistance tested per ASTM E119 and listed in the c. appropriate floor or roof design in the Underwriters Laboratories Fire Resistance Directory
 - 2. **Acoustical Panels**
 - As with other architectural features located at the ceiling, α. may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for auidance where automatic fire detection and suppression systems are present.

1.07 DELIVERY, STORAGE, AND HANDLING Α.

- Packing, Shipping, Handling, and Unloading
 - 1. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
 - 2. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

PROJECT CONDITIONS 1.08

- 1.09 SEQUENCING
 - Α. Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.10 SCHEDULING

1.11 WARRANTY

- A. Suspension
 - Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:
 - 1. Grid System: Rusting and manufacturer's defects
- B. Warranty Period
 - 1. Grid: Ten years from date of substantial completion
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - 1. Deliver extra materials to Owner.
 - 2. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Match existing installed product manufacturer. If unable to determine manufacturer, provide one of the following:
 - 1. Armstrong World Industries, P.O. Box 3001 Lancaster, PA 17604
 - 2. USG Interiors, 550 West Adams Street, Chicago, IL 60661
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Match existing installed product model. If unable to determine model, provide one of the following:
 - 1. (Armstrong) Prelude XL 15/16" Exposed Tee
 - 2. (USG) Donn Brand DX/DXL 15/16" Exposed Tee
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Wire for Hangers and Ties
 - 1. ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.
 - B. Edge Moldings and Trim
 - 1. 7/8-in x 7/8-in
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
 - A. Shop Priming, Shop Finishing

- 1. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint.
- 2. Color: Flat White

2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

3.03 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

3.04 ERECTION

- 3.05 INSTALLATION
 - A. Follow manufacturer installation instructions.
 - B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.
 - C. Suspend main beam from overhead construction with hanger wires spaced 4'-0" on center along the length of the main runner. Install hanger wires plumb and straight.
 - D. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
 - E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
 - F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
 - A. Replace damaged and broken panels.
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
 - A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

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- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 09 65 13 RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

C.

- A. Section Includes
 - 1. Resilient wall base
 - 2. Accessories
- B. Products Supplied But Not Installed Under This Section1. Owner to supply all products
 - Products Installed But Not Supplied Under This Section
 - 1. Owner to install all products
- D. Related Sections
 - 1. 09 65 19 Resilient Tile Flooring
 - 2. 09 68 13 Tile Carpeting
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION

- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 09 65 19 RESILIENT TILE FLOORING

PART 1 GENERAL

1.01 SUMMARY

C.

- A. Section Includes
 - 1. Resilient Tile Flooring
 - 2. Adhesive
- B. Products Supplied But Not Installed Under This Section1. Owner to supply all products
 - Products Installed But Not Supplied Under This Section
 - 1. Owner to install all products
- D. Related Sections
 - 1. 09 65 13 Resilient Base and Accessories
 - 2. 09 68 13 Tile Carpeting
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION

- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 09 68 13 TILE CARPETING

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Tile Carpeting
 - B. Products Supplied But Not Installed Under This Section
 1. Owner to supply all products
 - C. Products Installed But Not Supplied Under This Section
 - 1. Owner to install all products
 - D. Related Sections
 - 1. 09 65 13 Resilient Base and Accessories
 - 2. 09 65 19 Resilient Tile Flooring
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
- 1.06 QUALITY ASSURANCE
- 1.07 DELIVERY, STORAGE, AND HANDLING
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION

- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 09 72 00 PRESENTATION DRY ERASE WALLCOVERING

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Magnetic receptive dry erase wallcovering
 - 2. Accessories
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 09 29 00 Gypsum Board
 - 2. 09 65 13 Resilient Base and Accessories
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. ASTM E84 Test Method for Surface Burning Characteristics of Building Materials
 - B. Gypsum Association GA-214-M-97 Recommended Levels of Gypsum Board Finish
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Manufacturer's product data and installation instructions for each type of dry erase wallcovering, adhesive, and accessories required.
 - B. Shop Drawings
 - C. Samples
 - 1. 7 inch x 9 inch samples of each dry erase material specified.
 - 2. 6 inch samples of trim, tray, and end caps specified.
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Manufacturer's written product data indicating compliance with specified materials required.
 - b. Manufacturer's written installation instructions.
 - c. Manufacturer's written instructions for recommended maintenance of each type of dry erase wall covering required.
 - E. Closeout Submittals
 - 1. Maintenance instructions: Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.

PRESENTATION DRY ERASE WALLCOVERING 09 72 00 - 1

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. Provide each type of dry erase wallcovering required produced by one manufacturer.
 - Installation by skilled commercial wallcovering contractor with no less than three years of documented experience installing dry erase wallcovering of the types and extent required.
- B. Regulatory Requirements
 - 1. Provide materials that meet Class I/A rating when tested in accordance with ASTM E84 for flame spread and smoke developed
- C. Certifications
- D. Field Samples
 - 1. Prepare field samples for architect's review and establish requirements for seaming and finish trim.
 - 1. Install sample panel of each type presentation wallcovering specified in area designated by architect.
 - 2. Maintain corrected and approved samples to serve as a standard of performance for the project.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - 1. Deliver presentation wallcoverings to the project site in unbroken and undamaged original factory packaging and clearly labeled with the manufacturer's identification label, quality or grade, and lot number.
 - B. Acceptance at Site
 - C. Storage and Protection
 - 1. Store materials in a clean, dry storage area with temperature maintained above 55°F with normal humidity.
 - 2. Store material within original packaging to prevent damage.
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - 1. Do not apply presentation wallcoverings when surface and ambient temperatures are outside the temperature ranges required by the wallcovering manufacturer.
 - 2. Provide continuous ventilation and heating facilities to maintain substrate surface and ambient temperatures above 55°F unless required otherwise by manufacturer's instructions.
 - 3. Apply adhesive when substrate surface temperature and ambient temperature is above 55°F and relative humidity is below forty percent.
 - 4. Maintain constant recommended temperature and humidity for at least 72 hours prior to and throughout the installation period, and for 72 hours after wallcovering installation completion.
 - 5. Provide not less than 80-foot-candles per square foot lighting level measured mid-height at substrate surfaces.
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. Manufacturer's limited five-year written warranty against manufacturing defects.

PRESENTATION DRY ERASE WALLCOVERING 09 72 00 - 2

- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - B. Maintenance Service

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Walltalkers Wallcoverings by RJF International Corporation, Fairlawn, Ohio,
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Wallcovering
 - 1. Walltalkers Magrite magnetic receptive, moderate gloss vinyl surface for dry erase markers.
 - 2. 48 inch width sheets, woven backing.
 - B. Trim and Tray
 - 1. Model: Aluminum Tray TY04-00 for length
 - 2. Finish: Clear satin, anodized aluminum
 - 3. Mounting: Snap-on marker and eraser tray with clips
 - 4. End Caps: ET02-00: 1/4 inch box tray end cap set for marker and eraser tray.
 - C. Wallcovering Trim
 - 1. J Cap Wallcovering Trim: N/A
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
 - A. Adhesives: Heavy-duty clear or clay based premixed vinyl adhesive.
 - B. Substrate Primer/Sealer: White pigmented acrylic base primer/sealer specifically formulated for use with vinyl wallcoverings.
 - C. Presentation Starter Kit: Provide one starter kit containing eight dry erase markers, one eraser, two dry erase cleaning cloths, one empty bottle for water, and one 8 ounce bottle liquid surface cleaning solution for each room installed with dry erase wallcovering.
 - D. Magnets: Heavy duty magnets black.
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Examine substrates and installation conditions to ensure surface conditions meet or exceed a Level 4 finish, per GA-214-M-97:

PRESENTATION DRY ERASE WALLCOVERING 09 72 00 - 3 Recommended Levels of Gypsum Board Finish, and permanent lighting is installed and operational.

- 2. Test substrate with suitable moisture meter and verify that moisture content does not exceed four percent.
- 3. Verify substrate surface is clean, dry, smooth, structurally sound, and free from surface defects and imperfections that would show through the finished surface.
- 4. Evaluate all painted surfaces for the possibility of pigment bleedthrough.
- 5. Notify the contractor and architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- 6. Beginning of installation means acceptance of surface conditions.
- 3.03 PREPARATION

3.04 ERECTION

3.05 INSTALLATION

- A. Acclimate wallcovering in the area of installation a minimum of 24 hours before installation.
- B. Read and follow the manufacturer's installation instruction sheet contained in each roll of the dry erase wallcovering.
- C. Examine all materials for pattern, color, quantity and quality, as specified for the correct location prior to cutting.
- D. Primer: Use a quality pigmented acrylic wallcovering primer.
- E. Adhesive: Apply a uniform coat of heavy-duty pre-mixed clay-based or extra strength clear wallcovering adhesive.
- F. Install each strip horizontally and in the same sequence as cut from the roll.
- G. Install dry erase wallcovering sheets in exact order as they are cut from bolt. Reverse hang alternate strips (except lined products). Do not crease or bend the wallcovering when handling.
- H. Install dry erase wallcovering horizontally using a level line.
- I. Using a level or straight edge, double cut the seam with a seam-cutting tool (Ex: Double Seam-Cutter or Swedish Knife). Do not score gypsum board when cutting material.
- J. When covering the entire wall, seam the material out of the main writing and viewing areas of the wall.
- K. Apply wallcovering to the substrate using a wallcovering smoother, wrapped with a soft cloth, to remove air bubbles. Do not use sharp edged smoothing tools. Smooth material on the wall from the middle to the outside edge.
- L. Remove excess adhesive immediately after the wallcovering is applied. Clean entire surface with a warm mild soap solution, and clean soft cloths. Rinse thoroughly with water and let dry before using. Change water often to maintain water clarity.
- M. Stop installation of material that is questionable in appearance and notify the manufacturer's representative for an inspection.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING

3.12 CLEANING

- A. Upon completion of installation, remove all exposed adhesive immediately using a soft cloth and a warm, mild soap solution and rinse thoroughly with water and dry with clean towel prior to using.
- B. Upon completion of the work, remove surplus materials, rubbish, and debris resulting from the wallcovering installation. Leave areas in neat, clean, and orderly condition.
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

SECTION 09 91 13 EXTERIOR PAINTING

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Section includes surface preparation and the application of paint systems on the following exterior substrates:
 - a. Concrete
 - b. Concrete Masonry Units
 - c. Steel
 - d. Galvanized Metal
 - e. Aluminum (Non-anodized or coated)
 - f. Wood
 - g. Exterior Portland Cement Plaster (Stucco)
 - h. Exterior Gypsum Board
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 07 92 00 Joint Sealants
 - 2. 09 24 00 Portland Cement Plaster
 - 3. 09 91 23 Interior Painting
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates

1.02 REFERENCES

A. CCR, Title 24, Part 11, 5,504.4.3 Paints and Coatings

- 1.03 DEFINITIONS
 - A. Blocking: Two painted surfaces sticking together such as a painted door sticking to a painted jamb.
 - B. Bio-Pruf: Biostabilizing additive, to protect products from premature microbial degradation.
 - C. EG: Ethylene Glycol. Ethylene glycol is listed as a hazardous air pollutant (HAP) by the U.S. EPA.
 - D. EPR: Environmental Performance Rating. Master Painters Institute (MPI) formula that relates to VOC, Performance of Category, Gloss and Appropriate specified use. Higher values equate to greater eco-efficiency.
 - E. MPI: Master Painters Institute. Organization that establishes architectural paint standards and quality assurance programs in North America. www.paintinfo.com.
 - F. PDCA: Painting & Decorating Contractors of America. www.pdca.org.
 - G. RAVOC: Reactivity adjusted VOC. "Reactivity" means the ability of a VOC to promote ozone formation
 - H. SSPC: The Society for Protective Coatings publishes Scopes of SSPC Surface Preparation Standards and Specifications. www.sspc.org.
- 1.04 SYSTEM DESCRIPTIONS

- 1.05 SUBMITTALS
 - A. Product Data
 - Submit product data for each type of product. Include preparation requirements and application instructions.
 - B. Shop Drawings
 - C. Samples

1

- 1. Submit samples for initial selection
- 2. Submit samples for verification that in each color and gloss topcoat.
 - a. Submit samples on rigid backing, no smaller than 7" x 10" or larger than 8.5" x 11"
 - b. Label each sample for project, architect, contractor, paint color name and number, and paint brand
- D. Quality Assurance/Control Submittals
 - 1. Design data, Test Reports, Certificates, Manufactures' Instructions, Manufactures' Field Reports, Qualification Statements
 - a. Printed statement of VOC Content
 - b. Documentation indicating the paints and coatings meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Closeout Submittals
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - B. Regulatory Requirements
 - 1. VOC Content: Products shall comply with VOC limits of SCAQMD and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 50 g/L.
 - 3. Primers, Sealers, and Undercoaters: 100 g/L.
 - 4. Rust Preventative Coatings: 100 g/L.
 - 5. Floor Coatings: 50 g/L.
 - 6. Shellacs, Clear: 730 g/L.
 - 7. Shellacs, Pigmented: 550 g/L.
 - 2. Colorants: The use of colorants containing hazardous chemicals, such as ethylene glycol, is prohibited.
 - C. Certifications
 - D. Field Samples
 - E. Mock-ups
 - 1. Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under verification sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 2. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.

- a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
- b. Other Items: Architect will designate items or areas required.
- c. Final approval of color selections will be based on mockups.
 - 1. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
- Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Pre-installation Meetings
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading
 - B. Storage and Protection
 - 1. Store materials not in use in tightly covered containers in wellventilated areas with ambient temperatures continuously maintained at not less than 45 deg. F or more than 120 deg. F.
 - 2. Maintain containers in clean condition, free of foreign materials and residue.
 - 3. Remove rags and waste from storage areas daily.
 - C. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - 1. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 105 deg F.
 - Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 - 3. Painting contractor should follow proper painting practices and exercise judgment based on his or her experience and project specific conditions as to when to proceed.
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - 1. Furnish extra materials from the same product run that match products installed and the are packaged with protective covering for storage and identified with labels describing content.
 - a. Paint 5% but not less than 5 gal of each material and color applied.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Dunn-Edwards Corporation, 4885 E. 52nd Place, Los Angeles, CA 90058
- B. Carboline, 2150 Schuetz Road, St. Louis, MO 63146
- C. Rainguard International, 3334 East Coast Highway #143, Corona del Mar, CA 92625
- Vista Paint Corporation, 2020 E. Orangethorpe Ave. Suite 210, Fullerton, CA 92831
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Colors: As selected by architect from manufacturer's full range as well as any custom color matching
 - B. Block Fillers
 - Latex, Interior/Exterior
 - 1. (Dunn-Edwards) Smooth Blocfil Select
 - a. VOC: 50 g/L
 - b. RAVOC: 30
 - C. Primers/Sealers

1

- Primer, Alkali Resistant, Water-Based
 - (Dunn-Edwards) Eff-Stop Premium
 - a. VOC: 20 g/L
 - b. RAVOC: 5 g/L
- 1 atl. (Vista) Uniprime II
- 2. Primer, Bonding, Water-Based
 - (Dunn-Edwards) Ultra-Grip Premium
 - a. VOC: 50 g/L
 - b. RAVOC: 20 g/L
- 3. Primer, Bonding, Water-Based
 - (Dunn-Edwards) Ultrashield Multi-Surface
 - a. VOC: 0 g/L
 - b. RAVOC: 0 g/L
- 4. Sealer, Graffiti Control
 - (Rainguard International) Blok-Lok With Graffiti Control a. VOC: 15g/L
- D. Metal Primers
 - 1. Primer, Alkyd, Anti-Corrosive for Metal (Dunn-Edwards) Bloc-Rust Premium
 - a. VOC: 30 g/L
 - b. RAVOC: 15 g/L
 - 2. Primer, Rust-inhibitive, Water-Based (Dunn-Edwards) Ultrashield DTM Gray Primer
 - a. VOC: 0 g/L
 - b. RAVOC: 0 g/L
 - 3. Primer, Quick Dry for Aluminum
 - (Dunn-Edwards) Galv-Alum Premium
 - a. VOC: 400 g/L
 - b. RAVOC: 130 g/L
 - 4. Primer, Galvanized and Non-Ferrous, Water Based (Dunn-Edwards) Ultra-Grip Premium

EXTERIOR PAINTING 09 91 13 - 4

- a. VOC: 50 g/L
- b. RAVOC: 20 g/L
- 5. Surface-Tolerant Epoxy Mastic
 - a. (Carboline) Carbogard 890 VOC
- E. Wood Primers
 - 1. Primer, Latex for Exterior Wood
 - (Dunn-Edwards) EZ-Prime Premium
 - a. VOC: 50 g/L
 - b. RAVOC: 20 g/L
- E. Water-Based Paints
 - 1. Acrylic Enamel, Latex, Exterior Flat/Velvet/Eggshell/Low-Sheen (Dunn-Edwards) Spartashield
 - a. VOC: 45 g/L
 - b. RAVOC: 30 g/L
 - 1 alt. (Vista) Weather Master
- F. Solvent-Based Paints
 - 1. Aliphatic Polyurethane, Satin
 - (Carboline) Carbothane 133 MC
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL
 - A. Tests, Inspection
 - 1. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - a. Owner may engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at project site. Samples will be identified, sealed, and certified by testing agency.
 - b. Testing agency will perform tests for compliance with product requirements.
 - c. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will comply with requirements to use compatible products and systems as described in this specification. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.01 INSTALLERS

3.02 EXAMINATION

- A. Site Verification of Conditions
 - 1. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 2. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - a. Concrete: 12 percent.
 - b. Masonry (Clay and CMU): 12 percent.
 - c. Wood: 15 percent.
 - d. Gypsum Board: 12 percent.
 - e. Plaster: 12 percent.
 - 3. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
 - 4. Plaster Substrates: Verify that plaster is fully cured, including pH testing to determine that alkalinity is within limits established by the manufacturer.
 - 5. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
 - 6. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
 - 7. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - a. Application of coating indicates acceptance of surfaces and conditions.
- 3.03 PREPARATION
 - A. Protection
 - B. Surface Preparation
 - 1. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
 - 2. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - 3. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
 - 4. Concrete Substrates (Where specifically indicated on drawings)
 - a. Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions, including pH testing to determine that alkalinity is within limits established by the manufacturer.
 - 5. Masonry Substrates (Where specifically indicated on drawings)
 - a. Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints

EXTERIOR PAINTING 09 91 13 - 6 exceed that permitted in manufacturer's written instructions.

- 6. Steel Substrates:
 - a. Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 1, "Solvent Cleaning."
 - 2. SSPC-SP 2, "Hand Tool Cleaning."
 - 3. SSPC-SP 3, "Power Tool Cleaning."
 - 4. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 - 5. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- 7. Shop-Primed Steel Substrates:
 - a. Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- 8. Galvanized-Metal Substrates (Where specifically indicated on drawings)
 - Remove grease and oil residue from galvanized sheet metal fabricated from coil stock to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- 9. Aluminum Substrates (Where specifically indicated on drawings)
 - a. Remove loose surface oxidation.
- 10. Wood Substrates:
 - a. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - b. Sand surfaces that will be exposed to view, and dust off.
 - c. Prime edges, ends, faces, undersides, and backsides of wood.
 - d. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- 11. Cotton or Canvas Insulation Covering Substrates
 - a. Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
- 3.04 ERECTION

3.05 INSTALLATION

- 3.06 APPLICATION
 - A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

EXTERIOR PAINTING 09 91 13 - 7

- 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Block Fillers: Provide block fill as scheduled to conform to the following PDCA Standard P12-05:
 - Level 3 Premium Fill: One or multiple coats of high performance block filler manufactured to be applied at a high dry film build. Block filler shall be back-rolled to eliminate voids and reduce the majority of the masonry profile depth.
- F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards and switch gear.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.
 - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - 2. Paint the following work where exposed in occupied spaces:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - h. Other items as directed by Architect.
 - 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
 - A. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING

3.12 CLEANING

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

3.13 DEMONSTRATION

3.14 PROTECTION

- A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- 3.15 SCHEDULES
 - A. Metals
 - 1. 1st Coat N/A
 - 2. 2nd Coat N/A
 - 3. 3rd Coat N/A
 - B. Metals (Steel Gates and Fences)
 - 1. 1st Coat N/A
 - 2. 2nd Coat N/A
 - 3. 3rd Coat N/A
 - C. Concrete Unit Masonry
 - 1. 1st Coat N/A
 - 2. 2nd Coat N/A
 - D. Concrete Unit Masonry (Trash Enclosures, Can Washs)
 - 1. 1st Coat N/A
 - 2. 2nd Coat N/A
 - E. Concrete (Vertical Faces, Exposed)
 - 1. 1st Coat N?A
 - 2. 2nd Coat N/A
 - F. Portland Cement Plaster
 - 1. 1st Coat Primers/Sealers, (Primer, Alkali Resistant, Water-Based)
 - 2. 2nd Coat Water-Based Paints Flat
 - 3. 3rd Coat Water-Based Paints Flat

SECTION 09 91 23 INTERIOR PAINTING

PART 1 - GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Section includes surface preparation and the application of paint systems on the following interior substrates:
 - a. Concrete
 - b. Concrete Masonry Units
 - c. Steel
 - d. Cast Iron
 - e. Galvanized Metal
 - f. Aluminum (Non-anodized or coated)
 - e. Wood
 - f. Gypsum Board
 - g. Plaster
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 07 92 00 Joint Sealants
 - 2. 09 29 00 Gypsum Board
 - 3. 09 91 13 Exterior Painting
 - 4. 09 91 23 Interior Painting
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. CCR, Title 24, Part 11, 5,504.4.3 Paints and Coatings
- 1.03 DEFINITIONS
 - A. Blocking: Two painted surfaces sticking together such as a painted door sticking to a painted jamb.
 - B. Bio-Pruf: Biostabilizing additive, to protect products from premature microbial degradation.
 - C. EG: Ethylene Glycol. Ethylene glycol is listed as a hazardous air pollutant (HAP) by the U.S. EPA.
 - D. EPR: Environmental Performance Rating. Master Painters Institute (MPI) formula that relates to VOC, Performance of Category, Gloss and Appropriate specified use. Higher values equate to greater eco-efficiency.
 - E. MPI: Master Painters Institute. Organization that establishes architectural paint standards and quality assurance programs in North America. www.paintinfo.com.
 - F. PDCA: Painting & Decorating Contractors of America. www.pdca.org.
 - G. RAVOC: Reactivity adjusted VOC. "Reactivity" means the ability of a VOC to promote ozone formation
 - H. SSPC: The Society for Protective Coatings publishes Scopes of SSPC Surface Preparation Standards and Specifications. www.sspc.org.

1.04 SYSTEM DESCRIPTIONS

1.05 SUBMITTALS

- A. Product Data
 - 1. Submit product data for each type of product. Include preparation requirements and application instructions.
- B. Shop Drawings
- C. Samples
 - 1. Submit samples for initial selection
 - 2. Submit samples for verification that in each color and gloss topcoat.
 - a. Submit samples on rigid backing, no smaller than $7^{\prime\prime}$ x $10^{\prime\prime}$ or larger than $8.5^{\prime\prime}$ x $11^{\prime\prime}$
 - b. Label each sample for project, architect, contractor, paint color name and number, and paint brand
- D. Quality Assurance/Control Submittals
 - 1. Design data, Test Reports, Certificates, Manufactures' Instructions, Manufactures' Field Reports, Qualification Statements
 - a. Printed statement of VOC Content
 - b. Documentation indicating the paints and coatings meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Closeout Submittals
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - B. Regulatory Requirements
 - 1. VOC Content: Products shall comply with VOC limits of SCAQMD and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 50 g/L.
 - 3. Primers, Sealers, and Undercoaters: 100 g/L.
 - 4. Rust Preventative Coatings: 100 g/L.
 - 5. Floor Coatings: 50 g/L.
 - 6. Shellacs, Clear: 730 g/L.
 - 7. Shellacs, Pigmented: 550 g/L.
 - 2. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
 - 3. Colorants: The use of colorants containing hazardous chemicals, such as ethylene glycol, is prohibited.
 - C. Certifications
 - D. Field Samples
 - E. Mock-ups

- 1. Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under verification sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
- Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 - c. Final approval of color selections will be based on mockups.
 - If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
- 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Pre-installation Meetings

1.07 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading

1.

- B. Storage and Protection
 - 1. Store materials not in use in tightly covered containers in wellventilated areas with ambient temperatures continuously maintained at not less than 45 deg. F or more than 120 deg. F.
 - 2. Maintain containers in clean condition, free of foreign materials and residue.
 - 3. Remove rags and waste from storage areas daily.
- C. Waste Management and Disposal
- 1.08 PROJECT CONDITIONS
 - A. Project Environmental Requirements
 - 1. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 105 deg F.
 - Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 - 3. Painting contractor should follow proper painting practices and exercise judgment based on his or her experience and project specific conditions as to when to proceed.
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials

- 1. Furnish extra materials from the same product run that match products installed and the are packaged with protective covering for storage and identified with labels describing content.
 - a. Paint 5% but not less than 5 gal of each material and color applied.

PART 2 - PRODUCTS

- 2.01 MANUFACTURERS
 - A. Dunn-Edwards Corporation, 4885 E. 52nd Place, Los Angeles, CA 90058
 - B. Deft by PPG Architectural Finishes, One PPG Place, Pittsburgh, PA 15272
 - C. Vista Paint Corporation, 2020 E. Orangethorpe Ave. Suite 210, Fullerton, CA 92831
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
 - A. Colors: As selected by architect from manufacturer's full range as well as any custom color matching
 - B. Block Fillers
 - Latex, Interior/Exterior
 - 1. (Dunn-Edwards) Smooth Blocfil Select
 - a. VOC: 50 g/L
 - b. RAVOC: 30
 - C. Primers/Sealers
 - 1. Primer Sealer, Latex, Interior
 - (Dunn-Edwards) Vinylastic Select Low Odor Zero VOC
 - a. VOC: 4 g/L
 - b. RAVOC: 4 g/L
 - 1 atl. (Vista) Acriglo Interior Primer Zero VOC
 - 2. Primer, Alkali Resistant, Water Based
 - (Dunn-Edwards) Eff-Stop Select
 - a. VOC: 50 g/L
 - b. RAVOC: 30 g/L
 - Primer, Latex for Interior Wood (Dunn-Edwards) Inter-Kote Low Odor Zero VOC Interior Undercoater
 - a. VOC: 2 g/L
 - b. RAVOC: 2 g/L
 - 4. Primer, Bonding, Water Based
 - (Dunn-Edwards) Ultra-Grip Premium
 - a. VOC: 1 g/L
 - b. RAVOC: 1 g/L
 - D. Metal Primers
 - 1. Primer, Rust-Inhibitive, Water Based (Dunn-Edwards) Bloc-Rust Premium
 - a. VOC: 30 g/L
 - b. RAVOC: 15 g/L
 - (Vista) 4200 Terminator II
 - 2. Primer, Galvanized and Non-Ferrous, Water Based
 - (Dunn-Edwards) Ultra-Grip Premium
 - a. VOC: 50 g/L
 - b. RAVOC: 20 g/L
 - E. Water-Based Paints

- Latex, Interior, Flat/Velvet/Eggshell/Low Sheen (Dunn-Edwards) Low Odor Zer VOC Spartazero a. VOC: 2 g/L
 - b. RAVOC: 1 g/L
- 1 alt. (Vista) Carefree Zero VOC [Sheen Level]
- F. Stains
 - 1. Waterborne Acrylic, Interior, Satin
 - (DEFT) Clear Wood Finish
 - a. VOC: <275 g/L
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL
 - A. Tests, Inspection
 - 1. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - a. Owner may engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at project site. Samples will be identified, sealed, and certified by testing agency.
 - b. Testing agency will perform tests for compliance with product requirements.
 - c. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will comply with requirements to use compatible products and systems as described in this specification. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.01 INSTALLERS

3.02 EXAMINATION

- A. Site Verification of Conditions
 - 1. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 2. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - a. Concrete: 12 percent.
 - b. Masonry (Clay and CMU): 12 percent.

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- c. Wood: 15 percent.
- d. Gypsum Board: 12 percent.
- e. Plaster: 12 percent.
- 3. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- 4. Plaster Substrates: Verify that plaster is fully cured, including pH testing to determine that alkalinity is within limits established by the manufacturer.
- 5. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
- 6. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- 7. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - a. Application of coating indicates acceptance of surfaces and conditions.

3.03 PREPARATION

- A. Protection
- B. Surface Preparation
 - 1. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
 - 2. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - 3. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
 - 4. Concrete Substrates (Where specifically indicated on drawings)
 - a. Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions, including pH testing to determine that alkalinity is within limits established by the manufacturer.
 - 5. Masonry Substrates (Where specifically indicated on drawings)
 - a. Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
 - 6. Steel Substrates:
 - a. Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 1, "Solvent Cleaning."

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- 2. SSPC-SP 2, "Hand Tool Cleaning."
- 3. SSPC-SP 3, "Power Tool Cleaning."
- 4. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
- 5. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- 7. Shop-Primed Steel Substrates:
 - a. Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- 8. Galvanized-Metal Substrates (Where specifically indicated on drawings)
 - Remove grease and oil residue from galvanized sheet metal fabricated from coil stock to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- 9. Aluminum Substrates (Where specifically indicated on drawings)
 - a. Remove loose surface oxidation.
- 10. Wood Substrates:
 - a. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - b. Sand surfaces that will be exposed to view, and dust off.
 - c. Prime edges, ends, faces, undersides, and backsides of wood.
 - d. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- 11. Cotton or Canvas Insulation Covering Substrates
 - a. Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
- 3.04 ERECTION
- 3.05 INSTALLATION
- 3.06 APPLICATION
 - A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
 - B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to

match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Block Fillers: Provide block fill as scheduled to conform to the following PDCA Standard P12-05:
 - Level 3 Premium Fill: One or multiple coats of high performance block filler manufactured to be applied at a high dry film build. Block filler shall be back-rolled to eliminate voids and reduce the majority of the masonry profile depth.
- F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards and switch gear.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.
 - Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - 2. Paint the following work where exposed in occupied spaces:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - h. Other items as directed by Architect.
 - 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.
- 3.07 CONSTRUCTION

3.08 REPAIR/RESTORATION

- A. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
- 3.12 CLEANING
 - A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from project site.

- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
 - A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

3.15 SCHEDULES

- A. Metals
 - 1. 1st Coat Metal Primer, (Primer, Rust-Inhibitive, Water Based)
 - 2. 2nd Coat Water-Based Paint Match existing sheen
 - 3. 3rd Coat Warer-based Paint Match existing sheen
- B. Gypsum Board
 - 1. 1st Coat Primers/Sealers, (Primer Sealer, Latex, Interior)
 - 2. 2nd Coat Water-Based Paints Flat
 - 3. 3rd Coat Water-Based Paints Flat
- C. Gypsum Board (Restrooms, Showers, Moisture Sensitive Areas)
 - 1. 1st Coat Primers/Sealers, (Primer Sealer, Latex, Interior)
 - 2. 2nd Coat Water-Based Paints Low Sheen
 - 3. 3rd Coat Water-Based Paints Low Sheen
- D. Doors and Frames (Hollow Metal)
 - 1. 1st Coat N/A Factory Finished Frame
 - 2. 2nd Coat N/A Factory Finished Frame
 - 3. 3rd Coat N/A Factory Finished Frame
SECTION 10 14 67 TACTILE SIGNAGE

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Plastic tactile signage
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit data sufficient to demonstrate compliance with this section and drawing requirements.
 - B. Shop Drawings
 - 1. Submit shop drawing and catalog cuts of items to be provided. Manufacturer or producer's standard drawings and technical information may be acceptable where complete enough to determine acceptability.
 - C. Samples
 - 1. Submit samples of products and materials where options of color, finish, pattern or texture exist.
 - D. Quality Assurance/Control Submittals
 - 1. Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - E. Closeout Submittals

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. Products and materials to be provided are to be from manufacturers and producers regularly engaged full-time in the manufacture or production of this and similar items, with a history of successful manufacture or production acceptable to the Owner.
 - 2. In addition to complying with pertinent codes and regulations, comply with industry and trade standards normally associated with this product or material, except where specified product or material is superior in quality to industry and trade standards.
 - 3. All tactile lettering shall be monolithic with sign. Adheared letters will not be accecpted.

- B. Regulatory Requirements
 - 1. All signage shall comply with 2013 CCR, Title 24, Part 2, Chapter 11B
 - 2. Raised characters shall comply with CBC Section 11B-703.2:
 - Depth: It shall be 1/32 inch minimum above their background and shall be sans serif uppercase and be duplicated in Braille.
 - Height: It shall be 5/8" inch minimum and 2" inches maximum based on the height of the uppercase letter I. CBC Section 11B-703.2.5
 - c. Finish and Contrast: Characters and their background shall have a non-glare finish. Character shall contrast with their background with either light characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1.
 - 3. Proportions: It shall be selected from fonts where the width of the uppercase letter 'O' is 60% minimum and 110% maximum of the height of the uppercase letter 'I'. Stroke thickness of the uppercase letter 'I' shall be 15% maximum of the height of the character. CBC Sections 11B-703.4 and 11B-703.6
 - 4. Character Spacing: Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8
 - 5. Braille: It shall be contracted (Grade 2) and shall comply with CBC Sections 11B-703.3 and 11B-703.4. braille dots shall have a domed and rounded shape and shall comply with CBC Table and Figure 11B-703.3.1.
 - 6. Mounting Height: A tactile sign shall be located 48" minimum to the baseline of the lowest Braille cells and 60" maximum to the baseline of the highest line of raised characters above the finish floor or ground surface.
 - 7. Mounting location: A tactile sign shall be located on the approach side, as one enters or exits rooms or space, and be reached within 0" of the required clear floor space per CBC Section and Figure 11B-703.4.2 as follows:
 - a. A clear floor space of 18" x 18" minimum, centered on the tactile characters, shall be provided beyond the arc of any door swings between the closed position and 45 degree open position.
 - b. On the wall at the latch side of a single door
 - c. On the inactive leaf of a double door with one active leaf.
 - d. On the wall at the right side of a double door with two active leafs.
 - e. On the nearest adjacent wall where there is no wall space at the latch side of a single door or no space at the right side of a double door with two active leafs.
 - f. Visual Characters shall comply with CBC Section 11B-703.5 and shall be 40" minimum above finish floor or ground.
 - g. Pictograms shall comply with CBC Section 11B-703.6
 - h. Symbol of accessibility shall comply with CBC Section 11B-703.7
- C. Certifications
- D. Field Samples
- E. Mock-ups

F. Pre-installation Meetings

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading
- B. Acceptance at Site
- C. Storage and Protection
 - 1. Store in a safe, dry place with all shop-supplied protection and labeling intact and legible until set, applied or installed.
 - 2. Use all reasonable means necessary to protect products and materials before, during and after installation.
- 1.08 PROJECT CONDITIONS
- 1.09 SEQUENCING
- 1.10 SCHEDULING
- 1.11 WARRANTY
 - A. Provide Owner with a written warranty as a condition of work acceptance, signed by Contractor and installer (where applicable), agreeing to maintain, repair and/or replace products and materials for one year following acceptance, and without additional cost to Owner.
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE
 - A. Extra Materials
 - B. Maintenance Service

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Signs and Lucite Products, Inc., 2721 Kimball Ave., Pamona, CA 91767
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS A. ¹/₄-in
 - ¼-inch thick matte acrylic plastic, 1/32-inch tactile lettering, with ¼-inch radius corners
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
- 2.10 FINISHES
 - A. Shop Priming, Shop Finishing
 - 1. Color: TBD, As selected by architect
 - 2. Sheen: Matte
 - 3. Coating: Graffiti Proof

2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
- 3.03 PREPARATION
 - A. Protection
 - B. Surface Preparation
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Install signs in strict accordance with manufacturer's recommendation and according to details of the drawings.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
 - A. In event of damage, regardless of responsibility and culpability, make repairs and replacements necessary to satisfaction of Owner, and at no additional cost to Owner.
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
 - A. Site Tests, Inspection
 - B. Manufacturers' Field Services
- 3.11 ADJUSTING
- 3.12 CLEANING
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES

END OF SECTION

SECTION 12 36 13 PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 GENERAL

- 1.01 SUMMARY
 - A. Section Includes
 - 1. Plastic-Laminate-Clad Countertops
 - 2. Factory finishing
 - B. Products Supplied But Not Installed Under This Section
 - C. Products Installed But Not Supplied Under This Section
 - D. Related Sections
 - 1. 06 41 16 Plastic-Laminate-Clad Architecture Cabinets
 - E. Allowances
 - F. Unit Prices
 - G. Measurement Procedures
 - H. Payment Procedures
 - I. Alternates
- 1.02 REFERENCES
 - A. Minimum Standards for work in this section shall be in conformity with the Architectural Woodwood Standards.
- 1.03 DEFINITIONS
- 1.04 SYSTEM DESCRIPTIONS
 - A. Design Requirements, Performance Requirements
 - 1. Performance shall comply with Premium grade requirements of Architectural Woodwork Standards, latest edition.
 - a. Appendix B, Section 11 Countertops
 - b. Appendix B, Section 12 Installation
 - 2. Each elevation of casework shall bear Woodwork Institute certified compliance label.
- 1.05 SUBMITTALS
 - A. Product Data
 - 1. Submit manufacturers' plastic laminate data sheets
 - B. Shop Drawings
 - 1. Submit shop drawings in conformance with the requirements of the Architectural Woodwork Standards, Section 1 Submittals.
 - 2. The first page of the shop drawing shall include a Woodwork Institute certified compliance label.
 - C. Samples

1.

- 1. Submit manufacturers' laminate full range of laminate samples
- D. Quality Assurance/Control Submittals
 - Design Data, Test Reports, Certificates, Manufacturers' Instructions, Manufacturers' Field Reports, Qualification Statements
 - a. Furnish Woodwork Institute certified compliance certificate prior to delivery certifying that all materials and fabrication thereof fully meet the specified grade requirements of Woodwork Institute specification.
- E. Closeout Submittals

- 1. Furnish, after completion of installation, Woodwork Institute certified compliance certificate certifying that the installation fully meets specified grade requirements of Woodwork Institute specification.
- 1.06 QUALITY ASSURANCE
 - A. Qualifications
 - 1. Woodwork manufacturer with no less than five years of production experience similar to a specific project, whose qualifications indicate the ability to comply with the requirements of this section.
 - 2. A single manufacturer shall provide and install the work of described in this section.
 - 3. Bidders will be Woodwork Association program participants.
 - B. Regulatory Requirements
 - 1. Fire-Test-Response Characteristics
 - Plastic laminate shall comply with the following surfaceburning characteristics as determined by testing identical products per ASTM E-84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Flame-Spread Index: 25 or less
 - Smoke-Developed Index: 450 or less
 - C. Certifications
 - 1. Work shall be in accordance with the Grade or Grades specified of the Architectural Woodwork Standards.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Packing, Shipping, Handling, and Unloading

2.

- 1. Comply with Woodwork Institute Architectural Woodwork Standards, latest edition, Section 2 – Care & Storage.
- 2. Deliver materials only when the project is ready for installation and the contractor has provided a clean storage area
- B. Acceptance at Site
 - 1. Delivery of millwork shall be made only when the area of operation is enclosed, all plaster and concrete work is dry and the area broom clean.

1.08 PROJECT CONDITIONS

- A. Project Environmental Requirements
 - 1. Maintain indoor temperature and humidity within the range recommended by the Architectural Woodwork Standards for the location of the project.
- 1.09 SEQUENCING
 - A. Coordinate fabrication, delivery, and installation with the contractor and other applicable trades.
- 1.10 SCHEDULING
- 1.11 WARRANTY
- 1.12 SYSTEM STARTUP
- 1.13 OWNER'S INSTRUCTIONS
- 1.14 COMMISSIONING
- 1.15 MAINTENANCE

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Formica Corporation, 10155 Reading Road, Cincinnati, OH 45241
- 2.02 EXISTING PRODUCTS
- 2.03 MATERIALS
- 2.04 MANUFACTURED UNITS
- 2.05 EQUIPMENT
- 2.06 COMPONENTS
 - A. Veneers shall be in accordance with the Architectural Woodwork Standards requirements for its use and the grades.
 - B. Lumber shall be in accordance with the Architectural Woodwork Standards Grade specified for the product being fabricated. Moisture content shall be 6% to 12% for boards up to 2-inches nominal thickness, and shall not exceed 19% for thicker pieces.
 - D. Core shall be hardwood plywood meeting the requirements of Architectural Woodwork Standards.
 - E. Adhesives used shall be Type II Water-Resistant
- 2.07 ACCESSORIES
- 2.08 MIXES
- 2.09 FABRICATION
 - A. Laminate
 - 1. (Formica) Formica Laminate, See 3.15 Schedules
 - B. Core Material
 - 1. Exterior grade hardwood plywood with non-telegraphing gain
 - a. ¾-inch plywood bearing the APA mark of quality
 - C. Back Spashes
 - 1. Wall Mount, jobsite assembled
 - 2. Square Top, Square Splash Joint
 - 3. 4-inches high
 - D. Front Edges
 - 1. Radiused No-Drip Edge
- 2.10 FINISHES
- 2.11 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.01 INSTALLERS
- 3.02 EXAMINATION
 - A. Site Verification of Conditions
 - 1. Verify the adequacy and proper location of any required or support framing.
 - 2. Verify that mechanical, electrical, plumbing, and other building components affecting work in this section are in place.
- 3.03 PREPARATION
- 3.04 ERECTION
- 3.05 INSTALLATION
 - A. Install all work in conformace with the Architectural Woodwork Standards, latest edition.

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- B. Installation shall conform to the AWS Grade of the items being installed
- C. All work shall be secured in place, square, plumb, and level.
- D. All work abutting other building components shall be properly scribed.
- E. Mechanical fasteners used at exposed and semi-exposed surfaces, excluding installation attachment screws shall be countersunk
- F. Equipment cutouts shown on plans shall be cut by the countertop installer.
- 3.06 APPLICATION
- 3.07 CONSTRUCTION
- 3.08 REPAIR/RESTORATION
- 3.09 RE-INSTALLATION
- 3.10 FIELD QUALITY CONTROL
- 3.11 ADJUSTING
 - A. Before completion of the installation, the installer shall adjust all moving operating parts to function smoothly and correctly.
 - B. All nicks, chips, and scratches in the finish shall be filled and retouched. Damaged items that cannot be repaired shall be replaced.
- 3.12 CLEANING
 - A. Upon compleation of installation, the installer shall clean all installed items of pencil and ink marks and broom clean the area of operation, depositing debris in containers provided.
- 3.13 DEMONSTRATION
- 3.14 PROTECTION
- 3.15 SCHEDULES
 - A. Laminate
 - 1. Color/Pattern Number & Color Pattern Name: TBD
 - a. As selected by architect from manufacturer's full range of options, including premium selections
 - 2. Grade (Name/Number): TBD
 - b. As selected by architect from manufacturer's full range of options, including premium grades
 - 3. Finish (Name/Number): TBD
 - c. As selected by architect from manufacturer's full range of options, including premium finishes

END OF SECTION

Perris Union High School District

Information Technology Services



MASTER SPECIFICATION FOR DATA CABLING INFRASTRUCTURE

Prepared By: Joseph Williams, Director of Technology Revised May 22nd, 2014 **Project Overview** General Systems Overview Backbone Infrastructure Cabling for Data Horizontal Data Network Cabling General Engineering and Design Considerations **Documents Referenced** Cabling System Installation Practices Trenching **Underground Conduit** Vaults Above Ground Conduit Pull Boxes Penetrations and Conduit Bracing Equipment Room Special Design Cases - IDF to Adjacent Buildings Typical User Requirements Typical Main Distribution Facility (MDF) Typical Intermediate Distribution Facility (IDF) **Typical Classroom Typical Office** Specific Systems Requirements Backbone Infrastructure Cabling Horizontal Cabling Installation Specification Scope of Work **Requirements** Vendor Qualifications Standards **Documentation and Labeling Engineering Drawings** Warranties

Perris Union High School District

Technology General Specifications

I. Project Overview

The objective of this project is to provide data cabling infrastructure to current and future schools in the Perris Union School District, located in Perris, California. The infrastructures are designed to facilitate a data network system. The installation of communications cabling is a specialized function, which should only be performed by companies and personnel who have established credentials.

The implementation of the above system will allow for Internet access and voice communication to each classroom and office, file and print sharing at all schools, district wide email access for administration personnel, teachers, and students. The system's design will be scalable to support future expansion and increase functionality.

II. General Systems Overview

A. Backbone Infrastructure Cabling for Data

Backbone infrastructure cabling serves as a data pipeline that will connect Main Distribution Facility (MDF) to each Intermediate Distribution Facility (IDF) location. Data backbone infrastructure will consist of 18-strand hybrid 12 multi-mode fiber and 6-strand single-mode optical cable that will be terminated on fiber patch panels at each MDF/IDF location. By design, we will utilize 4 fiber-optic strands on active hardware per IDF. Refer to Section V.A for specifications.

B. Horizontal Data Network Cabling

The Data Network Cabling is also referred to as the horizontal cabling distribution. The horizontal cabling will supply a connection from an IDF to each individual workstation using Category 6 modular jack in each classroom and office. The horizontal cabling will be Category 6 cable, which will be run from a Category 6 patch panel at the IDF to individual Category 6 modular jacks.

Category 6 is the minimum requirement for all horizontal cabling. As new cabling standards are approved by EIA/TIA they will automatically become the de facto District standard.

III. General Engineering and Design Considerations

This section of the document is intended to highlight all applicable engineering standards and codes that must be taken into consideration during the design phase of all sites. The references to standards and codes will be made in general terms, since the scope of this project includes many sites with varying complexities of construction, layout, and needs. Detailed plans and code references will be made on a site-by-site basis, as designs are generated for review, and approved by the district.

Perris Union High School District requires a Berk-Tek/Leviton structured cabling system. The cabling system(s) shall be backed by a minimum 25-year factory system performance warranty between the Perris Union High School District and the cabling manufacturer. All companies bidding, submitting proposals, or engaged in any way, must provide a certificate of authorization to facilitate the warranty with all responses to Requests for Proposals, Requests for Quotation, or any other pricing method. The authorization must be in force a minimum of one (1) year prior to the beginning of any work. No site certifications shall be accepted. The companies shall provide a list of references, five (5) minimum, of work for other school districts encompassing a similar scope in which the approved system was approved for factory warranty.

A. Documents Referenced

(considered to be District accepted standard practices)

- 1. TIA/EIA-568-B.1 (TIA/EIA-568-B.1-2006) Commercial Building Telecommunications Cabling Standard – Part 1
- TIA/EIA-568-B.1-1 (TIA/EIA-568-B.1-1-2006) Commercial Building Telecommunications Cabling Standard – Part 1: General Requirements – Addendum 1 – Minimum 4-pair UTP and 4-pair ScTP Patch Cable Bend Radius
- TIA/EIA-568-B.2 (TIA/EIA-568-B.2-2006) Commercial Building Telecommunications Cabling Standard – Part 2: Balanced Twisted Pair Cabling Components
- TIA/EIA-568-B.2-1 (TIA/EIA-568-B.2-1-2006) Commercial Building Telecommunications Cabling Standard – Part 2: Balanced Twisted Pair Cabling Components – Addendum 1
- TIA/EIA-568-B.2-2 (TIA/EIA-568-B.2-2-2006)
 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted Pair Cabling Components – Addendum 2
- TIA/EIA-568-B.2-3 (TIA/EIA-568-B.2-3-2006)
 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted Pair Cabling Components – Addendum 3 – Additional Considerations for Insertion Loss and Return Loss Pass/Fail Determination
- 7. TIA/EIA-568-B.3 (TIA/EIA-568-B.3-2006) Optical Fiber Cabling Components Standard
- 8. TIA-569A (TIA-569-A-2004) Commercial Building Standard for Telecommunications Pathways and Spaces
- TIA/EIA-758 (ANSI/TIA/EIA-758-2004)
 Customer-Owned Outside Plant Telecommunications Cabling Standard
- 10. TIA/EIA-758-1 (ANSI/TIA/EIA-758-1-2004 Customer-Owned Outside Plant Telecommunications Cabling Standard -Addendum 1
- TIA/EIA-606 (ANSI/TIA/EIA-606-A-2002) Administration Standards for the Telecommunications Infrastructure of Commercial Buildings
- 12. ANSI-J-STD-607-A) Commercial Building Grounding and Bonding Requirements for Telecommunications
- TIA/EIA-854 (ANSI/TIA/EIA-854-2001)
 Full Duplex Ethernet Specification for 1000 Mbps (1000 BASE-TX) Operating over Category 6 Balanced Twisted-Pair Cabling
- 14. TIA/EIA-568-B Guidelines for Maintaining Optical Fiber Polarity through Reverse Pair Positioning
- 15. Building Industry Consulting Services International (BICSI) Telecommunications Distribution Methods Manual

B. Cabling System Installation Practices

- 1. Cable tie devices shall not be utilized at any time. Only Velcro strap devices are permitted. Velcro straps are to be utilized in the MDFs and IDFs at a maximum interval of three (3) feet.
- 2. All pull rope devices are to be replaced in all pathways for future use.
- 3. All intra-building cabling shall be routed either parallel or at right angles to the building structure and/or walls.
- 4. All innerduct shall be supported at a minimum of twelve (12) inches if running vertical and forty-eight (48) inches if running horizontal.
- 5. No cabling is to be pulled through L-bend devices. If L-bend devices are pre-existing and it is determined, at the review of the District's representative that sufficient space in the conduit is available, the contractor shall remove the L-bend cap and pull the cable to and beyond the cap, and then carefully pulled beyond the cap.
- 6. Communications cabling shall never be tied to power cables or devices, lighting systems, or co-exist in any pathway with power cabling.
- 7. Any visible damage to a cable such as kinks or bends in violation of the minimum bend radius shall render the cable segment defective and shall be removed and replaced.
- 8. All materials shall be new, unused, and delivered to job site in original manufacturer or distributor cartons or packages. No previously installed material shall be used at any time.

C. Trenching

All trenching will follow specifications in PUHSD M&O District Standards and relevant codes.

Trenching will be coordinated with District designee. Contractor will be reponsible for identification, location and protection of underground utilities in accordance with applicable code.

The trench will house underground rated non-metallic conduit, to include: fiber-optic and exterior Category 6 cables.

D. Underground Conduit

Non-metallic conduit will be used in underground applications. The conduit will adhere to all guidelines listed in NEC article 343.

- 1. Sizing: Conduit sizing will take into account the number, size, and type of cabling used and will adhere to a 40% fill ratio. Conduit sizing will be done in accordance with NEC Chapter 9, Table 4, and EIA/TIA 569, Table 5.2-1.
- 2. Bends: All conduit bends shall comply with NEC article 343-10 and 343-11, and EIA/TIA 569, Section 4.4.2.1.
- 3. Pull Cords: Fish tape or pull cords shall be placed in all installed conduit in accordance with EIA/TIA 569, Section 4.4.2.3.
- 4. Labeling: At each vault location, tag each conduit for data after cable placement. In addition, the label should include information regarding which vault the conduit is routed to and from.

E. Vaults

Vaults shall be installed where conduit branching from the main feed is provided, or when there are more than two 90-degree turns in the conduit, as specified in EIA/TIA 569, Section 9.3.2.3.6.

The vault size should be appropriate for the amount of cabling used. ALL CONDUITS SHALL ENTER VAULTS FROM THE SIDES, NOT THE BOTTOM. Underground sweeps shall be provided for fiber-optic cables.

All cabling running through or into vault shall be dressed and anchored around sides above halfway between the bottom and the top of vault lid. (e.g. if the vault is 3' deep, the cable should be secured at a minimum of 1.5' from the bottom.)

F. Above Ground Conduit

Metal conduit will be used above ground to connect to the public boxes outside of the buildings. The conduit design and installation shall adhere to NEC article 345.

- 1. Sizing: Conduit sizing will take into account the number, size, and type of cabling used and will adhere to a 40% fill ratio. Conduit sizing will be done in accordance with NEC Chapter 9, Table 4, and EIA/TIA 569, Table 5.2-1.
- 2. Grounding and Bonding: All conduit runs shall be grounded and bonded where necessary in accordance with EIA/TIA Appendix A-5.
- 3. Bends: All conduit bends shall comply with NEC article 345-10 and 345-11, and EIA/TIA 569, Section 4.4.2.1.
- 4. Pull Cords:Fish tape or pull cords shall be placed in all installed conduit in accordance with EIA/TIA 569, Section 4.4.2.3.
- 5. Corrosion Protection: Connections between the non-metallic underground conduit and the metallic above ground conduit will use sealtite transitions.

G. Pull Boxes

Pull boxes shall be provided for all buildings at the point where cabling enters the building in accordance with applicable code. The pull boxes are to be mounted onto the outside wall of the building, at an elevation of 7 feet. The pull box dimensions will be 2 ft x 2 ft x 8 inches or 12 inch x 12 inch x 4 inches. In the event that an outside mounted pull box is not practical, direct conduit penetration into the building, through the foundation will be considered. This action will require specific review and sign off by the District.

H. Penetrations and Conduit Bracing

Penetrations shall be made from the pull boxes, through walls, directly. There shall be no roof penetrations. All holes remaining after wall penetration should be sealed to conform to the existing building wall construction (i.e. stucco, wood, etc.). Additionally, all exterior conduits shall be braced vertically oriented. There shall be no horizontal runs of conduit along exterior walls and no conduit runs on roof tops, unless approved by District prior to installation. All pull boxes and conduit braces should be anchored with the proper size lag bolts to anchor systems into the wall studs. The anchoring system of all wall-mounted equipment should comply with manufacturer specification, and conform to applicable codes.

I. Equipment Room

1. Site Selection

Careful consideration is required in the selection of the ideal site for equipment placements. Site selection should comply with all provisions of TIA 569; including the following:

- a. Floor Loading: If equipment room is not on ground level or a basement, the floor support system should be designed for distribution loading greater than 250 lbf/ft², and a concentrated loading should be greater than 1000 lbf over the area of the greatest stress to be specified.
- b. Flooring: District approved Non-Static VCT flooring to be used
- c. Room Size: An allowance shall be made for non-uniform occupancy throughout the building. Provide 0.75 ft2 of equipment room space for every 100ft² of workstation space, or a minimum of 150 ft², whichever is greater.
- d. Water Infiltration: The equipment room shall be free of water infiltration.
- e. Environmental Requirements: The equipment room should be provided with temperature control equipment (HVAC) to maintain the temperature inside the room between 64-75 degrees Fahrenheit, while the equipment is operating.
- f. Power Requirements: A separate power supply serving the equipment room shall be provided and terminating at its own electrical panel.

J. Special Design Cases - IDF to Adjacent Buildings

In the event that a building with minor data needs is located nearby another building with an IDF, connectivity will be provided as if it were a horizontal run from the IDF to the adjacent building. There are some conditions that must be met: the total cable length from the IDF to the jacks in the adjacent building must be less than 90 meters, and Category 6 cable will be used. This should be done while maintaining the minimum 25-year manufacturer's warranty. Utilize outside plant rated cable when installed through outside plant rated conduit.

IV. Typical User Requirements

A. Typical Main Distribution Facility (MDF)

Each individual District site shall have one MDF location. All data cables will be terminated at the MDF location. Free standing, 7 foot, 19" four post racks will be used. A TMGB connection is required for each rack utilizing a minimum #6 AWG primary wire.

B. Typical Intermediate Distribution Facility (IDF)

Each individual building shall have one IDF location. The IDF location will be determined by the District, after considering various environmental and functional factors. Wherever possible, IDFs are to be located in non-instructional areas. Based on the IDF location the following equipment will be used:

- 1. Dedicated, secured signal room: 7' CPI QuadraRack 4-Post Frame (50120-703)
- 2. Wall-mounted in occupied area: 4' CPI CUBE-iT Plus w/ Plexiglas door 48"x24"x30" 200lbs. load rating (12419-748)
- 3. Outdoor enclosure: Rittal (888D6009)
 - 800W x 1800H x 600D
 - Texture standard front solid
 - Door 130° hinged right
 - Standard mounting panel
 - NEMA 4 solid base
 - Side panels, screw fastened outside
 - 19" rails front and rear
 - Comfort handle, lock insert-push button
 - TS system chassis
 - Cutout for NEMA Type 4X AC unit on rear door, centered in both directions
 - AC unit included
 - Sidewalls to be internally fastened
 - 8" plinth included

In special cases, a building with only minor data requirements will not be provided with its own IDF. If such buildings are less than 90 meters (total cable length) from the building with an IDF, a Category 6 cable will be used to provide connectivity from the IDF.

C. Typical Classroom

A typical classroom installation will use Category 6 cable. Cable is required to be installed in the wall unless it is impossible to do so, otherwise, a plastic molded raceway may be used, from patch panel to a wall plate. The center of the wall plate and/or raceway shall be installed not less than 18 inches above the floor or working platform, to comply with Article 210 of the Americans with Disabilities Act.

1. Classroom (8) data

a.	Locations	
	Teacher Location	4 data in single gang wall plate
	Ceiling Location #1	2 data in surface mount box above ceiling tile, centered in room
	Ceiling Location #2	2 data in surface mount box above ceiling tile above whiteboard

- b. Each outlet shall be cabled with Category 6 cables terminating to a Category 6 modular jack. Each jack will be Category 6 RJ-45 with a 110 termination using 568B wiring standards. Cable shall be rated for the environment.
- c. Each cable shall have a minimum of a 6ft service loop above each drop location and at each IDF/MDF location.
- 2. Raceways (if required and approved by District)
 - a. A non-metallic Wiremold 2300 or 5400 series raceway system shall be used for surface mount applications and screw mounted into wall studs at intervals not to exceed 3 feet. The data cabling shall occupy one channel only of the two-channel (5400 series) system.
 - b. Plastic molding shall be installed to the station outlets branching off the main cable routes or separate runs shall be installed to individual outlets as required. At no time shall the raceway fill rate exceed 40 percent.
 - c. Each raceway run shall include the appropriate ceiling fitting for the raceway size splice cover.
 - d. All elbows or turns shall meet the required bend radius for the cable being installed.

D. Typical Office

A typical office installation will use Category 6 cable. Cable is required to be installed in the wall unless it is impossible to do so, otherwise, a plastic molded raceway may be used, from patch panel to a wall plate. The center of the wall plate and/or raceway shall be installed not less than 18 inches above the floor or working platform, to comply with Article 210 of the Americans with Disabilities Act.

- 1. Principal's Office
 - a. Shall have a single gang mounted with 2 data outlets on each wall.
 - b. Each outlet shall be cabled with Category 6 cable, terminating to a Category 6 modular jack. Each jack will be a Category 6 RJ-45 with a 110 termination using 568B wiring standards.
 - c. Fill all unused faceplate ports with a blank insert matching the color of the faceplate.

- 2. Office Data drops (faculty drop)
 - a. Shall have a single gang mounted with 2 data outlets on each wall.
 - b. Each outlet shall be cabled with Category 6 cables terminating to a Category 6 modular jack. Each jack will be Category 6 RJ-45 with a 110 termination using 568B wiring standards.
 - c. Fill all unused faceplate ports with a blank insert matching the color of the faceplate.
- 3. Raceways (if required)
 - a. A non-metallic Wiremold 2300 or 5400 series raceway system shall be used for surface mount applications and screw mounted into wall studs at intervals not to exceed 3 feet. The data cabling shall occupy one channel only of the two-channel (5400 series) system.
 - b. Plastic molding shall be installed to the station outlets branching off the main cable routes or separate runs shall be installed to individual outlets as required. At no time shall the raceway fill rate exceed 40 percent.
 - c. Each raceway run shall include the appropriate ceiling fitting for the raceway size splice cover
 - d. All elbows or turns shall meet the required bend radius for the cable being installed.

V. Specific Systems Requirements

A. Backbone Infrastructure Cabling

- 1. Backbone fiber-optic Cabling: The distributed cabling architecture will require (1) 18-strand hybrid 12 multi-mode fiber and 6-strand single-mode optical cable for backbone connectivity between the MDF and each IDF.
- The optical fiber cable shall be OM4 multi-mode (50/125) 6-strand, tight buffered, capable of running 10Gbps and single-mode 6-strand, tight buffered. The cable shall have a UL rating for both indoor and outdoor use if required. Fiber cable shall meet or exceed ISO/IEC 11801:1995 and TIA/EIA-568-B.1 and B.3.
- 3. A standard 3-meter service loop shall be provided at the end of each fiber-optic cable run at termination point.
- 4. All new fiber-optic terminations shall use LC connectors with ceramic ferrules. All fibers shall have LC connections at the fiber patch panel or LIU.
- 5. A 2-meter LC to LC duplex, OM4 50/125 multi-mode, fiber-optic patch cable is to be provided for each main fiber connection at both the MDF and IDF location. A minimum of two (2) per 6 strands fiber-optic cable installed.
- 6. MDF fiber patch shall be a rack mountable multi-fiber enclosure with required brackets, panels, and related hardware to terminate multiple, fiber-optic cables. One 6-port LC duplex panel shall be installed for every 6-strands of fiber-optic cable installed.
- 7. All fiber-optic cabling is to be terminated and tested at the MDF and IDF locations. Testing shall meet or exceed TIA/EIA-568-A and TIA/EIA-568-B.1 and B.3.
- 8. All exposed fiber-optic cable shall be enclosed in inner-duct to a maximum 40 percent fill ratio

Inner-duct is not required within inter-building conduit.

- 9. All empty slots in fiber enclosures are to be fitted with blank panels.
- 10. MDF/IDF UTP Termination Equipment
 - a. The horizontal cross-connect for data circuits shall consist of patch cords from the horizontal Category 6 termination panels to the network equipment within the same or adjacent racks. Patch panels shall be 48 modular jack ports, wired to T568B, with wire management. Patch panels shall terminate the building cabling on 110-style insulation displacement connectors. Patch panels must be UL listed under file number E81956. Part numbers are:

Leviton 48-port 69586-U48

- b. A 2U horizontal cable management bracket shall be installed immediately below each patch panel.
- c. A 1U space will be left open immediately below the cable management bracket before mounting the next patch panel. This space will be reserved for installation of a 1U switch to service all ports on the patch panel immediately above the cable management bracket.
- 11. No splicing is permitted anywhere for any copper cabling.
- 12. Fiber Test Parameters
 - a. Backbone multi-mode fiber shall be bi-directionally tested at both 850nm and 1300 nm in one direction. Backbone single-mode fiber shall be tested at both 1310nm and 1550nm. Test set up and performance shall be conducted in accordance with ANSI/EIA/TIA-526-14 Standard, Method B.
 - b. Where concentrated links are installed to complete a circuit between devices, the Contractor shall test each link from end to end to ensure the performance of the system. After the link performance test has been successfully completed, all patch cords shall be installed to complete, and then the entire channel shall be tested. The evaluation criteria shall be established between Perris Union High School District and the contractor prior to the start of the test. The values for calculating loss shall be those defined in the ANSI/TIA/EIA Standard.
 - c. Attenuation testing shall be performed with a stable launch condition using two-meter jumpers to attach the test equipment to the cable plant. The light source shall be left in place after calibration and the power meter moved to the far end to take measurements.
 - d. Any fiber-optic pairs not meeting the minimum ANSI/EIA/TIA Standard specifications shall be repaired or replaced by the Contractor at the option of the District.

Typical fiber-optic Test Standards				
	Multi-mode	Single-mode		
Test Parameters	850nm and 1300nm	1310nm and 1550nm		
	50/125 micron	8.3/125 micron		
Max. Attenuation				
(dB/km)	2.6/2.0	0.70/0.70		
Minimum Bandwidth				
(MHz-km)	500-500			

- 13. The contractor shall be responsible for the successful testing of all copper and fiber-optic terminations per TIA/EIA- 568-B specifications and ANSI/EIA/TIA Standard respectfully.
 - a. The installation shall be tested to meet or exceed the TIA/EIA-568-B Channel test specifications. Any discrepancies are to be resolved prior to acceptance by the district. Testing is to ensure performance to TIA/EIA-568-B Category 6 up to 250 MHz.
 - b. Prior to the acceptance tests, an acceptance test plan is to be provided to the District for their approval. Additionally, the District management and/or appointed representatives reserve the right to witness the testing process.
 - c. All cable and termination hardware shall be 100% tested for defects in installation and to verify cable performance under installed conditions. All conductors of each installed cable shall be verified usable by the contractor prior to system acceptance. Any defect in the cable system installation including but not limited to cable, connectors, feed through couplers, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100% usable conductors in all cables installed. Twisted pair cables shall be tested using a Class II cable analyzer. All installed cabling shall be 100% tested and certified.
 - d. Test documentation shall be provided as an electronic file within three weeks after the completion of the project. The electronic documents shall be clearly marked with the words "Test Results," project name, and date of completion (month and year). The electronic document shall be divided by major heading tabs, Horizontal and Backbone.
- 14. At the District's direction, the contractor will perform additional random testing which shall consist of a random sample of up to 10% of each installed distribution system. The contractor shall assume responsibility for providing proper test equipment and staff to conduct tests. The District representative reserves the right to witness any or all tests performed.
- 15. Should the initial 10% test not be 100% successful (all drops testing over Category 6 up to 250 MHz), the Contractor shall assume responsibility to repair/replace non-passing links, at the discretion of the District, and the links re-verified and resubmitted. A 20% random sample shall then be conducted to ensure proper performance of the system.
- 16. Should there be a failure in this re-test, the vendor shall be responsible to repeat the re-test procedure until such time as all cabling is verified.
- 17. At project completion, contractor must provide accurate drawings to scale in CAD format.

B. Horizontal Cabling

- 1. Workstation wiring will be Category 6, 4-pair, 23 AWG, UTP cable [Blue] as defined in EIA/TIA 568-B Draft 11 CMP or CMR depending upon the environment.
 - a. Acceptable products shall meet or exceed EIA/TIA 568B Draft 11, certified Category 6. Part numbers are:

Manufacturer	CMR	СМР
Berk-Tek	10136339	10136226

- Buildings/locations served will utilize a network of false-ceiling bundle, surface-mount raceways, and/or conduit (underground, overhead) for all data related cable installation as per drawings. The Contractor is to confirm that the installation will adhere to all applicable building and fire codes including NEC and UL Listings.
- 3. All distribution horizontal Category 6 cables shall be terminated at the appropriate number of rack mounted Category 6 patch panels.
- 4. Category 6 patch cords and drop cords shall be provided. One (1) 1-meter cord for the MDF/IDF and a (1) 3-meter cord for each outlet jack port. Part numbers are:

Leviton 62460-3L (1m), 62460-10L (3m)

In instances where longer cords are required, the contractor is to clarify the requirement with the District before installing or provided any longer cords.

- 5. A standard 12-inch service loop shall be provided at the end (IDF) of each UTP cable run.
- 6. In plenum return locations, any required cabling that is not completely installed in conduit shall be plenum rated.
- 7. All inter-building cabling shall be duct rated (voice tie cable, backbone and backbone extension fiber-optic, not including horizontal fiber).
- The cable routing to all work locations will be above false-ceilings, in crawl space access, in existing interior or exterior conduit, conduit risers, and/or in surface mounted raceway systems. No cabling shall be exposed except for patch cables between fiber patch, wiring termination equipment and active hardware.
- All horizontal distribution cable shall be installed in one continuous segment from the IDF to the wall plate (home run). No splicing or consolidation points are permitted unless pre-approved by the District.
- 10. All cable that must be surface-mounted must run at right angles to the walls and ceiling, emanating from a central run from the IDF.
- 11. All surface mount raceways must be screw-mounted to wall studs at intervals not to exceed 3 feet.
- 12. All cable installed above false ceilings must emanate from the IDF in one bundled group and cable tied to suspension wires so as not to lay on top of ceiling tiles, wiring, ducting, electrical conduit, lighting fixtures or other equipment existing above the false ceiling. All cabling not in conduit shall be supported by J-hook hardware at maximum 5-foot intervals. Velcro straps shall secure the cable bundle at intervals not to exceed 5 feet.
- 13. All cable installed below floors and in crawl spaces must emanate from the IDF or locking

cabinet in one bundled group, Velcro strapped mounted onto floor joists using wire saddle-type accessories at intervals not to exceed 5 feet.

- 14. Following is the standard for all workstation terminations:
 - a. Outlets with one or two terminations will use single-gang, dual-port face plates. Outlets with three or four terminations will use single-gang, four-port face plates. Specific part numbers will be determined by the District based on the requirements of the project.
 - b. All unused ports will be filled with blank inserts.
 - c. The 568B wiring method shall be adhered to for all terminations.
- 15. UTP Test Parameters
 - a. All cabling continuity, opens, breaks, shorts, and grounds.
 - b. Near-end cross talk (NEXT), impedance, capacitance, and resistance.

	Attenuation	Power Sum
Frequency	dB/1000'	Near-End Crosstalk (dB)
	(Worst Pair)	(Worst Pair)
250mhz	67	32.7

Minimum Cable Performance Standards

Impedance	100 ohms +/- 25 ohms at 200-250mhz	
Delay Skew	25 max ns/100m maximum	
DC Resistance	9.38 ohms/100m maximum	
Attenuation	32.8 db/100m maximum at 20dg C	
PS-ACR	3.5 db/100m minimum	
PS-NEXT	36.3 db/100m at 250mhz	

VI. Installation Specification

A. Scope of Work

- 1. As it is not practical to enumerate in these specifications all details of fittings and accessory equipment required for proper operation of the system herein described, it is understood that they will be supplied by the Contractor in accordance with manufacturers' installation standards, without extra compensation.
- 2. All MDF/IDF UTP and multi-pair cable runs will be secured with appropriate wire management systems.
- 3. Contractor to coordinate locations of all components with other trades and electrical systems prior to installation to avoid conflicts.
- 4. The documentation detailing the scope of work must include all labor and materials necessary

for the installation of a fiber-optic and copper cable plant data distribution system at Perris Union High School District. The quote must provide a detailed cost breakdown for materials and labor. Data system includes:

- Workstation outlets
- Horizontal wire distribution (link)
- Tight-buffer fiber-optic cable
- Copper and fiber-optic termination
- Raceway installation
- Acceptance testing
- Documentation and labeling

B. Requirements

Throughout this document, the terms "contractor" and "vendor" are often used. Unless indicated, these terms are interchangeable. Following is a brief description of vendor/contractor responsibilities with respect to cable installations. The installing contractor shall:

- 1. Provide equipment and labor to render the cabling system complete and operable for all outlet locations, as specified within this document and related architectural and engineering plans.
- 2. Roof penetrations are not allowed under any circumstances. Additionally, there shall be no conduit runs on rooftops, or horizontally along exterior walls without prior District authorization.
- 3. Incorporate the horizontal distribution systems described in these specifications and illustrated in drawings (if available).
- 4. Provide hardware and cable dressing to be consistent with layout and appearance as directed by these specifications.
- 5. Coordinate current construction schedules to be provided by the District.
- 6. Coordinate with other trades, ensuring that installed cable and equipment is not damaged by other construction activity.
- 7. The District reserves the right to issue other contracts in connection with the installation of the system, and the vendor shall afford any such vendors reasonable opportunity for the installation and execution of their work, and shall properly connect and coordinate its work with theirs as required.
- 8. The contractor shall bear the costs of all shipping to the site and of all unusual storage requirements, make appropriate arrangements, and coordinate with authorized personnel at the site, for the proper acceptance, handling, protection, and storage of equipment so delivered.
- 9. Upon completion of above tests for all installed cabling and wiring, contractor is to submit machine readable files presenting test results, including numerical values, where applicable, for all measurements for review prior to demonstration and final acceptance testing.
- 10. With the above report, submit written certification that the installation conforms to specifications, is complete, and is ready for inspection testing.

C. Vendor Qualifications

The designated wire and cabling contractor shall maintain and have available for inspection:

1. A valid California C-7, low-voltage contractors license.

- 2. Appropriate liability and workers compensation insurance.
- Certification from appropriate manufacturers ensuring the qualifications of the contractor's installation team for 110-style termination hardware, surface mounted multi-channel raceway systems, copper horizontal distribution systems, fiber-optic cable and fiber-optic cable terminations.
- 4. Specialized equipment and materials shall be provided by an authorized factory distribution to ensure proper specification adherence, final connection, test, turnover, warranty compliance, and service.
- 5. The supplier shall maintain sufficient stock on hand and have a fully equipped service organization capable of guaranteeing an agreed upon response time to service completed systems.
- 6. A fingerprint check must be provided for all personnel working on school sites, performed by the Department of Justice, pursuant to California Education Code Section 45125.1.

D. Standards

The installing contractor shall adhere to all building, regulatory, equipment vendor, and Perris Union High School District standards applicable to the project. These standards are to include, but not limited to, the following:

- 1. Except as modified by governing codes and by the Contract Documents, the contractor shall comply with applicable provisions and recommendation of the following:
 - a. The cabling and components will carry Underwriters Laboratory (UL) Listing, and be appropriately classified for all installations.
 - b. National Electric Code (NEC) for 2005 and the municipal code of Riverside County and/or Menifee, depending on location.
 - c. Apply for and acquire all required permits and inspections from regulatory agencies.
- 2. Work shall be performed in accordance with all applicable requirements of all governing codes, rules, and regulations including the following minimum standards, whether statutory or not:
 - Uniform Building Code (UBC)
 - National Electric Code (NEC)
 - National Fire Protection Association (NFPA)
 - City, State, and other codes and requirements
- 3. All equipment must be registered with the FCC and approved for direct access to the line connections of the public Telephone Company
- 4. All equipment must be listed by Underwriters Laboratories or a nationally recognized testing laboratory empowered by the United States Occupational Safety and Health Administration to issue listing names that are equal to UL.
- 5. Fixed wall terminations shall be a modular universal application RJ-45 type, accepting most phone and data plugs.
- 6. Surface-mount wall terminations shall be a universal application RJ-45 type, housed in a dual or

quad outlet attached to plastic railway system.

- 7. Splicing of fiber or copper is not permitted between MDF and IDF, or between and IDF and workstation connection. Any cabling used should never be spliced.
- 8. The installing Contractor shall provide hardware, cable dressing, and wire management systems to be consistent with layout and appearance to acceptable communications industry standards for a "neat" installation without causing undue stress on all cabling.
- 9. Dress all cables with Velcro straps. Cable ties are not allowed.

E. Documentation and Labeling

- 1. All cables, outlets, and terminations shall be machine labeled and designated as specified below:
 - a. The format for the outlet labeling will correspond to the switchport that the drop will be connected to. The outlet wall plate will also be labeled with the IDF room number that services the location, centered at the top. Individual outlet numbering will be left to right across the top row, continuing left to right on the next row and so on. Reference Exhibit #1 in Appendix A.
 - b. IDF naming begins at 1 and increases consecutively. IDF must contain a label on the fiber patch panel/LIU indicating the IDF number. UTP Patch panels in IDF are labeled with the same number as the switchport blade they will patch into. UTP Patch panel connecters will be labelled with their corresponding room number. If a room number does not exist, contractor will obtain a location designation from the District. Reference Exhibit #2 & #3 in Appendix A.

F. Engineering Drawings

As a condition of acceptance of the cabling system, the contractor shall provide the following:

- Three copies of red-line markups are to be provided on clean prints of scale drawings on 11" x 17" paper. The Contractor is to provide "cable run lists" in a format that clearly identifies and labels each cable run, the terminating locations, the type of cable, and the type and number of conductors in each cable in the run. The drawings should include building labeling that match the actual names of the building(s).
- 2. Site drawings in electronic format. All drawings shall be engineered and drawn to scale on a vector/raster based CAD system.Drawings must include the following:
 - a. Complete floor plans, at scale of contract documents, showing the locations throughout the project of all receptacles, conduits, wire-ways, tray, pull boxes, junction boxes, and equipment racks.
 - b. Complete system riser diagrams, showing all elevations, room numbers, conduit sizes, types and fills, box sizes and types, devices, equipment and rack designations.
 - c. Complete scales (1" 1") equipment rack elevation drawings, including equipment designation, manufacturer's name, model number.
 - d. Run sheets of field wiring drawings: clearly show at each terminal point, the type of connector to be used and include typical wiring details of each connector. Note where shields are connected and where they will float to ensure the integrity of the grounding

system. Call out wire types and color code where appropriate.

3. Installation and instruction manuals will be supplied as a condition of acceptance of the distribution cabling system. One complete hard copy will be delivered to Technology Services. This manual must provide service information, test procedures, inter-cabling diagrams, and parts lists. The manual must contain "as built" schematic wiring diagrams for data distribution, including the termination labeling (jack numbers) and corresponding termination location identification within the MDF and any IDF locations. This shall be provided electronically as a matrix in Excel format. The labeling information should also be pasted onto the site maps.

G. Warranties

- 1. The Contractor facilitates a manufacturer's warranty on the cable plant system, in writing, against defects in workmanship and material for a minimum of twenty-five years after final acceptance or from the date of first usage of the work by Owner personnel. The warranty must also include a system warranty for performance specifications to meet or exceed the industry accepted standards at the time of installation. The warranty shall include all future applications that are designed to operate on a 200mhz platform. The first usage date shall be agreed to be in writing by the owner and contractor within five (5) working days of first usage. During this time, the entire system must be kept in proper operating condition at no additional labor or material cost to the District
- 2. The manufacturer of the major components will maintain a replacement parts department and provide test equipment when needed. A complete parts department will be located in a geographical proximity consistent with rendering service within the stated agreement.
- 3. Potential end-user actions, which may void the warranty, shall be identified and submitted for District's approval prior to start of installation.