PROJECT MANUAL

including

SPECIFICATIONS

Tri-City Medical Center
Decontamination Sink
4002 Vista Way
Oceanside, California 92056

HCAI No. S222032-37-00

Bid Specs - 2/6/23

Prepared by

Sfeir Architects
5151 Shoreham Place., Suite 265
San Diego, California 92122

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PROJECT DIRECTORY

Project	**Tri-City Medical Center** 4002 Vista Way Oceanside, California 92056
Architect	**Sfeir Architects** 5151 Shoreham Place, Suite 100 San Diego, California 92122 Tel. (619) 299-3917
Structural Engineer	**Sun Structural Engineering** 2091 Las Palmas, Suite D Carlsbad, California 92011 Tel. (760) 438-1188
Mechanical Engineer	**P2S Engineering** 9665 Chesapeake, Suite 230 San Diego, California 92123
Plumbing Engineer	**P2S Engineering** 9665 Chesapeake, Suite 230 San Diego, California 92123
Electrical Engineer	**P2S Engineering** 9665 Chesapeake, Suite 230 San Diego, California 92123

END OF DOCUMENT

Signature and Approvals
for
Tri-City Medical Center
Decontamination Sink
Oceanside, California

ARCHITECT
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STRUCTURAL
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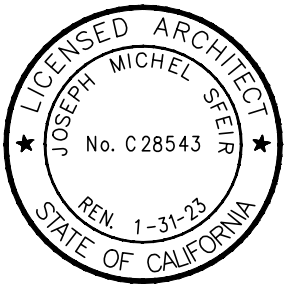
End of Section



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38-001 – 09/26/2019

Section 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY OF THE WORK:

1.1.1 The Work under this Contract necessary for and incidental to the execution and completion of all Work indicated in the Contract Documents for construction of:

Tri-City Medical Center – Decontamination Skin
4002 Vista Way
Oceanside, California 92056

1.1.2 Contract Documents prepared by:

Sfeir Architecture
5151 Shoreham Place, Suite 265
San Diego, California 92122

1.2 GENERAL DESCRIPTION OF WORK:

1.2.1 Installation of new decontamination sink, and sonic cleaner. The intent is to reconstruct the hospital building in accordance with 2016 CBSC. The Decontamination Room is approximately 722 sq. ft. Project also includes related Mechanical, Electrical, and Plumbing work.

1.2.2 The Work of this Section includes the furnishing of all labor, materials, services and transportation, except as specifically excluded, which is required for the completion of the Project in accordance with the requirements of the Contract Documents.

1.2.3 The work will be done in two phases:

.1 Phase one:

a. Furr out existing wall. Install new wall with electrical, water, drain and compressed air lines for new sink.
b. Protect back wall with C/S Acrovyn Wall Protection.
c. Install new decontamination sink with faucets, RO water outlet, and compressed air. Anchor to floor.

.2 Phase two:

a. Install temporary sonic cleaner.
b. Replace existing corroded 2” waste line with new 2” waste line. Connect existing to new.

c. Furr out existing wall. Install new wall with electrical, water, and drain for existing sonic cleaner and future new sonic cleaner.
d. Reinstall existing sonic cleaner. Anchor to floor.
e. Patch floor, ceiling, and wall finishes.
f. Refer to Section 02 22 20 Demolition for Remodeling.

1.3 REQUIREMENTS OF REGULATORY AGENCIES:

1.3.1 Construction shall be in conformance with the California Code of Regulations (CCR), as follows:

.1 California Code of Regulations Title 19.

.2 California Code of Regulations Title 22.

.3 California Code of Regulations Title 24

.4 NFPA 13 – Installation of Sprinkler Systems, 2016.

.5 NFPA 72 – Fire Alarm Systems, 2016.

.6 NFPA 99 – Health Care Facilities, 2016.

.7 2016 California Building Standards Administrative Code, Part 1, Title 24 C.C.R.

.8 2016 California Building Code (CBC), Part 2, Title 24 C.C.R.

.9 2016 California Electrical Code (CEC), Part 3, Title 24 C.C.R.

.10 2016 California Mechanical Code (CMC), Part 4, Title 24 C.C.R.

.11 2016 California Plumbing Code (CPC), Part 5, Title 24 C.C.R.

.12 2016 California Fire Code (CFC), Part 9, Title 24 C.C.R.

1.3.2 A copy of CCR Title 24 Parts 1 and 2 shall be kept at the Project site during construction.

1.3.3 Accessibility Requirements: Comply with 2016 California Building Code (CBC). Construction shall be in conformance with the ADA Accessibility Guidelines for Buildings and Facilities, dated June 26, 1991 as amended April 5, 1993 and January 18, 1994, and July 2004.

1.4 REGULATORY AGENCIES:

1.4.1 California Office of Statewide Health Planning and Development (OSHPD)

1.5 OCCUPATIONAL SAFETY AND HEALTH ACT REQUIREMENTS:

1.5.1 During the entire construction period, it shall be the responsibility of the Contractor to maintain conditions at the Project site so as to meet in all respects the requirements of the California Code of Regulations, Title 8, Industrial Relations, Chapter 4, Div. of Industrial Safety.

1.5.2 Asbestos Free Materials: Materials containing asbestos will not be permitted to be used. Comply with requirements of the Environmental Protection Agency (EPA), 16 CFR 1305 dated 1978, and other governmental agencies having jurisdiction.

1.5.3 Owner's "Construction Guide" must be followed.

1.6 CONFLICTS:

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

1.7 COORDINATION OF PHYSICAL SPACE:

1.7.1 Coordinate use of physical space and sequence of installation of mechanical work, specifically ductwork, electrical work, and plumbing which is indicated diagrammatically on the Drawings. Follow routing indicated as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Coordinate work of the various trades to assure efficient and orderly utilization of space available.

1.7.2 The Contractor's attention is directed to the need of special coordination and efficient use of the available physical space between the top of ceiling framing and bottom of the roof framing on all buildings.

1.7.3 In finished areas, except as indicated otherwise, conceal pipes, ducts, and conduits in the construction. Coordinate location of fixtures and outlets with finish elements.

1.8 COORDINATION WITH STRUCTURAL REQUIREMENTS:

1.8.1 The placement of pipes, conduits, other materials, and the location, size and reinforcement of holes in the building structure shall conform to the structural Drawings and Specifications. When the requirements of the Mechanical, Electrical or other sections of the Specifications or Drawings are in conflict with the structural requirements, the structural requirements shall take precedence. Where the safety of the building structure is threatened, due to mechanical, electrical or other work or holes required for such work, modifications shall be made as directed by the Architect.

1.8.2 It is the Contractor's responsibility to coordinate the Work so as to minimize conflicts and optimize efficiency.

1.9 COORDINATION OF SITE UTILITIES AND FACILITIES

1.9.1 Civil Engineering Work, including survey for utility lines and drainage in the Scope of Work area will be included in Contractor's Bid.

1.9.2 Coordinate the work and sequence of installation of the various utilities and facilities. Coordinate connection of utility systems with public agencies and other trades. Comply with requirements of governing agencies and regulations. Notify Architect of any conflict and make modifications as directed by Architect.

1.10 WORK INDICATED AS NIC:

1.10.1 The term "NIC" shall be construed to mean that construction work not to be furnished, installed or performed by the Contractor. The term shall mean "Not in this Contract" or "Not a Part of the Work to be performed by the Contractor" except that coordination and installation of certain NIC items specified shall be the Contractor's responsibility.

1.10.2 "NIC" work is indicated on the Drawings and specified herein as an aid to the Contractor in scheduling the amount of time and materials necessary for the completion of the Contract.

1.11 OWNER-FURNISHED CONTRACTOR-INSTALLED PRODUCTS:

1.11.1 Owner's Responsibilities: The Owner will arrange and pay for product delivery to the site in accordance with the construction schedule. The Owner and the Contractor shall jointly inspect the deliveries for shortages and damaged or defective items. The Owner will arrange for replacement of damaged, defective or missing items.

1.11.2 Contractor's Responsibilities: The Contractor shall unload, uncrate, and store the products at the site and shall protect them from exposure to the elements and other damage. Items damaged after acceptance by the Contractor shall be replaced at the Contractor's expense. The products shall be installed, connected, adjusted and finished in accordance with the applicable section of these Specifications.

1.12 CONTRACTOR'S USE OF THE PREMISES:

1.12.1 The Contractor shall limit his use of the premises for construction activities and for storage, to allow for Owner occupancy or for construction activities by other contractors.

1.12.2 The Contractor shall be responsible for the following:

.1 Coordinate the use of the premises under the direction of the Owner.

.2 Assume full responsibility for the protection and safekeeping of products under this Contract which are stored at the site.

.3 Move stored products that are under the Contractor's control, which interfere with operations of the Owner or the other contractors.

.4 Obtain and pay for the use of additional storage or construction areas needed for operations.

.5 The Contractor shall make provisions to insure the security of the building.

1.13 OWNER OCCUPANCY:

1.13.1 The Owner will occupy the premises during the entire period of construction for the conduct of his normal operations. Cooperate with the Owner in all construction operations including the following to minimize conflict and to facilitate Owner usage.

1.13.2 If and when it should be necessary for the Contractor to impact the day-to-day operations of Owner's functions in order to pursue the Work, the Contractor shall furnish adequate (at least two (2) weeks and depending on the impact more time may be needed) notice to the Owner and coordinate the means and timing to avoid, minimize, or circumvent such impacts. The Owner reserves the right to assess and anticipate such impacts and the right to stop or postpone the Work until a mutually satisfactory time and means can be agreed upon. Costs incurred due to delays caused by such impacts on Owner's functions will be negotiated at the time of the occurrence of such delay. Typical impacts shall include, but not be limited to, the following:

.1 Interruption of utility service serving the existing buildings, areas, or functions.

.2 Blockage of or inhibiting access to existing entry, exit, dock, delivery or pickup point, driveway, fire hydrant. Particular care shall be taken to maintain access for delivery of supplies, entry and egress of visitors and employees.

.3 Noise, dust, dirt, water, fumes or other objectionable, hazardous, or disruptive conditions.

.4 Interruption of heating, air conditioning, and ventilating systems.

.5 Interruption of internal systems such as gas supplies, communications, fire sprinklers, fire alarms, internal deliveries, elevators, other systems.

1.14 DIVISION AND IDENTIFICATION OF DRAWINGS AND SPECIFICATIONS:

The drawings and specifications are divided in sections and titled, as set forth in the drawing sheet index and the specification table of contents, for convenience of ready reference only, and the Contractor shall not construe such as establishing the scope of work of the various trades. The Contractor shall be responsible for dividing the work among his various subcontractors. The Architect assumes no responsibility to act as arbiter to establish subcontract limits of work. The Contractor shall be responsible for providing items, devices or parts of work regardless of where they are indicated in the drawings or specifications.

END OF SECTION

38-001 – 05/15/2019

Section 01 11 15

REQUESTS FOR INFORMATION

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Procedures for requesting information other than that shown in the Contract Documents, and discusses conditions under which such requests will be considered.

1.2 RELATED WORK:

1.2.1 Related Work Specified Elsewhere:

.1 Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and other Sections in Division 1 of these Specifications.

1.3 REQUESTS FOR INFORMATION:

1.3.1 Assumption of Prior Knowledge:

.1 Instructions to Bidders for this Work state requirements that, prior to submitting a bid, bidders become thoroughly familiar with the proposed Contract Documents, and that they request and secure clarification of all matters on which there may be any question as to design intent.

.2 Reasons for these requirements include the Owner's wish:

a. That bidders have complete and adequate knowledge of the proposed Work in order to propose a fair and proper bid price;

b. To avoid unnecessary time-consuming and effort-consuming requests for information during progress of the work; and

c. To discourage frivolous requests for information while encouraging acquisition of complete familiarity with the Drawings, Specifications, and other Documents of the Contract.

1.3.2 However, the Owner and the Architect recognize that data may inadvertently have been omitted from the Contract Documents or require clarification of alleged conflict of data, and the following procedures are established for requesting such data.

1.3.3 Procedures:

.1 Prior to requesting information, conduct a thorough search of the Contract Documents and determine that the information is apparently missing from the Contract Documents or requires clarification of an alleged conflict of data.

.2 Fill out a photocopy of the “Request for Information” form which follows this Section, and deliver it to the Architect.

.3 The Architect will conduct the necessary search.

.4 Within 14 calendar days, the Architect will respond to the Request for Information.

a. Should the information be missing, or require clarification, the Architect will respond by giving the proper information to the Contractor.

b. Should the information already be clearly shown in the Contract Documents, the Architect will so advise the Contractor by stating the location of the requested information and the Owner may deduct the sum of One Hundred Dollars ($100.00) from the Contract Sum, not as a penalty but as reimbursement for the Architect’s time and effort devoted to research and handling.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

38-001 – 04/15/2019

Section 01 11 17

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Make such changes in the Work, in the Contract Sum, in the CONTRACT TIME of Completion, or any combination thereof, as are described in written Change Orders signed by the Owner and the Architect and issued after execution of the Contract, in accordance with the provisions of this Section.

1.2 RELATED WORK:

1.2.1 Related Work Specified Elsewhere:

.1 Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

.2 Changes in the work are described further in the General Conditions.

.3 Architect's Supplemental Instructions:

a. From time to time during progress of the Work, the Architect may issue supplemental instructions which interpret the Contract Documents or order minor changes in the Work without change in Contract Sum or Contract Time.

b. Should the Contractor consider that a change in Contract Sum or Contract Time is required, he shall submit an itemized proposal to the Architect immediately and before proceeding with the Work. If the proposal is found to be satisfactory and in proper order, the supplemental instructions in that event will be superseded by a Change Order.

.4 Proposal Requests:

a. From time to time during progress of the Work the Architect may issue a proposal request for an itemized quotation for changes in the Contract Sum and/or Contract Time incidental to proposed modifications to the Contract Documents.

b. This will not be a Change Order, and will not be a direction to proceed with the changes described therein.

1.3 QUALITY ASSURANCE:

1.3.1 Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Change Order data.

1.4 DELIVERY, STORAGE, AND HANDLING:

1.4.1 Maintain a "Register of Proposal Requests, Supplemental Instructions, and Change Orders" at the job site, accurately reflecting current status of all pertinent data.

1.4.2 Make the Register available to the Architect for review at his request.

1.5 PROCESSING PROPOSAL REQUESTS:

1.5.1 Make written reply to the Architect in response to each proposal request.

.1 State proposed change in the Contract Sum, if any.

.2 State proposed change in the Contract Time of Completion, if any.

.3 Clearly describe other changes in the Work, if any, required by the proposed change or desirable therewith.

.4 Include full back-up data such as subcontractor's letter of proposal or similar information.

.5 Submit this response in single copy.

1.5.2 When cost or credit for the change has been agreed upon by the Owner and the Contractor, or the Owner has directed that cost or credit be determined in accordance with provisions of the General Conditions, the Architect will issue a Change Order to the Contractor.

1.6 PROCESSING CHANGE ORDERS:

1.6.1 Change Orders will be numbered in sequence, and dated.

.1 The Change Order will describe the change or changes, will refer to the proposal requests or supplemental instructions involved, and will be signed by the Owner and the Architect.

.2 The Architect will issue four (4) copies of each Change Order to the Contractor.

a. The Contractor promptly shall sign all four (4) copies and return three (3) copies to the Architect.

b. The Architect will retain one signed copy in his file, will forward one signed copy to the Owner, and will forward one signed copy to the Lender.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

38-001 – 04/15/2019

Section 01 29 00

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 SCHEDULE OF VALUES:

1.1.1 Coordinate preparation of the Schedule of Values with the Contractor's Construction Schedule.

1.1.2 Correlate line items in the Schedule of Values with other schedules and forms, including:

.1 Contractor's Construction Schedule

.2 Application for Payment Form

.3 List of Subcontractors

.4 List of Products

.5 Schedule of Submittals

1.1.3 Submit the Schedule of Values to the Architect at the earliest date, but no later than 7 days before the date scheduled for submittal of the initial Application for Payment.

1.1.4 Format and Content: Use the Project Manual Table of Contents as a guide to establish the format.

.1 Identification: Include the following identification:

a. Project name and location
b. Name of the Architect
c. Project number
d. Contractor's name and address
e. Date of submittal

.2 Arrange the Schedule in tabular form with columns to indicate the following for each item:

a. Generic name
b. Related Specification Section
c. Change Orders (numbers) that have affected value
d. Dollar value
e. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

.3 Break Contract Sum down in enough detail to facilitate evaluation of Applications for Payment. Break subcontract amounts down into several line items. Round amounts off to the nearest dollar; the total shall equal the Contract Sum.

.4 Show line items for indirect costs, and margins on costs, to extent that such items will be listed individually in Application for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including total cost and share of overhead and profit.

a. Temporary facilities and items that are not direct cost of Work-in-Place may be shown as separate line items or distributed as general overhead expense.

b. Update and resubmit the schedule when Change Orders or Construction Change Directives change the Contract Sum.

1.2 APPLICATIONS FOR PAYMENT:

1.2.1 Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

1.2.2 Payment Application Times: Payment dates are indicated in the Agreement. The period covered by each application is the period indicated.

1.2.3 Payment Application Forms: Use the form provide by the Architect.

1.2.4 Application Preparation: Complete every entry, including notarization and execution by person authorized to sign on behalf of the Owner. Incomplete applications will be returned without action.

.1 Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revision have been made.

.2 Include amount of Change Orders and Construction Change Directives issued prior to the last day of the period covered by the application.

1.2.5 Transmittal: Submit 6 executed copies of each application to the Architect within 24 hours.

.1 Transmit each copy with a transmittal listing attachments, and recording information related to the application.

1.3 INITIAL APPLICATION FOR PAYMENT:

Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include:

.1 List of subcontractors
.2 Schedule of Values
.3 Contractor's Construction Schedule (preliminary if not final).

.4 Submittal Schedule (preliminary if not final).
.5 List of Contractor's staff assignments.

1.4 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION:

Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions. Administrative actions and submittals that precede or coincide with this application include:

.1 Warranties and maintenance agreements
.2 Test/adjust/balance records
.3 Maintenance instructions
.4 Meter readings
.5 Change-over information related to Owner's occupancy
.6 Final cleaning

1.5 FINAL PAYMENT APPLICATION:

Administrative actions and submittals which must precede or coincide with submittal of the final payment application include:

.1 Completion of project closeout requirements.
.2 Completion of items specified for completion after Substantial Completion.
.3 Transmittal of required project construction records to Architect.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

38-001 – 04/15/2019

Section 01 31 20

PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Requirements for preconstruction meeting, progress meetings, specially called meetings, and post-construction meeting.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 CONTRACTOR'S RESPONSIBILITIES:

1.2.1 Contractor or Contractor's Representative and Job Superintendent must attend all site meetings. Architect/Designer to determine time and location, prepare agenda, notify participants, and make physical arrangements for all site meetings. The agenda will follow format specified in paragraph 1.4.3.

1.2.2 Contractor will record meeting minutes, to include significant proceedings and decisions. Contractor will reproduce and distribute copies of minutes to all attendees within 5 days after each meeting. In addition, Contractor will communicate with all parties affected by the decisions made during these meetings. Contractor is responsible for ensuring that all directives regarding work to be accomplished, deadlines, delivery of materials, workmanship, etc. are communicated to the appropriate persons.

1.3 PRE-CONSTRUCTION MEETING:

1.3.1 Before issuance of notice to proceed, a pre-construction meeting will be held at a time and location designated by the Architect/Designer.

1.3.2 Attendance: The meeting shall be attended by the Owner's representative, the Architect/Designer and his professional consultants, the Contractor and his superintendent, all major subcontractors and other persons designated by the Owner.

1.3.3 Agenda: The agenda for the meeting shall include the following items as a minimum.

.1 Distribution and discussion of the construction schedule including critical construction sequencing.

.2 Designation of persons authorized to represent and sign documents for the Owner, Architect/Designer and Contractor, with examples of official signature of each.

.3 Procedures and forms for processing submittals, field decisions, proposal requests, change orders, applications for payment, and revised construction schedules.

.4 Procedures for maintaining record documents.

.5 Contractor's use of premises including location of office, construction and storage areas.

.6 Temporary barricades, utilities, sanitary facilities, signs and other temporary facilities required.

.7 Safety and first aid procedures including designation of Contractors safety officer.

.8 Security procedures.

.9 Housekeeping procedures.

.10 Communication procedures between parties.

.11 List names, addresses and telephone numbers of those persons authorized to act for the Contractor in emergencies.

.12 Construction permit requirements, procedures and posting.

.13 Testing laboratory or agency and testing procedures.

.14 Establish schedule for progress meetings.

.15 Other administrative items as appropriate.

1.4 PROGRESS MEETINGS:

1.4.1 Progress meetings shall be held at the dates and times scheduled at the preconstruction meeting unless changes are agreed to by all parties and appropriate notification of such changes has been given.

1.4.2 Attendance: The meeting shall be attended by the Architect/Designer, the Contractor's superintendent and the Owner's representative. When requested by the Owner, the Architect/Designer or the Contractor; subcontractors, and the Architect/Designer's consultants shall also attend.

1.4.3 Agenda: The agenda for these meetings shall include the following items.

.1 Review progress of construction since the previous meeting.

.2 Discuss field observations, problems and conflicts.

.3 Identify problems which impede planned progress and develop corrective measures as required to regain the projected schedule. Revise the construction schedule if necessary.

.4 Plan progress during the next construction period.

.5 Coordinate the progress of subcontractors.

.6 Review changes proposed by the Owner for their effect on the construction schedule and completion time.

1.5 SPECIAL MEETINGS:

Upon appropriate notice to other parties, special meetings may be called by the Owner, Architect/Designer or Contractor, at times agreed to by all parties involved.

1.6 POST-CONSTRUCTION CONFERENCE:

A post-construction conference shall be held before final inspection of the Work to discuss and resolve all unsettled matters. Bonds and insurance to remain in force, and the other documents required to be submitted by the Contractor will be reviewed and all deficiencies determined. Schedules and procedures for the final inspection process and for the correction of defects and deficiencies shall be discussed and agreed.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

38-001 – 04/15/2019

PROGRESS SCHEDULES AND REPORTS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Preparation and submission of progress schedule, submittal schedule, and schedule of values, including the up-to-date maintenance of these schedules as required.

1.1.2 Related Documents:

.1 Time of completion: The Agreement.

.2 Construction phasing requirements: Section 01 11 00.

.3 Submittal procedures for requests for payment: Section 01 29 00.

.4 Submittal procedures for shop drawings, product data and samples: Section 01 33 40.

1.2 CONSTRUCTION SCHEDULE:

1.2.1 Immediately upon being awarded the Contract and before request for first partial payment, the Contractor shall prepare and submit to the Architect a construction progress schedule.

.1 The schedule shall be prepared in fully developed, horizontal bar chart form with continuous vertical lines to identify the first working day of each week. Provide a separate time bar for each significant construction activity. Use the same breakdown of construction activities as used in preparing the Schedule of Values. Within each time bar, show estimated dates for beginning and completion and percent of completion in 10 percent increments. As Work progresses, place a contrasting mark in each bar to show actual completion.

.2 As an option to the bar chart form, the Contractor may prepare and submit the progress schedule using the critical path method (CPM), or other computer assisted method affording similar and equivalent information and control.

.3 The schedule shall conform to the working time and time of completion established under the terms of the Contract and shall be subject to modification by and approval of the Owner.

1.2.2 When, in the Architect's opinion, it becomes necessary to accelerate the Work, modify the schedule to show the effects of the acceleration.

1.2.3 Continuously update and, if necessary, redraw the Construction Schedule and submit it simultaneously with the application for progress payments. Each

revised schedule shall show the Work actually accomplished during the previous period and the schedule for completion of the remaining Work.

1.2.4 Post a copy of the current Construction Schedule in the Contractor's job office. Keep copies of out-of-date schedules at the job office for perusal by the Architect or the Owner's Representative.

1.3 SUBMITTAL SCHEDULE:

1.3.1 Furnish a separate schedule along with the Construction Schedule specified herein, showing the proposed dates for submittal of shop drawings, product data, and samples.

1.3.2 When using CPM method to develop the progress schedule, the submittal schedule may be integrated into the progress schedule.

1.3.3 Submit two copies of the submittal schedule to the Architect.

1.4 SCHEDULE OF VALUES:

1.4.1 Immediately upon being awarded the Contract, and before first request for partial payment, prepare and submit to the Architect, a Schedule of Values allocated to the various portions of the Work. Use this Schedule of Values, unless challenged by the Architect, as the basis for the Contractor's Applications for Payment.

1.4.2 The schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction. Follow the table of contents of this Project Manual as the format for listing component items. For each major line item, list sub-values of major products or operations under the item, where applicable.

1.4.3 Each item shall include a directly proportional amount of the Contractors overhead and profit.

1.4.4 For items on which progress payments for stored materials will be requested, break down the value into (1) the cost of the materials, delivered and unloaded, with taxes paid, and (2) the total installed value.

1.4.5 The sum of all values listed in the schedule shall equal the total Contract sum.

1.4.6 When using CPM method to develop the progress schedule, the schedule of values may be included in the progress schedule.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

38-001 – 04/15/2019

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Preparation and submission of shop drawings, product data, and samples as specified herein and in the various sections of these specifications. The requirements specified herein are in addition to requirements for shop drawings, product data, samples, materials lists, or other submittals specified elsewhere in these specifications.

1.1.2 Related Documents:

.1 Submittal of construction schedule, submittal schedule, and schedule of values are specified in Section 01 32 50.

.2 Submittal of requests for substitution are specified in Section 01 63 00.

.3 Submittal of operation and maintenance data and warranties are specified in Section 01 77 00.

.4 The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 DEFINITIONS:

As used herein, the term "manufactured" applies to standard units usually mass-produced; and "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements.

1.3 GENERAL SUBMITTAL PROCEDURES:

1.3.1 Submit shop drawings, product data, and samples in accordance with the submittal schedule specified in Section 01 32 50. Extension of Contract time will not be granted because of the Contractor's failure to make timely and complete submittals. If submittal of shop drawings does not generally adhere to the submittal schedule, the turn around time shall be appropriately adjusted. Do not begin construction activities covered by the required submittals until submittals have been reviewed, approved and returned.

1.3.2 Transmittal: Accompany each submittal with a dated, signed and sequence numbered transmittal on prescribed submittal forms. Include information required by this form including project identification, name and address of Contractor and of subcontractor or supplier, a list of items included in the submittal, and identification of drawing numbers, specification section and paragraph numbers to which the submittal pertains, and space for Contractor's review and approval stamp.

1.3.3 Check of Returned Submittals: Check the submittals returned for correction and ascertain if the corrections result in extra cost above that included under the Contract Documents, and give written notice within 5 days if, in Contractor's opinion, such extra cost results from corrections. By failing to so notify or by starting any Work covered by a submittal, Contractor waives all claims for extra costs resulting from required corrections. No work involving additional cost shall proceed without the written approval of the Owner.

1.4 SHOP DRAWINGS AND PRODUCT DATA:

1.4.1 Shop Drawings: The term "Shop Drawings" as used herein includes fabrication and installation, layout, and setting drawings; wiring and control diagrams; and other drawings, as defined in Clause 3.12.1 of the General Conditions.

.1 Check and verify all field measurements and submit for review, with such promptness as to cause no delay in the Work or in that of any other contractor or subcontractor, all shop or setting drawings and schedules required for the construction activities of the various trades. Shop Drawings shall be prepared at the Contractor's expense and shall be sent to the Architect, carriage prepaid. A copy of the submittal shall be delivered to the Owner.

.2 Drawings shall show all information required by the applicable technical section and shall be in sufficient detail as may be required to show that fabricated materials, equipment or systems, and the positions thereof conform to the Contract Documents.

.3 Shop Drawings shall establish the actual detail of fabricated items, indicate proper relation of adjoining construction, amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions. Shop Drawings shall be drawn to scale and shall be completely dimensioned.

.4 Coordination Drawings and Field Layouts:

a. Where work by separate entities requires off-site fabrication of products and materials which must be accurately interfaced and closely intermeshed to produce required results, prepare coordination drawings to indicate how work shown by separate shop drawings will be interfaced, intermeshed, and sequenced for installation.

b. Prepare and submit coordination drawings and field layouts as required to solve tight field conditions and when required to coordinate the construction activities of several trades such as mechanical, electrical, and plumbing systems. Include dimensioned plans, elevations, sections, and details and give complete information particularly as to kinds and types of materials and equipment, size and location of sleeves, inserts, attachments,

chases, openings, conduits, ducts, boxes, and structural interferences.

c. Coordinate these coordination drawings and field layouts in the field for proper relationship to construction activities of applicable trades based on field conditions. Contractor shall have competent personnel readily available for coordinating, checking, and supervising of field layouts. The procedures for submittals and re submittals, and final distribution shall be as specified for Shop Drawings.

d. Coordinate preparation and processing of submittals with performance of the work so that work will not be delayed by submittal. Coordinate and sequence different categories of submittal for same work, and for interfacing units of work, so that one will not be delayed for coordination with review of another. Submit shop drawings of products specified below, together with the required coordination drawings. The Architect will not review these assemblies without all required shop drawings.

.5 Prepare Shop Drawings on sheet of same size as Contract Drawings or on 8-1/2" by 11" three-hole punched vellum-type sheets suitable for both xerox and ozalid reproduction.

.6 Each Shop Drawing shall have a title block containing the following information.

a. Name and location of the Project.
b. Name and address of the Contractor.
c. Name and address of the subcontractor, manufacturer, supplier or distributor as applicable.
d. Date, scale of drawings and identification number.
e. Space for the Contractor's review and approval stamp.

.7 Submit 3 blue or black line prints and one reproducible transparency of each shop drawing.

1.4.2 Product Data: The term "product data" as used herein includes manufacturer's standard drawings, certificates of conformance, substantiating calculations, and other data as defined in Clause 3.1.12 of the General Conditions.

.1 The data shall include all information required by the applicable technical section and shall be in sufficient detail to show that manufactured materials and equipment conform to the Contract Documents.

.2 Catalog Cuts: Clearly mark each copy to indicate the product or model as well as optional sizes, finishes or other features proposed for use. Delete inapplicable data.

.3 Submittal Preparation: Bind product data with sturdy, labeled covers with an index listing the contents. Loose unbound submittals will be returned without review. Submit 7 copies of all product data.

1.5 SAMPLES:

1.5.1 Furnish for review samples of the various materials, together with the finish thereon, as specified for and intended to be used on or in the Work. Samples shall be sent to the office of the Architect, carriage prepaid.

1.5.2 Submit samples to the Architect for distribution and review before purchasing, fabricating, applying, or installing such materials and finishes. The Architect will review and take action on samples within 20 working days of the Contractor's submittal. All actions by the Architect will be in writing, unless otherwise noted in the submittal schedule.

1.5.3 Submit 4 copies of samples, other than field samples, unless otherwise noted in the submittal schedule. A standard transmittal copy, attached at end of this section, shall accompany the sample and shall list all items being transmitted, designating their particular usage and location in the Work and shall be identified as to manufacturer, trade name, style, model. Two approved samples will be returned to the Contractor, and one sample to the Owner who will maintain the approved sample at the jobsite for reference until the end of the Project.

1.5.4 Approval of a sample shall not be taken in itself to change or modify any contract requirement. Materials, finishes, and workmanship in the completed building shall be equal in every respect to that of the approved sample.

1.5.5 Unless otherwise specified, samples shall be 8" by 10" in size and shall be limited in thickness to a minimum consistent with sample analysis. In lieu thereof, the actual full size item may be submitted.

1.5.6 Field samples shall be prepared at the site by the Contractor as specified in the various sections of these Specifications. Affected finished construction shall not be commenced until written approval of the field samples has been received.

1.6 ARCHITECT'S ACTION:

1.6.1 The Architect will review the submittals and will affix the Architect's initials or signature as follows:

.1 Submittals stamped "REVIEWED", require no further action and fabrication or construction may proceed. The Architect will return to the Contractor, the stamped transparency of Shop Drawings and 2 stamped copies of brochures, schedules, materials lists, and other product data, except where required otherwise.

.2 Submittals stamped "MAKE CORRECTIONS NOTED", fabrication may proceed contingent upon all corrections being made as noted. Quantities returned will be as specified in paragraph 1.6.1.1. The corrected drawings must be resubmitted to obtain the Architect’s stamp prior to being sent to the jobsite.

.3 Submittals stamped "REJECTED" or "REVISE AND RESUBMIT", require the Contractor to resubmit them with reasonable promptness and no fabrication or construction may begin. The Architect will return to the Contractor; one stamped transparency and one marked copy of shop drawings and two marked copies, all stamped, of brochures, schedules, materials lists, and other product data.

1.6.2 Resubmittals: If first or subsequent submittal is stamped "REJECTED" or "REVISE AND RESUBMIT", corrective action shall be taken and resubmittal procedure shall be same as for first submittal. The Contractor shall direct specific attention in writing on resubmitted Shop Drawing to revisions other than the correction requested by the Architect on previous submittals.

1.6.3 Distribution Copies: The Contractor shall be responsible for obtaining required prints and for distribution to related subcontractors. Make distribution copies from the transparency bearing the Architect's stamp.

1.6.4 The Architect will check and take action on such drawings and schedules only for conformance with the design concept of the Work and compliance with information given in the contract documents. When so directed by the Architect, the Contractor shall make corrections required. The Architect will review the Shop Drawings as originally submitted as well as the first resubmittal thereof at his own cost.

1.6.5 The shop drawings, product data and supporting data shall be prepared by the Contractor or his suppliers and subcontractors, but shall be submitted as the instruments of the Contractor.

1.6.6 The Contractor shall check the drawings of his suppliers and subcontractors as well as its own drawings before submitting them. In particular, the Contractor shall ascertain that the drawings meet all requirements of the Contract Drawings and Specifications and conform to the structural and space conditions. If such shop drawings show variations from Contract Documents, whether because of standard shop practice or other reasons, the Contractor shall clearly describe such variations including other changes required to correlate the construction in his letter of transmittal.

1.6.7 Shop Drawings when submitted to the Architect for review shall be accompanied by a written statement signed by the Contractor, that the Shop Drawings have been checked and found to be in accordance with the Contract Drawings and Specifications and that proper provision has been made to accommodate abutting construction. This statement may be in the form of an approval stamp bearing the Contractor's signature.

1.6.8 Submittals not requested in these documents or otherwise will be returned without comments.

1.6.9 Substantiating calculations, when specified, shall be prepared and signed by a registered Civil or Structural Engineer, employed by the Contractor.

1.6.10 The Architect's review of Shop Drawings will be general only and shall not

relieve the Contractor from responsibility for errors of any sort, for deviations from Drawings or Specifications, or for conflict with the construction activities of others that may result from such deviations. Architect's review of a separate item does not indicate a review of an assembly in which the item functions.

1.6.11 The Contractor shall not proceed with shop drawings involving additional cost without written approval.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

38-001 – 04/15/2019

SHOP DRAWING SUBMITTAL

TO: **SFEIR ARCHITECTS**
5151 Shoreham Place, Suite 265
San Diego, California 92122

FROM: _____

_____

_____

PROJECT: Tri-City Medical Center – Decontamination Sink
Oceanside, California

ARCHITECT'S PROJECT No:

CONTRACTOR SHALL COMPLETE THE FOLLOWING:

SPECIFICATIONS:

Section: _____ Title: _____ Contractor's Submittal No. _____

_____ Initial Submittal
_____ 2nd Submittal
_____ Submittal

Shop Drawing Schedule date of Submittal: _____
Shop Drawing Schedule date of Return: _____
Date Sent: _____ _ No. of Copies: _____ No. of Samples: _____

_____ No Substitutions

_____ Substitution: Request Form previously submitted

_____ Submittal conforms with Construction Documents

Signature: _____Contractor to verify all dimensions

Title: _____

I certify that the attached submittal conforms to the Contract Documents

* *

Architect will fill out the following and return to Contractor listed above:

ACTION:

_____ No Exception Taken

_____ Make Corrections Noted (Shop Drawings will not have Architect's stamp. Resubmit for record approval)

_____ Rejected / Resubmit

_____ Revise and Resubmit

_____ Date Sent

_____ Number of Items Returned

Description / Comments: _____

_____

_____

_____ See attached comments

Reviewed by: _____ Signature: _____

SFEIR ARCHITECTS
5151 Shoreham Place, Suite 265
San Diego, California 92122
(619) 299-3917

Copies: _____ File

_____ Owner

_____ Other _____

Section 01 38 00

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Provide photographs taken at the specified stages during construction, and in accordance with provisions of this Section.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 SUBMITTALS:

1.2.1 Except as otherwise directed and paid for, submit three (3) prints of each photograph.

1.2.2 Submittal procedures and quantities are specified in Section 01 33 40.

1.3 QUALITY ASSURANCE:

1.3.1 Contractor shall submit samples of photographs acceptable to the Architect.

PART 2 - PRODUCTS

2.1 CONSTRUCTION PHOTOGRAPHS:

2.1.1 Provide color prints:

.1 Size: 4” by 6”.

.2 Type: Smooth surface, glossy print, single weight paper with white base.

2.1.2 On the back side of each print, in a manner not damaging to the print, show the following:

.1 Job Name.

.2 Location from which photographed, and sequential numbers.

.3 Date of photograph.

.4 Photographer’s name, address, and photograph number.

2.1.3 Contractor shall retain the negatives for at least one year following Date of Substantial Completion. Provide additional prints to the Owner during that period at prevailing commercial rates for such prints.

2.1.4 Do not permit prints to be issued for any other purpose without specific written approval from the Architect.

2.1.5 Contractor may take digital photographs. Digital photographs shall conform to the requirements in paragraphs 2.1.1 and 2.1.2 above. Digital photographs shall be taken at a resolution sufficient to produce photographic prints of quality comparable to conventional photographic prints.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS:

3.1.1 Except as otherwise specifically approved by the Architect, make the photographs within three (3) calendar days of the date of Contractor's application for progress payment.

.1 To the maximum extent practicable, make photographs at approximately the same time of day throughout the progress of the Work.

.2 When inclement weather is anticipated, consult with the Architect and determine acceptable alternative arrangements.

3.1.2 Except as otherwise specifically approved by the Architect, make the photographs from three (3) separate locations around the Work.

.1 Select the locations to provide diversified overall views of the Work, from positions, which are expected to remain accessible throughout the progress of the Work.

.2 Identify each location by word description, by marked drawing, or by such other means as acceptable to the Architect, to enable future photographs to be taken from the same position.

.3 When so directed by the Architect because of the stage of construction, change one or more of the locations to new locations inside or outside the buildings as the Architect directs.

3.1.3 Make each photograph clear, in focus, with high resolution and sharpness, and with minimum distortion.

3.1.4 Contractor shall photograph concealed, below grade and subsurface installation. Indicate on project record document floor plan, the location of number of photograph. One set shall be provided to Owner along with close out submittals.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Applicability and availability of standards referenced or specified in these specifications.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 APPLICABILITY:

1.2.1 For products or workmanship specified by association, trades, or Federal Standards, comply with requirements of the standard, only to the extent required by the specific reference contained in these specifications.

1.2.2 The issue of the standard that is in effect for this Contract shall be the issue designated by the specific reference to the standard. Where the issue is not designated in the reference, the issue of the standard is the latest issue published as of the Bid date.

1.3 AVAILABILITY:

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
202/862-5100
www.aluminum.org

AABC Associated Air Balance Council
1518 K Street, NW, Suite 503
Washington, DC 20005
202/737-0202
www.aabchq.com

AAMA American Architectural Manufacturers Association
1827 Walden Office Sq., Suite 104
Schaumburg, IL 60173-4268
847/303-5664
www.aamanet.org

AASHTO American Association of State Highway and Transportation Officials
444 North Capitol Street, Suite 249
Washington, DC 20001
202/624-5800
www.aashto.org

AATCC American Association of Textile Chemists and Colorists
P.O. Box 12215
One Davis Drive
Research Triangle Park, NC 27709-2215
919/549-8141
www.aatcc.org

ACI American Concrete Institute
P.O. Box 9094
Farmington Hills, MI 48333-9094
248/848-3700
www.aci-int.org

ACPA American Concrete Pipe Association
222 West Las Colinas Blvd., Suite 641
Irving, TX 75039-5423
972/506-7216
www.concrete-pipe.org

ADC Air Diffusion Council
104 South MichiganmAve., Suite 1500
Chicago, IL 60603
312/201-0101

AF&PA American Forest and Paper Association
1111 19th St., NW, Suite 800
Washington, DC 20036
800/878-8878
www.afandpa.org

AGA American Gas Association
400 N. Capitol St. N. W.
Washington, D.C. 20001
202/824-7000
www.aga.com

AHA American Hardboard Association
1210 W. Northwest Hwy
Palatine, IL 60067-1897
847/934-8800
www.hardboard.org

AHAM Association of Home Appliance Manufacturers
1111 19th Street NW, #402
Washington, DC 20036
202/872-5955
www.aham.org

ALA American Library Association
50 E. Huron
Chicago, IL 60611
800/545-2433

AI Asphalt Institute
Research Park Drive
P.O. Box 14052
Lexington, KY 40512-4052
606/288-4960
www.asphaltinstitute.org

AIA The American Institute of Architects
1735 New York Avenue, NW
Washington, DC 20006-5292
202/626-7300
www.e-architect.com

AISC American Institute of Steel Construction
One East Wacker Drive, Suite 3100
Chicago, IL 60601-2001
800/644-2400
www.aisc.org

AISI American Iron and Steel Institute
P.O. Box 4321
Chestertown, MD 21690
800/277-3850
www.steel.org

AITC American Institute of Timber Construction
7012 S. Revere Pkwy., Suite 140
Englewood, CO 80112
303/792-9559
www.aitc-glulam.org

ALCA Associated Landscape Contractors of America
12200 Sunrise Valley Drive, Suite 150
Reston, VA 20191
703/620-6363
www.alca.org

ALI Associated Laboratories, Inc.
P.O. Box 152837
1323 Wall St.
Dallas, TX 75315
214/565-0593

ALSC American Lumber Standards Committee
P.O. Box 210
Germantown, MD 20875
301/972-1700

AMCA Air Movement and Control Association International, Inc.
30 W. University Drive
Arlington Heights, IL 60004-1893
847/394-0150
www.amca.org

ANLA American Nursery and Landscape Association
1250 I Street, NW, Suite 500
Washington, DC 20005-3922
202/789-2900
www.anla.org

ANSI American National Standards Institute
11 West 42nd Street, 13th Floor
New York, NY 10036-8002
212/642-4900
www.ansi.org

APA APA-The Engineered Wood Association
2130 Barret Park Dr., Suite 102
Kennesaw, GA 30144-3681
770/427-9371
www.apawood.org

APA Architectural Precast Association
6710 Winkler Road, Ste. 8
Fort Myers, FL 33919
941/454-6989
www.archprecast.org

ARI Air Conditioning and Refrigeration Institute
4301 Fairfax Drive, Suite 425
Arlington, VA 22203
703/524-8800
www.ari.org

ARMA Asphalt Roofing Manufacturers Association
1156-15th Street, NW, Ste. 900
Washington, DC 20005
202/207-0917
www.asphaltroofing.org

ASA Acoustical Society of America
500 Sunnyside Blvd.
Woodbury, NY 11797
516/576-2360
www.acoustics.org

ASCE American Society of Civil Engineers-
World Headquarters 703/295-6300
1801 Alexander Bell Drive
Reston, VA 20190-4400
800/548-2723
www.asce.org

ASHRAE American Society of Heating, Refrigerating and
Air Conditioning Engineers
1791 Tullie Circle, NE
Atlanta, GA 30329-2305
800/527-4723 –or- 404/636-8400
www.ashrae.org

ASLA American Society of Landscape Architects
4401 Connecticut Ave., NW, 5th Floor
Washington, DC 20008-2369
202/686-2752
www.asla.org

ASME ASME International
Three Park Avenue
New York, NY 10016-5990
212/591-7722
www.asme.org

ASPE American Society of Plumbing Engineers
3617 Thousand Oaks Blvd., Suite 210
Westlake, CA 91362-3649
805/495-7120

ASQC American Society for Quality
611 E. Wisconsin Avenue
Milwaukee, WI 53201-3005
800/248-1946 – or -414/272-8575
www.asq.org

ASSE American Society of Sanitary Engineers
28901 Clemens Road
Westlake, OH 44145
440/835-3040
www.asse-plumbing.org

ASTM American Society for Testing and Materials
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
610/832-9500
www.astm.org

AWCI Association of the Wall and Ceiling Industries--International
307 E. Annandale Road, Suite 200
Falls Church, VA 22042-2433
703/534-8300
www.awci.org

AWI Architectural Woodwork Institute
1952 Isaac Newton Square
Reston, VA 20190
703/733-0600
www.awinet.org

AWPA American Wood Protection Association
P.O. Box 361784
Birmingham, AL 35236-1784
205/733-4077
www.awpa.com

AWS American Welding Society
550 NW LeJeune Road
Miami, FL 33126
800/443-9373 305/443-9353
www.amweld.org

AWWA American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235
800/926-7337 –or - 303/794-7711
www.awwa.org

BHMA Builders' Hardware Manufacturers Association
355 Lexington Avenue, 17th Floor
New York, NY 10017-6603
212/297-2100

BIA Brick Institute of America
11490 Commerce Park Drive
Reston, VA 22091-1525
703/620-0010
www.bia.org

CE Corps of Engineers
(U.S. Department of the Army)
20 Massachusetts Avenue, NW
Washington, DC 20314
202/761-0660
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
601/634-2696

CBM Certified Ballast Manufacturers Association
1422 Euclid Avenue, Suite 402
Cleveland, OH 44115-2094
216/241-0711

CCC Carpet Cushion Council
P.O. Box 546
Riverside, CT 06878-0546
203/637-1312
www.carpetcushion.org

CDA Copper Development Association
260 Madison Avenue, 16th Floor
New York, NY 10016-2401
800/232-3282 – or - 212/251-7200
www.copper.org

CGA Compressed Gas Association
1725 Jefferson Davis Hwy, Suite 1004
Arlington, VA 22202-4102
703/412-0900
www.cganet.com

CISCA Ceilings & Interior Systems Construction Association
1500 Lincoln Hwy, Suite 202
St. Charles, IL 60174
202/275-7703
www.cisca.org

CISPI Cast Iron Soil Pipe Institute
5959 Shallowford Road, Suite 419
Chattanooga, TN 37421
423/892-0137
www.cispi.org

CLFMI Chain Link Fence Manufacturers Institute
10015 Old Columbia Rd., #B-215
Columbia, MD 21046
301/596-2583
www.chainlinkinfo.org

CPSC Consumer Product Safety Commission
East West Towers
4330 East-West Hwy.
Bethesda, MD 20814
800/638-2772

CPPA Corrugated Polyethylene Pipe Association
432 N. Superior Street
Toledo, OH 43604
800/510-2772 – or - 419/241-2221

CRA California Redwood Association
405 Enfrente Drive, Suite 200
Novato, CA 94949
888/225-7339 – or - 415/382-0662
www.calredwood.org

CRI Carpet and Rug Institute
310 S. Holiday Avenue
Dalton, GA 30722-2048
800/882-8846 – or - 706/278-0232
www.carpet-rug.com

CRSI Concrete Reinforcing Steel Institute
933 N. Plum Grove Road
Schaumburg, IL 60173-4758
847/517-1200
www.crsi.org

CSSB Cedar Shake and Shingle Bureau
515 116th Avenue, NE, Suite 275
Bellevue, WA 98004-5294
206/453-1323
www.cedarbureau.org

CTI Ceramic Tile Institute of America
12061 W. Jefferson Blvd.
Culver City, CA 90230-6219
310/574-7800
www.ceramic-tile.com

DHI Door and Hardware Institute
14170 Newbrook Drive
Chantilly, VA 20151-2223
703/222-2010
www.dhi.org

DIPRA Ductile Iron Pipe Research Association
245 Riverchase Pkwy East, Suite O
Birmingham, AL 35244
205/402-8700
www.dipra.org

DOC Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
703/605-6000

DOT Department of Transportation
400 Seventh Street, SW
Washington, DC 20590
202/366-4000

EIMA EIFS Industry Members Association
402 N. Fourth Street, Suite 102
Yakima, WA 98901-2470
800/294-3462 – or - 509/457-3500
www.eifsfacts.com

EJMA Expansion Joint Manufacturers Association
25 N. Broadway
Tarrytown, NY 10591-3201
914/332-0040
www.ejma.org

EPA Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
800/490-9198
www.epa.gov

FCICA Floor Covering Installation Contractors Association
7439 Millwood Drive
West Bloomfield, MI 48322-1234
248/661-5015
www.fcica.com

FM Factory Mutual
1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, MA 02062-9102
617/255-4681
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
213/740-2032

FS Federal Standards
(Available from GSA)
470 East L'Enfant Plaza, SW, Suite 8100
Washington, DC 20407
202/619-8925

FTI Facing Tile Institute
% Stark Ceramics
P.O. Box 8880
Canton, OH 44711
330/488-1211

GA Gypsum Association
810 First Street NE, Suite 510
Washington, DC 20002
202/289-5440
www.gypsum.org

GANA Glass Association of North America
3310 SW Harrison Street
Topeka, KS 66611-2279
913/266-7013
www.glasswebsite.com/gana

HMA Hardwood Manufacturers Association
400 Penn Center Blvd., Suite 530
Pittsburgh, PA 15235-5605
800/373-9663 – or - 412/828-0770
www.hardwood.org

HPVA Hardwood Plywood and Veneer Association
1825 Michael Farraday Drive
P.O. Box 2789
Reston, VA 20195
703/435-2900
www.hpva.org

IEEE Institute of Electrical and Electronic Engineers
445 Hoes Lane
Piscataway, NJ 08855-1331
800/678-4333 – or - 212/705-7900
www.standards.ieee.org

IESNA Illuminating Engineering Society of North America
120 Wall Street, 17th Floor
New York, NY 10005-4001
212/248-5000
www.iesna.org

ILI Indiana Limestone Institute of America
Stone City Bank Building, Suite 400
Bedford, IN 47421
812/275-4426
www.iliai.com

ITS Intertek Testing Services
P.O. Box 2040
3933 US Route 11
Cortland, NY 13045-7902
800/345-3851 – or - 607/753-6711
www.itsglobal.com

KCMA Kitchen Cabinet Manufacturers Association
1899 Preston White Drive
Reston, VA 22091-4326
703/264-1690
www.kcma.org

LMA Laminating Materials Association
116 Lawrence Street
Hillsdale, NJ 07642-2730
201/664-2700
www.lma.org

MBMA Metal Building Manufacturer's Association
1300 Sumner Avenue
Cleveland, OH 44115-2851
216/241-7333
www.mbma.org

MCAA Mechanical Contractors Association of America
1385 Piccard Drive
Rockville, MD 20850-4329
301/869-5800
www.mcaa.org

MFMA Maple Flooring Manufacturers Association
60 Revere Drive, Suite 500
Northbrook, IL 60062
847/480-9138
www.maplefloor.org

MIA Marble Institute of America
33505 State Street
Farmington, MI 48335
810/476-5558
www.marble-institute.com

MIA Masonry Institute of America
2550 Beverly Blvd.
Los Angeles, CA 90057
213/388-0427
www.masonryinstitute.org

ML/SFA Metal Lath/Steel Framing Association
(A Division of the NAAMM)
8 South Michigan Avenue, Suite 1000
Chicago, IL 60603
312/456-5590

MSS Manufacturers Standardization Society for the Valve and Fittings Industry
127 Park Street, NE
Vienna, VA 22180-4602
703/281-6613
www.mss-hq.com

NAA National Arborist Association
P.O. Box 1094
Amherst, NH 03031-1094
800/733-2622 – or - 603/673-3311
www.natlarb.com

NAAMM National Association of Architectural Metal Manufacturers
8 South Michigan Avenue, Suite 1000
Chicago, IL 60603
312/332-0405
www.naamm.org

NAIMA North American Insulation Manufacturers Association
44 Canal Center Plaza, Suite 310
Alexandria, VA 22314
703/684-0084
www.naima.org

NAPA National Asphalt Pavement Association
NAPA Building
5100 Forbes Blvd.
Lanham, MD 20706-4413
301/731-4748

NBGQA National Building Granite Quarries Association
1220 " L" Street, NW #100-167
Washington, DC 20005
800/558-2848
www.nbgqa.com

NCMA National Concrete Masonry Association
2302 Horse Pen Road
Herndon, VA 20171-3499
703/713-1900
www.ncma.org

NCPI National Clay Pipe Institute
P.O. Box 759
253-80 Center Street
Lake Geneva, WI 53147
414/248-9094
www.ncpi.org

NCRPM National Council on Radiation Protection and Measurements
7910 Woodmont Ave., Suite 800
Bethesda, MD 20814-3095
800/229-2652 – or - 301/657-2652
www.ncrp.com

NCSPA National Corrugated Steel Pipe Association
1255 23rd Street, NW, Suite 850
Washington, DC 20037
202/452-1700
www.ncspa.org

NEBB National Environmental Balancing Bureau
8575 Grovemont Circle
Gaithersburg, MD 20877-4121
301/977-3698
www.nebb.org

NECA National Electrical Contractors Association
3 Bethesda Metro Center, Suite 1100
Bethesda, MD 20814-5372
301/657-3110
www.necanet.org

NEI National Elevator Industry
185 Bridge Plaza North, Suite 310
Fort Lee, NJ 07024
201/944-3211

NEMA National Electrical Manufacturers' Association
1300 N. 17th Street, Suite 1847
Rosslyn, VA 22209
703/841-3200
www.nema.org

NFPA National Fire Protection Association
One Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
800/344-3555 – or - 617/770-3000
www.nfpa.org

NHLA National Hardwood Lumber Association
P.O. Box 34518
Memphis, TN 38184-0518
901/377-1818
www.natlhaardwood.org

NIST National Institute of Standards and Technology
100 Bureau Drive – Stop 1070
Gaithersburg, MD 20899-1070
301/975-6478
www.nist.gov

NIA National Insulation Association
99 Canal Center Plaza, Suite 222
Alexandria, VA 22314
703/683-6422
www.insulation.org

NOFMA National Oak Flooring Manufacturers Association
P.O. Box 3009
Memphis, TN 38173-0009
901/526-5016
www.nofma.org

NPA National Particleboard Association
18928 Premiere Court
Gaithersburg, MD 20879-1569
301/670-0604
www.pbmdf.com

NPCA National Paint and Coatings Association
1500 Rhode Island Avenue, NW
Washington, DC 20005-5597
202/462-6272
www.paint.org

NRCA National Roofing Contractors Association
P.O. Box 809261
Chicago, IL 60680-9261
800/323-9545
www.roofonline.org

NRMCA National Ready Mixed Concrete Association
900 Spring Street
Silver Spring, MD 20910
301/587-1400
www.nrmca.org

NSA National Stone, Sand and Gravel Association
2101 Wilson Blvd.
Arlington, VA 22201
800/342-1415 – or - 703/525-8788
www.nssga.org

NSF NSF International
P.O. Box 130140
Ann Arbor, MI 48113-0140
734/769-8010
www.nsf.org

NSSEA National School Supply and Equipment Association
8300 Colesville Road, Suite 250
Silver Spring, MD 20910
800/395-5550 – or - 301/495-0240
www.nssea.org

NTMA National Terrazzo and Mosaic Association
3166 Des Plaines Avenue, Suite 121
Des Plaines, IL 60018
800/323-9736 – or - 708/635-7744
www.ntma.com

NUSIG National Uniform Seismic Installation Guidelines
12 Lahoma Court
Alamo, CA 94526
510/946-0135

NWWDA The Window and Door Manufacturer's Door Association
1400 East Touhy Ave., Suite 470
Des Plaines, IL 60018
800/223-2301 – or - 847/299-5200
www.wdma.org

OSHA Occupational Safety and Health Administration
(U.S. Department of Labor)
200 Constitution Ave., NW
Washington, DC 20210
202/219-8148

OSHPD Office of Statewide Health Planning and Development
Gregory Bateson State Office Building
1600 Ninth Street
Sacramento, CA 95814
916/654-1606

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077-1083
847/966-6200
www.portcement.org

PCI Precast/Prestressed Concrete Institute
175 W. Jackson Blvd.
Chicago, IL 60604
312/786-0300
www.pci.org

PDCA Painting and Decorating Contractors of America
3913 Old Lee Hwy, Suite 33-B
Fairfax, VA 22030
800/332-7322 – or - 703/359-0826
www.pdca.com

PDI Plumbing and Drainage Institute
45 Bristol Drive
South Easton, MA 02375
800/589-8956 – or - 508/230-3516
www.pdionline.org

PEI Porcelain Enamel Institute
4004 Hillsboro Pike, Suite 224-B
Nashville, TN 37215
615/385-5357
www.porcelainenamel.com

RFCI Resilient Floor Covering Institute
401 E. Jefferson #102
Rockville, MD 20850
301/340-8580
www.rfci.com

RIS Redwood Inspection Service
c/o California Redwood Association
405 Enfrente Drive, Suite 200
Novato, CA 94949-7206
415/382-0662
www.calredwood.org

SDI Steel Deck Institute
P.O. Box 25
Fox River Grove, IL 60012
847/462-1930
www.sdi.org

SDI Steel Door Institute
30200 Detroit Road
Cleveland, OH 44145-1967
440/899-0010
www.steeldoor.org

SIGMA Sealed Insulating Glass Manufacturers Association
401 N. Michigan Avenue
Chicago, IL 60611-4267
312/644-6610

SJI Steel Joist Institute
3127 10th Avenue, North Ext.
Myrtle Beach, SC 29577-6760
843/626-1995
www.steeljoist.org

SMA Stucco Manufacturers Association
14006 Ventura Blvd.
Sherman Oaks, CA 91403
213/789-8733

SMACNA Sheet Metal and Air Conditioning Contractors
National Association, Inc.
4201 Lafayette Center Drive
Chantilly, VA 20151-1209
703/803-2980
www.smacna.org

SPI Society of the Plastics Industry, Inc.
Spray Polyurethane Division
1801 K Street, NW, Suite 600K
Washington, DC 20006
800/951-2001 – or - 202/974-5200
www.socplas.org

SPIB Southern Pine Inspection Bureau
4709 Scenic Highway
Pensacola, FL 32504-9094
850/434-2611
www.spib.org

SPRI SPRI
(Formerly: Single Ply Roofing Institute)
200 Reservoir Street Suite 309A
Needham, MA 02494
781/444-0242
www.spri.org

SSPC The Society for Protective Coatings
40 24th Street, 6th Floor
Pittsburgh, PA 15222-4656
412/281-2331
www.sspc.org

SWI Steel Window Institute
c/o Thomas Associates, Inc.
1300 Sumner Avenue
Cleveland, OH 44115-2851
216/241-7333
www.steelwindows.com

TCA Tile Council of America
100 Clemson Research Blvd.
Anderson, SC 29625
864/646-8453
www.tileusa.com

TPI Truss Plate Institute
583 D'Onofrio Drive, Suite 200
Madison, WI 53719
608/833-5900

TPI Turfgrass Producers International
1855-A Hicks Road
Rolling Meadows, IL 60008
800/405-8873 – or - 847/705-9898
www.turfgrasssod.org

UL Underwriters Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062
800/704-4050 – or - 847/272-8800
www.ul.com

UNI Uni-Bell PVC Pipe Association
2655 Villa Creek Drive, Suite 155
Dallas, TX 75234
972/243-3902
www.uni-bell.org

USDA U.S. Department of Agriculture
14th St. and Independence Ave., SW
Washington, DC 20250
202/720-8732

USPS U.S. Postal Service
475 L'Enfant Plaza, SW
Washington, DC 20260-0010
202/268-2000

WA Wallcoverings Association
401 N. Michigan Avenue
Chicago, IL 60611-4267
312/644-6610
www.wallcoverings.org

WCLIB West Coast Lumber Inspection Bureau
P.O. Box 23145
Portland, OR 97281-3145
503/639-0651
www.wclib.org

WCMA Window Covering Manufacturers Association
355 Lexington Ave., 17th Floor
New York, NY 10017-6603
212/661-4261

WI Woodwork Institute
P.O. Box 980247
West Sacramento, CA 95798-0247
916/372-9943
www.woodworkinstitute.com

WLPDIA Western Lath/Plaster/Drywall Industries Association
8635 Navajo Road
San Diego, CA 92119
619/466-9070

WMMPA Wood Moulding & Millwork Producers Association
507 First Street
Woodland, CA 95695
800/550-7889 – or - 916/661-9591
www.wmmpa.com

WRI Wire Reinforcement Institute
P. O. Box 450
Findlay, OH 45839-0450
419/425-9473
www.wirereinforcementinstitute.org

WWPA Western Wood Products Association
Yeon Building
522 S.W. 5th Avenue, #500
Portland, OR 97204-2122
503/224-3934
www.wwpa.org

END OF SECTION

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Section 01 45 70

TESTING AND INSPECTION

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Testing laboratory services and inspections required during the course of construction.

1.1.2 Related Documents: The Conditions of the Contract and the other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 TESTS:

1.2.1 The Owner will select an independent testing laboratory to conduct tests. Material required to be tested will be selected by the laboratory or the Owner's Inspector and not by the Contractor.

1.2.2 The Contractor shall notify the Owner's Inspector a minimum of 5 working days in advance of the manufacture of material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the Owner may arrange for the testing of such material at the source of supply.

1.2.3 Material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection or before the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Project.

1.2.4 The Owner will select and pay testing laboratory costs for all tests and inspections, but may be reimbursed by the Contractor for such costs under the Contract conditions. Any direct payments by the Contractor to the testing laboratory on this project is prohibited.

1.3 TESTING LABORATORY:

1.3.1 Testing and inspections will be performed by an independent testing laboratory selected and employed by the Owner and approved by the State of California Office of Statewide health Planning and Development (OSHPD) and Structural Engineer of Record. Procedural and acceptance criteria are set forth in the 2016 California Building Standards Administrative Code Sec. 4-335.

1.3.2 Testing and inspection services which are performed shall be in accordance with requirements of the 2016 California Building Code, and as specified herein. Testing and inspection services shall verify that work meets the requirements of the Contract Documents.

1.3.3 In general, tests and inspections for structural materials shall include all items enumerated on the Structural Tests and Inspections list for this project as prepared and distributed by the Architect.

1.3.4 Test reports shall be signed by a Registered Civil Engineer licensed in the State of California.

1.4 PAYMENTS:

1.4.1 Costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections, will be paid for by the Owner, providing such testing and inspection indicates compliance with Contract Documents. Initial tests and inspections are defined as the first tests and inspections as herein specified.

1.4.2 In the event a test or inspection indicates failure of a material or procedure to meet requirements of Contract Documents, costs for retesting and reinspection will be paid by the Owner and backcharged to the Contractor.

1.4.3 Additional tests and inspections not herein specified but requested by Owner or Architect, will be paid for by Owner, unless results of such tests and inspections are found to be not in compliance with Contract Documents, in which case the Owner will pay all costs for initial testing as well as retesting and reinspection and backcharge the Contractor.

1.4.4 Costs for additional tests or inspections required because of change in materials being provided or change of source or supply will be paid by Owner and backcharged to the Contractor.

1.4.5 Costs for tests or inspections which are required to correct deficiencies will be paid by the Owner and backcharged to the Contractor.

1.4.6 Cost of testing which is required solely for the convenience of Contractor in his scheduling and performance of work will be paid by the Owner and backcharged to the Contractor.

1.4.7 Overtime costs for testing and inspections performed outside the regular work day hours, including weekends and holidays, will be paid for by the Owner and backcharged to the Contractor. Such costs include overtime costs for the Owner's Inspector.

1.4.8 Testing Laboratory will separate and identify on the invoices, the costs covering all testing and inspections which are to be backcharged to the Contractor as specified above.

1.4.9 Testing Laboratory will furnish to Owner a cost estimate breakdown covering initial tests and inspections required by Contract Documents. Estimate will include number of tests, man-hours required for tests, field and plant inspections, travel time, and costs.

1.5 TEST AND INSPECTION REPORTS:

1.5.1 Testing Laboratory will certify in writing that all work specified or required to be tested and inspected conforms to drawings, specifications and applicable building codes.

1.5.2 Each and every test or inspection report shall bear the official File Number and Application Number assigned to this project by the OSHPD.

1.5.3 The Testing Laboratory will make the following distribution of test and inspection reports:

Architect	2
Structural Engineer	1
Contractor	1
Owner’s Inspector	1
OSHPD	1

1.5.4 Test reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of the 2016 California Building Code, and with the approved specifications. They shall also state definitely whether or not the material or materials tested comply with requirements.

1.6 VERIFICATION OF TEST REPORTS:

Each testing agency shall submit to OSHPD a verified report covering all tests which are required to be made by that agency during the progress of the project. Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project.

1.7 REPORTING TEST FAILURES:

Immediately upon determination of a test failure, the Laboratory will telephone the results of test to Architect. On the same day, Laboratory will send written test results to those named on above distribution list.

1.8 AVAILABILITY OF SAMPLES:

1.8.1 Contractor shall make materials required for testing available to Laboratory and assist in acquiring these materials as directed by the Owner's Inspector. The samples shall be taken under the immediate direction and supervision of the Testing Laboratory or Inspector.

1.8.2 If work which is required to be tested or inspected is covered up without prior notice or approval, such work may be uncovered at the discretion of Architect at no additional cost to the Owner. Refer to paragraph "Payments" herein.

1.8.3 Unless otherwise specified, Contractor shall notify Testing Laboratory a minimum of 10 working days in advance of all required tests, and a minimum of 2 working days in advance of all required inspections. All extra expenses resulting from a failure to notify the Laboratory will be paid by the Owner and backcharged to the Contractor.

1.8.4 Contractor shall give sufficient advance notice to Testing Laboratory in the event of cancellation or time extension of a scheduled test or inspection. Charges due to insufficient advance notice of cancellations or time extension will be paid for by the Owner and backcharged to the Contractor.

1.9 REMOVAL OF MATERIALS:

Unless otherwise directed, materials not conforming to the requirements of Contract Documents shall be promptly removed from the Project site.

1.10 INSPECTION BY THE OWNER:

1.10.1 The Owner's Inspector shall at all times have access for the purpose of inspection to all parts of the work and to the shops wherein the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

1.10.2 The Owner shall have the right to reject materials and workmanship which are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the Owner. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the Owner may correct such rejected work and charge the expense to the Contractor.

1.10.3 Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work, the Contractor shall on request promptly furnish necessary facilities, labor and materials. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

1.11 OWNER'S INSPECTOR:

1.11.1 An Inspector employed by the Owner in accordance with the requirements of the 2016 California Building Code will be assigned to the work. His duties are specifically defined in CCR Title 24 Part 1, Sec. 7-144.

1.11.2 The Contractor shall notify the Inspector a minimum of 2 working days in advance of execution of all work that requires inspection.

1.11.3 The work of construction in all stages of progress shall be subject to the personal continuous observation of the Inspector. He shall have free access to any or all parts of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TESTS AND INSPECTIONS:

3.1.1 Tests and inspections for the following will be required in accordance with the 2016 California Building Code, unless otherwise specified:

3.1.2 Structural Steel (Chapter 22A):

.1 Materials:

Structural Steel, Cold Formed Steel	2202A.1; 2203A; 2204A; 206A
Material Identification	2202A

.2 Inspection of Structural Steel: (Chapter 1704A)

Tests of Structural & Cold Formed Steel	2212A.1
Tests of H.S. Bolts, Nuts, Washers	2212A.2
Tests of End Welded Studs	2212A.3
High Strength Bolt Inspection	1704A.3.3
Welding Inspection	1704A.3
Nelson Stud Welding	2212A.5
Non-destructive Weld Testing	1708A.4
Shop Fabrication Inspection	1704A.2.1, 1704A.3.1
Epoxy Injection	1704A.13

3.1.3 Aluminum (Chapter 20A):

.1 Materials:

Alloys	2001A.2
Identification	2001A.4

.2 Inspection:

Welding	2004A.8

3.2 TESTING OF STRUCTURAL STEEL:

3.2.1 Mill certificates or affidavits and manufacturers' certification shall be supplied to the Testing Laboratory and Inspector for verification of steel materials. Testing Laboratory shall be notified at least 2 working days in advance of fabrication and supplied with the reports so that it can make a shop inspection of the steel.

3.2.2 Tests of Steel Materials: If structural steel cannot be identified by heat or melt numbers, or if its source is questionable, not less than one tension test and one bend test will be made for each 5 tons or fractional part thereof. Such testing shall be paid for by the Owner and backcharged to the Contractor. Structural steel identified by heat or melt numbers marked at the mill need not be tested subject to OSHPD's acceptance of the mill certificates (sec 1708A.4), except testing is required of steel with Fy greater than 36 ksi.

3.2.3 General Inspection:

.1 Testing Laboratory will visit the fabricator's plant to verify that materials used check with the mill tests, affidavits of test reports, and that fabrication and welding procedures meet specifications.

.2 Testing Laboratory will visually check fabricated steel against the contract drawings and reviewed shop drawings for compliance, and will make physical tests and measurements as required to meet the specifications. Single pass fillet welds may be visually checked.

.3 Inspection of Shop Fabrication: Inspection of shop fabrication may be required for important work if so designated on the Structural Tests and Inspections list. This inspection shall be made by a qualified inspector approved by the OSHPD. He shall furnish the Architect and the OSHPD a report duly verified by him that the materials and workmanship conform to the approved plans and specifications.

.4 Approved Fabricators: In addition to welding inspection, fabrication inspection will be required for all work done on the premises of a steel fabricator who does not hold a currently valid certificate CBC, Sec. 1701B.7, Approved Fabricators. The cost of the fabrication inspection will be paid by the Owner and backcharged to the Contractor.

.5 Inspection of welding shall be in accordance with the requirements of the 2016 California Building Code, Sec. 1704A.3.

.6 Erection Inspection: If so designated on the Structural Tests and Inspections list, Testing Laboratory will visually inspect bolted and field welded connections, perform such additional tests and inspections of field work as are required by the Architect and prepare test reports for the Architect's review.

.7 Shop Fabrication Inspection Outside of Area: The added cost of shop fabrication inspection, and material testing outside the State of California or 150 mile radius of the Project site will be paid by the Owner and backcharged to the Contractor.

.8 Special inspection for high tension bolting will be provided by the Testing Laboratory. Inspection shall be in accordance with AISC Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.

.9 Should defects appear in welds tested, repairs shall be similarly inspected at the Contractor's expense and at the direction of the Architect until satisfactory performance is assured.

.10 Other methods of inspection, for example, X-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the Architect.

3.2.4 Inspection and Tests for End Welded Studs:

.1 Inspection of all the shop and field welding operations for the automatic end welded studs shall be made in accordance with the 2016 California Building Code, Sec. 1704A.3 and 1708A.4 by a qualified welding inspector approved by the OSHPD. The type and capacity of the welding equipment shall be in accordance with the manufacturer's recommendations and shall be checked and approved by the welding inspector.

.2 At the beginning of each day's work, a minimum of 2 test stud welds shall be made with the equipment to be used on metal which is the same as the actual work piece. The test studs shall be subjected to a 90 degree bend test by striking them with a heavy hammer. After the above test, the weld section shall not exhibit any tearing out or cracking.

3.2.5 Corrections:

.1 Correct deficiencies in structural steel work which inspections and test reports indicate to be not in compliance with the specified requirements.

.2 Perform additional tests required to reconfirm noncompliance of the original work and to show compliance of corrected work. Costs for all additional tests will be paid for by the Owner and backcharged to the Contractor.

END OF SECTION

38-001 – 04/15/2019

Section 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Temporary construction facilities and controls as required for proper performance of the Contract. Locate temporary facilities where directed and maintain in a safe and sanitary condition at all times until completion of the Contract.

1.1.2 Related Documents: The Conditions of the Contract and the other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 REGULATORY REQUIREMENTS:

1.2.1 Comply with governing regulations and utility company regulations and recommendations.

1.2.2 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.

1.2.3 Temporary construction shall conform to requirements of State, County, and local authorities and underwriters which pertain to operation, health, safety, and fire hazard. Furnish and install items necessary for conformance with such requirements, whether or not called for under the separate divisions of these specifications.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TEMPORARY SANITARY FACILITIES:

3.1.1 Provide temporary sanitary conveniences for the use of employees and persons engaged on the Work, including subcontractors and their employees, as required by law, ordinances, or regulations of public authorities having jurisdiction.

3.1.2 Maintain sanitary facilities in a clean and sanitary condition during the entire course of the Work.

3.1.3 Use of permanent toilet facilities in the Work under construction will not be permitted except by written approval of the Owner.

3.1.4 Cooperate with the Owner in maintaining sanitary facilities in a clean and sanitary condition during the entire course of the Work.

3.2 TEMPORARY ELECTRIC FACILITIES:

3.2.1 Provide and maintain during the progress of the Work all electrical lighting and power requirements to facilitate the Work of all trades and services connected with the Work. Provide adequate lighting levels to permit workmen to properly perform their construction activities and for detection of flaws in finishes.

3.2.2 Make application for electric service, arrange for metering, and pay costs including electric energy used in temporary and permanent electrical facilities until acceptance of the Work by the Owner.

3.3 TEMPORARY WATER:

3.3.1 Make arrangements and pay costs for all water required for construction purposes and for testing, disinfection and flushing of the water supply system. Furnish and install piping or hose to carry water to every point where needed on the project. Use only potable water. Determine closest availability of water, meter the water, and pay the utility company at the regular local rates for water used.

3.3.2 The Contractor shall be responsible for undue wasting of water used on the Work. Furnish hoses and temporary piping placed where water connections are available.

3.3.3 Provide fire protection for the duration of work in accordance with local codes, ordinances and the local authorities having jurisdiction.

.1 The Contractor shall take necessary precaution to guard against and eliminate possible fire hazards and to prevent damage to construction work, building materials, equipment, and public property. The Contractor shall be responsible for providing, maintaining and enforcing fire protection methods.

3.4 TEMPORARY HEATING AND VENTILATING:

3.4.1 Provide temporary heat as necessary for the drying out of the building, the proper installation of Work and materials, and the protection of Work and materials against injury from dampness and cold. Do not use the permanent building heating system for temporary heating unless first approved by the Owner. If approved for use, replace filters before final acceptance of the Work.

3.4.2 Provide adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors or gases.

3.4.3 Pay costs for fuel consumed for temporary heat and ventilation and for fuel consumed in testing and balancing of permanent heating and ventilation systems.

3.5 CONSTRUCTION EQUIPMENT:

3.5.1 Erect, equip, and maintain construction equipment in strict accordance with applicable statutes, laws, ordinances, rules and regulations of authority having jurisdiction.

3.5.2 Provide, maintain and remove 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.

3.6 FENCES AND BARRICADES:

3.6.1 Before start of Work at the Project Site, install a 6 foot high chain link fence or solid plywood and wood frame enclosure fence with locked entrance gates. Locate the fence to enclose substantially the entire Project Site, or that portion the Contractor establishes as required to encompass the entire project construction operation.

3.6.2 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. Provide walks around obstructions made in a public place for carrying on the Work covered in this Contract. Leave protection in place and maintain in good condition until removal is authorized.

3.6.3 Provide barriers to protect trees and plants on the site and immediately adjacent to the site which are designated to remain. Construct temporary barriers to a height of 6 feet around each tree or plant or each group of trees of plants.

3.7 STORAGE:

Confine operations of the Contractor, including storage of materials, to areas approved. Contractor shall be liable for damage caused by him during such use of property of the Owner or other parties. Contractor shall save the Owner, its officers 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. Maintain storage facilities to provide protection of products from excessive cold, heat, moisture, humidity or physical abuse as specified in the respective sections for the products stored.

3.8 TEMPORARY JOB OFFICE:

Provide and maintain, in good condition, on the site a temporary job office of suitable size for Contractor and for project meetings. Provide a job office which is weatherproof and secure and provide with adequate lighting, heat, and ventilation. Furnish the meeting area with a conference table and sufficient chairs for all participants. Provide plan rack or files for storage of project record documents.

3.9 TEMPORARY TELEPHONE SERVICE:

Make arrangements and pay costs, including service and toll charges, until final acceptance of the Project, for temporary telephone service with loud exterior bell, and an on-site facsimile machine in the temporary job office for use by the Contractor, subcontractors, the Architect, and their representatives, for purposes related to the work. Provide a separate telephone line and telephone instrument for the facsimile machine.

3.10 PROJECT SIGN:

3.10.1 Provide one painted sign 8'-0" by 12'-0" (96 sq. ft.) with painted graphic content to include project title and the names and titles of the Owner, Architect, professional consultants, Contractor, major subcontractors and financial institution involved. Graphic design, style of lettering and colors shall be as selected by the Architect.

3.10.2 Paint all exposed surfaces of sign including supports and framing with one coat of primer and one coat of exterior paint. Employ a professional sign painter for painting of graphics.

3.10.3 Install the sign on the site at a location of high public visibility as approved.

3.11 REMOVAL AT COMPLETION:

Upon completion of the Work, or prior thereto, when so directed by the Architect, remove all temporary facilities, structures and installation from the Owner's property. Similarly, return exterior areas utilized for temporary facilities to substantially their original state, or when indicated on the Drawings, complete the areas as indicated or noted. Properly disinfect sanitary facilities remove evidence from the site.

END OF SECTION

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Section 01 63 00

PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Procedures for submittal of requests for substitution for materials.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 GENERAL REQUIREMENTS:

1.2.1 Whenever in the specifications products are by reference standard, any Product meeting the standards referenced may be used. Submit information on such products in accordance with Section 01 33 40.

1.2.2 Whenever in the specifications any material, article or process is indicated or specified by trade, patent or proprietary name or name of manufacturer such specification for material, article or process, unless marked "no substitution", shall be deemed to be followed by the words "or equal" as accepted in writing by the Architect".

1.2.3 Where more than one proprietary name is specified, the Contractor may Provide any one of the materials or equipment specified. Use only one brand, kind of make of material or equipment for each specific purpose throughout the Work notwithstanding that similar materials or equipment of two or more manufacturers or producers may be specified for the same purpose.

1.2.4 Submit a written request for proposed substitutions to the Architect not later than 30 days after date of "Notice to Proceed". Submit proposed substitutions relating to a particular subcontract or trade at one time on the enclosed form, listing proposed items for indicated or specified items, and stating amounts for all variations in costs. If the Architect accepts any proposed substitution, such acceptance will be set forth in a Change Order. No substitution will be considered after this 30 day period.

1.2.5 Drawings have been detailed in compliance with the International Code Council Evaluation Service Reports (ICC ESRs) for material specified. If a proposed substitute material is accepted by the Architect, the Contractor will assume the responsibility for construction modifications and additional costs required by reason of this acceptance.

1.2.6 Where materials or items of manufacturer are specified in groups and are made or furnished by one manufacturer, no substitution will be considered that is not made or furnished similarly by one manufacturer. Where the Contractor proposes to use a system of equipment other than that specified or detailed on the Drawings the substitution shall be proposed as a complete system.

1.3 REQUIREMENTS FOR SUBMITTING SUBSTITUTIONS:

1.3.1 Submit with written request for a proposed substitution all data Substantiating request as well as a "Certificate of Suitability" certifying that the proposed substitution is equal or better in all respects to that specified and that it will, in all respects perform the function for which it is intended. Include with request all required samples. Submit 3 copies of all written requests and data for proposed substitutions.

1.3.2 Submit complete information to the Architect so that proper evaluation can be made. The burden of proof of equality of the substituted item shall be on the Contractor. Acceptance of such substitutions is entirely at the discretion of the Architect and Owner. All materials or items of manufacturer, which the Contractor proposes to substitute for those specified, must be accepted by the Architect before they may be ordered.

1.3.3 The Architect will issue to the Contractor a list setting forth those items for which substitutions are accepted. No substitution will be accepted for any materials or item of manufacture called for in the Contract Documents which is not of equal quality and utility and which does not possess equal design or color characteristics to those of the specified material or item.

1.3.4 If, in the opinion of the Architect or Owner, the proposed substitution is not equal or better in every respect to that so indicated or specified, or was not submitted for acceptance in the manner outlined above, the Contractor shall furnish the specified materials.

1.3.5 It shall be the responsibility of the Contractor, in proposing a substitution for any item herein specified, to inform all other trades, vendors, and subcontractors of effects said substitution will have upon their construction activities or products. Failure to so notify shall require that the Contractor make all payments arising from alterations in specified materials or methods necessary to complete the Work in an approved and acceptable manner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

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CONTRACTOR REQUEST TO SUBSTITUTE
MATERIALS, PRODUCTS OR SYSTEMS

CONTRACTOR:_____

PROJECT: _____

DATE: _____ BY: _____

PRODUCT, MATERIAL OR SYSTEM:

_____

_____

_____

_____

_____

COST INCREASE OR DECREASE: _____

CONSTRUCTION SCHEDULE SHORTENING OR
LENGTHENING IN CALENDAR DAYS: _____

DOES THIS SUBSTITUTION HAVE TO BE REVIEWED BY THE BUILDING DEPARTMENT OR OTHER GOVERNMENTAL AGENCIES? _____ yes _____ no

DOES THIS SUBSTITUTION REQUIRE CHANGES TO THE DRAWING OR SPECIFICATION? _____ yes _____ no

REASON FOR SUBSTITUTION REQUEST: (CHECK ONE OR MORE)

PRODUCT OR MATERIAL IS EQUAL - NO COST SAVINGS _____

PRODUCT OR MATERIAL IS EQUAL - COST SAVINGS _____

ORIGINAL SPECIFIED PRODUCT OR MATERIAL
IS UNAVAILABLE _____

ORIGINAL SPECIFIED PRODUCT OR MATERIAL
WILL DELAY PROJECT _____ CALENDAR DAYS _____

PRODUCT OR MATERIAL WILL SHORTEN CONSTRUCTION
SCHEDULE _____ CALENDAR DAYS _____

PRODUCT OR MATERIAL IS NOT EQUAL - COST SAVINGS _____

Section 01 70 00

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: General requirements for installing, applying, and placing products, and for correction of defective Work.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 RELATED SECTIONS:

1.2.1 Project Meetings as specified in Section 01 31 20.

.1 Pre-installation conference where procedures for installing, applying, and placing products are reviewed prior to performance of the Work.

1.2.2 Individual Product Specification Sections: Specific requirements for installing, applying, and placing products.

1.2.3 Deliver all keys, construction and permanent, properly identified, to the Owner.

1.3 EXECUTION:

1.3.1 Manufacturer's Requirements: Determine product manufacturer's requirements and recommendations prior to commencing Work.

1.3.2 Execution: Perform installation, application, and placement actions according to manufacturer's instructions and recommendations and according to specified procedures.

.1 Preform surface preparation as necessary to create suitable substrates for application, installation, and placement of products.

.2 Notify Architect in writing of unsuitable conditions preventing proper performance of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 INSTALLATION, APPLICATION, AND PLACEMENT OF PRODUCTS:

3.1.1 Manufacturer's Instructions: Comply with manufacturer's written instructions and recommendations for installing, applying, placing, and finishing products.

3.1.2 Installation, Application, and Placement, General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

.1 Make vertical work plumb, and make horizontal work level.

.2 Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

.3 Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

.4 Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling, unless otherwise directed.

.5 Install products at the same time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until acceptance of the Work.

.6 Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

3.1.3 Tools and Equipment: Do not use tools and equipment that produce noise and/or vibration levels which are objectionable to the Owner or existing facility users.

3.1.4 Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

.1 Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Architect.

.2 Allow for building movement, including thermal expansion and contraction.

3.1.5 Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, submit proposed locations for Architect approval to arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

3.1.6 Hazardous Materials: Use products, cleaners, and installation materials that do not contain hazardous materials which create hazards to health or property.

3.1.7 Cleaning: Comply with requirements specified in Section 01 74 00. See individual product Specification Sections for specific cleaning procedures to be performed.

3.1.8 Protection: Provide barriers, covers, and other protective devices as recommended by manufacturer and complying with general requirements specified in Section 01 50 00.

.1 Comply with manufacturer's written instructions and specified requirements for temperature and relative humidity prior to installation of products.

.2 See individual product Specification Sections for specific protective measures to be provided.

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

3.2 OWNER-INSTALLED PRODUCTS:

3.2.1 Site Access: Provide access to Project site for Owner's separate contractors or vendor forces.

3.2.2 Coordination: Coordinate construction and operations of the Work with work performed by Owner's separate contractors or vendor forces.

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

.2 Pre-installation Conferences: Include Owner's separate contractors or vendor forces as pre-installation conferences covering portions of the Work that are to receive Owner's work. Attend pre-installation conferences conducted by Owner's separate contractors or vendor forces, if portions of the Work depend on Owner's construction.

3.3 CORRECTION OF WORK:

3.3.1 Correction of Work General: Repair or remove and replace defective construction. Restore damaged substrates and finishes.

.1 Comply with requirements of other Sections for repair, cutting and patching of damaged or defective Work.

.2 Repairing shall include replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

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

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

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

3.3.2 Restoration of Existing Conditions: Restore permanent facilities used during construction to their specified conditions.

3.3.3 Restoration of Existing Facilities: Restore existing facilities damaged or destroyed to the conditions that existed prior to commencement of Work.

END OF SECTION

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Section 01 74 00

CLEANING

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Cleanup during construction and final cleaning of the building(s) before acceptance by the Owner, including waxing and polishing as specified herein and in other sections when specified.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

PART 2 - PRODUCTS

2.1 MATERIALS:

Use cleaning materials which will not create hazards to health or property and which will not damage materials. Use cleaning materials and methods recommended by the manufacturer of the surface material to be cleaned. Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

PART 3 - EXECUTION

3.1 CLEANUP DURING CONSTRUCTION:

3.1.1 It is required that the entire site be kept in a neat and orderly condition, and the Architect may, at any time during construction, order a general cleanup of the site as a part of the Work.

3.1.2 Dispose of waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Bury no such waste material and debris on the site. Burning of trash and debris on the site will not be permitted.

3.1.3 Location of dump for trash and debris and length of haul is the Contractor's responsibility.

3.2 FINAL CLEANING OF BUILDING(S):

3.2.1 Before final inspection by the Architect and after all construction activity is essentially complete, thoroughly clean the building(s), utilizing professional building cleaners. Items to be cleaned include, but are not limited to; all glass, plastic, doors, opening frames, grilles, trim, exposed nonferrous metal surfaces, floor covering, light fixtures and plates, plumbing fixtures and trim, and all finish surfaces throughout the

construction. Thoroughly remove ink trademarks from plastic laminate surfaces. Vacuum clean the building(s) and remove all spots, smears, dust, debris, hand prints and defacements of every sort, including those of vandals. Follow the recommendations of the manufacturer of the materials and items to be cleaned for all cleaning, polishing, and treatment such as waxing.

3.3 FINAL SITE CLEANUP:

Also before final inspection, thoroughly clean the entire site and put it into a neat, acceptable condition. Remove from the entire site all construction waste and unused materials, dunnage, loose rock and stones, excess earth, roots, weeds, and all debris of any description resulting from the Work. Hose down and scrub where necessary all new concrete and asphalt pavement and walks dirtied as a result of the work. Thoroughly remove mortar droppings from concrete walks and other pavements.

END OF SECTION

38-001 – 04/15/2019

Section 01 77 00

CLOSEOUT SUBMITTALS AND PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Closing out the Contract and assisting in Owner's final inspection.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 REQUIREMENTS PREPARATORY TO FINAL INSPECTION:

1.2.1 Remove temporary facilities from the site as specified in Section 01 50 00.

1.2.2 Thoroughly clean the building and site as specified in Section 01 74 00.

1.2.3 All plumbing and mechanical equipment shall operate quietly and free from vibration. Properly adjust, repair, balance, or replace equipment producing objectionable noise or vibration in the occupied areas of the building. Provide additional brackets, bracing, other methods to prevent objectionable noise or vibration. All systems shall operate without humming, surging, or rapid cycling.

1.2.4 Properly mount all operating instructions for equipment and post as specified in their respective sections.

1.2.5 Record (as-built) drawings shall be completed, signed, and submitted to the Architect as specified herein.

1.2.6 Submit to the Architect, the material and equipment maintenance instructions, as specified in the body of the Specifications.

1.2.7 Submit to the Architect, all guarantees and warranties as specified in the General Conditions.

1.2.8 Submit to the Architect, "Contractor's Affidavit of Payment of Debts and Claims", A.I.A. Document G-706; and "Contractor's Affidavit of Release of Liens", A.I.A. Document G-706A.

1.2.9 Deliver all tools which are a permanent part of equipment installed in the Work to the Owner.

1.2.10 Deliver all keys, construction and permanent, properly identified, to the Owner.

1.3 FINAL INSPECTION:

1.3.1 After all requirements preparatory to the final inspection have been completed as herein specified, notify the Architect to perform the final inspection. Give notice at least 3 working days in advance of the time the final inspection is to be performed. Final approval of the Work shall be in conformance with 7-155, Part 1, Title 24 California Code of Regulations (CCR).

1.3.2 The Contractor or his principal superintendent, authorized to act in behalf of the Contractor, shall accompany the Architect and Owner on the final inspection tour, as well as principal subcontractors that the Architect or Owner may request to be present.

1.3.3 If the Work has been completed in accordance with the Contract Documents, and no further corrective measures are required, the Owner will accept the Work and will file for the Notice of Completion.

1.3.4 If the Work has been substantially completed in accordance with the Contract Documents, and only minor corrective measures are required, the Contractor shall prepare a punch list of items to be corrected and the Owner will conditionally accept the Work and will file for the Notice of Completion based upon the Contractor's assurance that the corrective measures will be completed within the shortest practicable time period.

1.3.5 If the Work has not been substantially completed in accordance with the Contract Documents, and several corrective measures are still required, the Owner will not accept the Work or file for the Notice of Completion. Instead, a punch list shall be prepared by the Contractor, based on the information gathered from the final inspection. The Contractor shall complete or correct the items listed on this punch list and then call for another final inspection, following the procedure outlined above.

1.3.6 Upon acceptance of the Work by the Owner, Contractor shall submit his request for final and acceptance payment. Final payment will not be made by the Owner, however, until 35 days after filing for the Notice of Completion.

1.4 RECORD DRAWINGS:

1.4.1 The Architect shall provide to the Contractor, at the Owner’s expense, a set of reproducible or electronic drawings of the original Contract Documents, which shall be used for recording the “As-Built” condition of the work.

.1 Provide additional Drawings as are required to properly describe changes in the Work.

.2 Record Drawings shall be prepared carefully and neatly by a competent drafter, familiar with the trade involved, using drafting methods acceptable to the Architect.

1.4.2 Concealed shall mean construction installed underground or in an area which cannot be readily inspected by use of access panels, inspection plates or other removable features.

1.4.3 Maintain a set of Record Drawings at the Project site. Keep Record Drawings current and legible, and available for inspection at all times by the Architect. Show all changes in the Work, or Work added on the Record Drawings in a contrasting color.

1.4.4 In showing changes in the Work, or added Work, use the same legends that are used on the Contract Drawings. Indicate exact locations by dimensions and exact elevations. Give dimensions from a permanent point.

1.4.5 Provide Record Drawings clearly showing the following:

.1 Differences in size, location, materials between the Contract Work as drawn and as installed for all exposed and concealed construction.

.2 Construction added to the Contract which is not indicated on the Contract Drawings.

.3 Location of all significant Work concealed inside the building, including ductwork, electrical lines and conduit, and plumbing piping.

.4 Dimensions and locations to a constructed building element of all major structural components including posts, columns, shear walls, load bearing walls, and major load bearing beams, and framed openings for future work.

.5 Locations of underground work including points of connection, valves, manholes, catch basins, capped stub-outs and invert elevations.

.6 Actual numbering of each electrical circuit.

1.5 OPERATION AND MAINTENANCE DATA SUBMITTAL:

1.5.1 Submit to the Owner for approval, 5 copies of complete operation and maintenance data as specified herein and in other sections of these specifications. Submit data a minimum of 30 days before completion of the Contract. The Contract will not be considered complete until this data has been reviewed by the Owner.

1.5.2 Assemble all data required herein, except that to be mounted in frames, in three-ring loose-leaf binders, complete with index, index dividers, and permanently attached exterior label on cover.

1.5.3 Data Required:

.1 Manufacturer's Manuals: Submit complete installation, operation, maintenance and service manuals, and printed instructions and parts lists for all materials and equipment where such printed matter is regularly available from the

manufacturer. This includes, but is not limited to such service manuals as may be sold by the manufacturer covering the operation and maintenance of his items, and complete replacement parts lists sufficiently detailed for parts replacement ordering to manufacturer. Bound publications need not be assembled in binders.

.2 Equipment Nameplate Data: Submit a typewritten list of all mechanical and electrical equipment showing exact equipment nameplate data. Identify equipment by means of names, symbols, and numbers used in the contract documents.

.3 System Operating Instructions: Submit typewritten instructions covering operation of the entire system as installed (not duplicating manufacturer's instructions for operating individual components). Include schematic flow and control diagrams as appropriate and show or list system valves, control elements, and equipment components using identification symbols and numbers. List rooms, area of equipment served, and show proper settings for valves, controls, and switches.

.4 System Maintenance Instructions: Submit typewritten instructions covering routine maintenance of system. List each item of equipment requiring inspection, lubrication, or service and briefly describe such maintenance, including types of lubricants and frequency of service. It is not intended that these instructions duplicate manufacturer's detailed instructions. Give name, address and phone number of nearest firm authorized or qualified to service equipment or provide parts.

.5 Wall Mounted Data: Frame one set of typewritten system instructions and diagrams as required under Paragraphs .3 and .4 above, covered with glass and mounted in locations as directed by the Owner. This set of instructions is in addition to the 5 required herein.

1.6 INSTRUCTION OF OWNER'S MAINTENANCE PERSONNEL BY CONTRACTOR:

1.6.1 After Work under this contract is completed, tested and before acceptance, and not less than 5 days after submittal of the operation and maintenance data required in Paragraph 1.5, operate all systems for a period of three 8-hour days during which time keep on the project competent personnel familiar with the items installed whose full-time assignment will be to instruct the Owner's maintenance personnel in the operation and maintenance of the equipment and systems.

1.6.2 Instructions from manufacturer's representatives required under other sections of this specification shall be conducted during this period. Do not conduct this instruction period before completion of piping and equipment labeling required.

1.6.3 Make arrangements and notices for operation and instruction periods through the Owner.

1.6.4 This 3 day instruction period shall be in addition and subsequent to any period of operation, test and adjustment called for elsewhere in this specification.

1.7 MANUFACTURERS' WARRANTIES:

1.7.1 Deliver all manufacturers' warranties required by the Contract Documents, with Owner named as the beneficiary. In addition, for all equipment and machinery, or components thereof, bearing a manufacturers' warranty that extends for a longer time period than the Contractor's warranty, secure and deliver the manufacturers' warranties in the same manner.

1.7.2 Form of Warranty: Submit written warranties, except manufacturers' standard printed warranties, on the Contractor's, subcontractor's, material suppliers', or manufacturer's own letterhead, addressed to the Owner. Submit all warranties in duplicate, and in the form shown on the following page, modified as approved to suit the conditions pertaining to the warranty.

1.7.3 Submission of Warranties: Collect and assemble all written warranties into a bound booklet form, and deliver them to the Owner for final review and approval.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

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(To be typed on Letterhead of Contractor responsible for Work to be guaranteed.)

GUARANTEE FOR

_____
(Work)

We hereby guarantee that the _____ Work

performed for the construction of _____
(Name & Address of Project per Specifications)

_____
has been performed in accordance with the Drawings and Specifications and that the Work as installed will fulfill the requirements of the Guarantee included in the Specifications. We agree to repair or replace any or all of our Work, together with any adjacent Work which may be displaced by so doing, that may prove to be defective in its workmanship or materials within a period of _____ (_____) year(s) from date of acceptance of the above named project

by the Owner, _____

_____
(Name of Owner per Specifications)

without any expense whatsoever to the said Owner, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above mentioned conditions within thirty (30) days after being notified in writing by the Owner, we collectively or separately do hereby authorize the Owner to proceed to have said defects repaired and made good at our expense and we will honor and pay the costs and charges therefrom upon demand.

Date: _____ Signed: _____
(Subcontractor) (Supplier)

Date: _____ Signed: _____
(Contractor)

Local Representative to be contacted for services:

Name: _____ Phone No. _____

Address: _____

_____

(Sample Form)

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

A. General Conditions of the Contract: Warranty and correction of work.

B. Section 01 77 00 - Contract Closeout: Contract closeout procedures.

C. Individual specification sections: Provision of warranties required for specific products or work.

1.02 FORM OF SUBMITTALS

A. Form of warranty: Written warranties, except manufacturer's standard printed warranties, shall be on the contractor's subcontractor's, material supplier's, or manufacturer's own letterhead, addressed to the owner. All warranties shall be submitted in duplicate, and in the format supplied with this section, modified as approved to suit the conditions pertaining to the warranty.

B. Bind warranties in commercial quality 8½" x 11" binders, with hardback, cleanable, plastic covers.

C. Label cover of each binder with typed or printed title "WARRANTIES", with title of project, name, address and telephone number of contractor, and the name of responsible principal.

D. Table of Contents: Neatly typed, in the sequence of the table of contents of the project manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

E. Separate each warranty 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.

1.03 PREPARATION OF SUBMITTALS

A. Obtain warranties, executed in duplicate by responsible subcontractor, suppliers, and manufacturers, within (10) days after completion of the applicable item of work. Except for items put into use with owner's permission, leave date of beginning of time of warranty until the date of final acceptance of the project by the owner.

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

C. All warranties shall be signed by both the general contractor and the appropriate subcontractor.

D. Retain warranties until time specified for submittal.

1.04 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during construction with owner's permission, submit documents within ten (10) days after acceptance.

B. Make other submittals prior to final application for payment.

END OF SECTION

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Section 01 78 90

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: The preparation and submittal of drawings of the work as it is built, job record and as-built drawings.

1.1.2 Related Documents: The Conditions of the Contract and other sections of Division 1 apply to this section as fully as if repeated herein.

1.2 GENERAL:

1.2.1 The Contractor shall provide complete as-built drawings in accordance with the General Conditions and as specified herein. The drawings shall indicate the actual work as it is built, including work added by addenda and change orders. This does not include changes to the structural framework.

1.2.2 The Contractor shall purchase from the Architect, at the cost of the reproduction, one complete set of reproducible copies of the Contract Document Drawings. These reproducible copies shall be used for the final as-built drawings.

1.3 JOB RECORD PRINTS:

1.3.1 One complete set of black line prints of the contract documents shall be used for the job record prints.

1.3.2 The job record prints shall be kept in the custody of the Owner's Inspector and shall not be used for any other purpose. The Owner's Inspector will ensure that the record prints are up to date, but he shall not be responsible for their accuracy. The Contractor's civil engineer shall keep records of all concealed work, as it is installed, on these prints.

1.3.3 Records shall be kept current, in a neat and legible manner, and shall be available for inspection at all times by the Architect. All entries shall be made on the sheet where the work was originally shown. Show all changes in the work on the record drawings, in a contrasting color.

1.3.4 Do not conceal any work until dimensions are recorded on the job record prints. Should any work be concealed before it is recorded on the record drawings, and verified by the Contractor's civil engineer, the Contractor shall expose the work, at his expense, so that dimensions can be taken and recorded.

1.3.5 All dimensions shall be taken from permanent, easily identifiable reference points.

1.3.6 Progress Payments: Progress payments will not be approved by the Inspector until all concealed work, to date, is properly recorded on the record prints. The Inspector will indicate the condition of the record prints in his monthly report.

1.4 WORK REQUIRED TO BE RECORDED:

1.4.1 Location of the following work concealed inside the building in areas which cannot be readily inspected by use of access or inspection panels or other removable features shall be recorded on the record drawings:

.1 Roof structural system

.2 Fire sprinkler piping and appurtenances

.3 Heating ventilating and air conditioning duct work

.4 Electrical conduit and wiring

.5 Plumbing piping.

1.4.2 The accuracy of the location of the following site work shall be recorded on the job record prints. The Contractor shall employ a civil engineer to prepare and certify the accuracy of the final as-built drawings. The civil engineer shall be approved in writing by the Architect.

.1 Structures, located with respect to property lines or monumented corners.

.2 Location and elevation of concrete and asphalt concrete paving, topsoil and earth.

.3 Location of fencing and gates.

.4 Finish grades at 50 foot intervals.

.5 Location and elevation of all underground work, including but not limited to, electrical conduits, flow line elevations, storm drain lines, sewer lines and clean-outs, plugged tees, capped ends, catch basins, drainage structures and man holes.

.6 Location of all concealed work in areas which cannot be readily inspected by use of access or inspection panels or other removable features.

1.4.3 An aerial survey will not be acceptable for the as-built drawings.

1.5 FINAL AS-BUILT DRAWINGS:

1.5.1 At the conclusion of the work, the Contractor's civil engineer shall prepare the final as-built drawings on the reproducible copies of the contract documents from the information recorded on the job record prints.

1.5.2 The reproducible copies shall be changed to indicate the work as it is built. The exact horizontal and vertical locations of all concealed work shall be dimensioned as it is built. The same information required on the job record prints shall be required on the final as-built drawings, except the final as-built drawings shall be changed to show only the work as it is built. All other irrelevant lines, dimensions and printing which do not indicate the as-built conditions shall be removed.

1.5.3 The changes shall be done in a neat, clear, professional manner and shall be indicated on the sheets where the work was originally shown. Use the same legends and symbols used on the Contract Documents.

1.5.4 The Contractor's civil engineer shall sign and stamp the final as-built drawings.

1.5.5 Prior to final inspection, the Contractor shall deliver the final as-built drawings and the job record prints to the Architect. If the final as-built drawings do not meet the requirements specified herein, the drawings will be returned to the Contractor for correction. The Architect will review the drawings for legibility and quality of drafting only, not for accuracy.

1.5.6 The final payment by the Owner is contingent on the Architect's acceptance of the final as-built drawings.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

38-001 – 04/15/2019

Section 02 22 20

DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Alteration work consisting of necessary demolition and removal of existing work and installation of new work as indicated and specified in applicable technical sections of the Specifications.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 ALTERATIONS:

1.2.1 Verification of Existing Conditions:

.1 Verify, at the site, conditions affecting the work. Obtain accurate field dimensions of related areas, spaces, openings, levels, and items of adjacent work. Before commencing work, report to the Architect/Designer in writing, discrepancies between the drawings and specifications and the actual field conditions. Commencement of work shall constitute acceptance of all adjacent conditions affecting the work of the section involved.

.2 Drawings show the existing conditions as they are believed to exist. Examine the existing conditions, alter the existing building as indicated, complete, and make required connections between existing and new. Protect existing utilities and structures.

1.2.2 Portions of existing structure where existing work is to be demolished or removed, and where new work is to be done, connections made, materials handled or equipment moved and relocated, shall be temporarily protected. Temporary protection shall be such that interior of existing structure will at all times be protected from dust and weather inclemency. Provide suitable temporary dust proof barrier partitions with hinged doors in existing structure where and as directed and approved by the Architect/Designer. Protect temporary openings in exterior walls by temporary weatherproof plywood closures. The Contractor will be held responsible for damage to existing structure and contents by reason of insufficiency of such protection.

1.2.3 Where alterations occur, or new and old work join, immediate adjacent surfaces, or so much thereof as is required by involved conditions, shall be cut, removed, patched, repaired or refinished and left in as good condition as existed before commencing work. Materials and workmanship employed in alterations involving new construction, unless otherwise indicated or specified, shall conform to that of original work.

.1 Where existing materials to remain interfere with installation of new work, remove existing materials. After installation of new work is complete, or in conjunction

with installation of new work as applicable, reinstall existing materials, patch and refinish, or provide new to match existing.

1.2.4 Relocate certain materials and equipment as indicated or specified. Refinish certain existing surfaces as specified in applicable technical sections. Repair and refinish relocated materials and equipment as necessary to leave finished work in good condition.

1.2.5 Salvaged materials occurring from work wrecked or removed shall become property of the Contractor (unless otherwise noted in the Specifications or Drawings to remain property of the Owner) and shall be removed by him from project site. Salvaged material specified or noted on Drawings to be retained by the Owner shall be protected, stored where directed. Construction equipment and mechanical and electrical equipment remaining the property of the Owner shall be carefully removed and stored on project site where directed, except that such items indicated or specified to remain or be relocated shall be set and connected in indicated location.

1.2.6 Before commencing alteration, removal and demolition work, prepare and submit for review by the Architect/Designer and Owner, a schedule showing commencement, order and completion dates of various parts of the work.

1.2.7 Before starting work relating to existing utilities (electrical, sewer, water, heat, gas, fire lines, etc.) that will temporarily discontinue or disrupt service to existing buildings, give 2 working days notice to the Architect/Designer and Owner and obtain their approval in writing before proceeding with this phase of the work.

1.3 REGULATORY REQUIREMENTS:

Demolition work shall conform to the California Fire Code, Article 87, "Fire Safety During Construction, Alteration or Demolition of a Building".

1.4 SUBMITTALS:

1.4.1 Schedule: Submit schedule indicating proposed methods and sequence of operations for demolition work for remodeling. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.

.1 Provide detailed sequence of demolition and removal operations to ensure uninterrupted progress of Owner's on-site operations.

1.4.2 Submittal procedures and quantities are specified in Section 01 33 40.

1.5 IMPACT ON OWNER'S OPERATIONS:

1.5.1 If and when it should be necessary for the Contractor to impact the day-to-day operations of Owner's functions in order to pursue the work, the Contractor shall furnish 3 working days notice to the Owner and coordinate the means and timing to

avoid, minimize, or circumvent such impacts. The Owner reserves the right to assess and anticipate such impacts and the right to stop or postpone the work until a mutually satisfactory time and means can be agreed upon. Costs incurred due to delays caused by such impacts on Owner's functions will be negotiated at the time of the occurrence of such delay. Typical impacts shall include, but not be limited to, the following:

.1 Interruption of utility service serving the existing buildings, areas, or functions.

.2 Blockage of or inhibiting access to existing entry, exit, dock, delivery or pickup point, driveway, fire hydrant. Take care to maintain access for delivery of supplies, entry and egress of visitors and employees.

.3 Noise, dust, dirt, water, fumes or other objectionable, hazardous, or disruptive conditions.

.4 Interruption of heating, air conditioning, and ventilation systems.

.5 Interruption of internal systems such as gas supplies, communications, fire sprinklers, fire alarms.

1.6 PROJECT CONDITIONS:

1.6.1 Occupancy: The Owner will be continuously occupying buildings adjacent to areas of demolition operations. Conduct demolition operations in a manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 3 working days advance notice to Owner of demolition activities which will severely impact Owner's operations.

1.6.2 Condition of Structure: The information indicated represents only the opinion of the Owner as to the character of the materials to be encountered and their locations. The Owner assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the Drawings or the interpretation thereof, and there is no warranty or guarantee, either expressed or implied, that the conditions and locations indicated are representative of those existing throughout the existing structures or that unforeseen developments may not occur.

1.6.3 Disconnection of Services: Notify Owner and authorities owning or controlling wires, conduits, pipes, and other services affected by demolition or remodeling a minimum of 3 working days or as required by company, utility, or local authority having jurisdiction before commencing operations.

.1 Disconnect and cap pipes and services as required by company, utility, or local authority having jurisdiction, and as required for demolition Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION:

3.1.1 The drawings show general information only. Examine the site to determine the exact existing conditions and character and extent of the Work to be performed and operations required.

3.1.2 Verify that spaces to remain unaltered adjacent to areas of demolition, alteration, or cutting are completely secured and rendered dustproof before beginning such work.

3.2 PREPARATION:

3.2.1 Provide barricades, and maintenance and supervision thereof, in accordance with applicable Federal, State and local Codes and their respective requirements, or as may be directed from time to time. Install temporary barricades, enclosures and protections before demolition work is started.

3.2.2 Protection from Weather: Protect the interior of the existing building from damage by weather at all times during demolition and remodeling operations.

3.3 GENERAL DEMOLITION REQUIREMENTS:

3.3.1 Remove existing work and items which are required to be removed in such manner that minimum damage and disturbance is caused to adjacent and connection work scheduled to remain. Repair or replace, at the discretion of the Architect, existing work scheduled to remain which is damaged by these operations.

3.3.2 Include preparation of existing areas to receive new materials and removal of materials and equipment to alter or repair the existing building as indicated and as specified.

3.3.3 Perform demolition exercising proper care to prevent injury to the public, workmen and adjoining property.

3.3.4 Perform the removal, cutting, drilling of existing work with extreme care, and use small tools in order not to jeopardize the structural integrity of the building.

3.3.5 Rebuild existing work which has to be removed to allow the installation of new work as required by the Architect.

3.3.6 Remove, protect and reinstall existing items as indicated. Replace materials scheduled for reuse which are damaged by the Contractor to the extent that they cannot be reused, with equal quality material.

3.4 DEMOLITION RESTRICTIONS:

3.4.1 No blasting will be permitted.

3.4.2 Burning of rubbish at the site will not be permitted.

3.4.3 Do not operate air compressors inside of existing buildings.

3.4.4 Drilling or cutting of columns, beams, joists, girders, or other structural supporting elements will not be permitted, unless specifically approved by the Architect.

3.4.5 Cover openings temporarily when not in use and patch as soon as work is installed.

3.5 REMOVED AND SALVAGED ITEMS:

3.5.1 Clean salvaged items.

3.5.2 Pack or crate items after cleaning, identify contents of containers.

3.5.3 Store items in a secure area until delivery to Owner.

3.5.4 Transport items to Owner's storage area designated by Owner.

3.5.5 Protect items from damage during transport and storage.

3.6 REMOVED AND REINSTALLED ITEMS: Comply with the following:

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

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

3.6.3 Protect items from damage during transport and storage.

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

3.7 EXISTING ITEMS TO REMAIN:

3.7.1 Protection construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition {and cleaned} and reinstalled in their original locations after selective demolition operations are complete.

3.8 SPECIFIC DEMOLITION REQUIREMENTS:

3.8.1 Interior Slabs On Grade: Use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.

3.8.2 Concrete: Demolish concrete in small sections. Cut concrete at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools. Saw concrete along straight lines to a depth of not less than 1-1/2 inches. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete or masonry is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

3.8.3 Anchorages: Remove anchorages to at least 1/2-inch below the surface of concrete or masonry and patch depressions to provide a flush surface. Where surface will be concealed in the finished work, anchors may be cut flush with the surface.

3.8.4 Remove resilient flooring to extent indicated. Clean existing substrate ready to install new flooring materials.

3.8.5 Gypsum Board: Cut back the gypsum board to the centerline of the next adjacent support to remain. Leave remaining material with a clean terminal line with no loose adhering material.

3.8.6 Acoustic Tile and Panels: Remove tile and suspension system back to next full unit beyond the removal line. Remove individual panels where required for new light fixtures and elsewhere as indicated or directed. Store and protect units suitable for re-installation where indicated in the new work.

3.8.7 Casework: Remove existing upper and lower casework as indicated on Drawings, repair floor as required.

3.8.8 Building Components: Remove existing bumper rail and coat rack as indicated. Remove existing electrical cut-off switch, and store for re-installation.

3.8.9 Fire-Resistive Corrugated Board – Corrugated Firewall FRB Class 94 V-2. Separate construction area from adjacent occupied space above ceiling to underside of deck above with fire resistive visqueen.

3.8.10 Provide two zipper curtains of fire resistant visqueen. Temporary exiting provisions shall meet OSHPD requirements CAN 9-3301 and Construction/Infection Control barrier placement shall be coordinated with OSHPD Field also.

3.9 SALVAGED MATERIALS AND ITEMS:

3.9.1 Do not reuse in this project, materials and items removed from existing site or buildings, except with specific written approval by the Architect in each case, unless such removed material or item is specifically indicated or specified to be reused.

3.9.2 Remove materials and equipment indicated to be salvaged for reinstallation and store to prevent damage, and reinstall as the work progresses. Do not reuse in this project, other materials and equipment removed from existing site or building, except with specific written approval by the Architect in each case.

3.9.3 Historic artifacts, including cornerstones and their contents, commemorative plaques and tablets, antiques, and other articles of historic significance remain the property of the Owner. Notify Owner if such items are encountered and obtain acceptance regarding method of removal and salvage from Owner.

3.9.4 Dismantled materials and items to be reused shall be in good condition without objectionable cracks, chips, splits, checks, dents, scratches, or other defects. Operating items shall operate properly.

3.10 ALTERATIONS, PATCHING AND REPAIRS:

3.10.1 Patch areas requiring patching, including damage caused by removing, relocating, or adding fixtures and equipment, damages caused by demolition at adjacent materials.

3.10.2 Existing permanent walls which remain shall have smooth regular surfaces with no visible marks from previous abutting construction.

3.11 DISPOSAL OF DEMOLISHED MATERIALS:

3.11.1 Do not stockpile debris in the existing building, without the approval of the Architect. Remove debris as it accumulates from removal operations to a legal disposal area.

3.11.2 If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution.

3.12 NOISE ABATEMENT AND DUST POLLUTION:

3.12.1 Noise Abatement: Limit noise to a reasonable level as related to specific items of equipment used and their hours of use. This does not preclude use of mechanical equipment, i.e. jack hammers, powder-driven fasteners.

3.12.2 Dust Pollution: During demolition take precautions to moderate the intensity of blowing dust and dirt.

END OF SECTION

Section 03 20 00

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Reinforcing steel.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES:

The editions of the specifications and standards referenced herein, published by the following organizations, apply to the concrete reinforcement only to the extent specified by the reference. Refer to Section 01 42 20 for information concerning availability and use of references.

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

1.3 SUBMITTALS:

1.3.1 Shop Drawings: Submit shop and placement drawings of reinforcing steel. Placement drawings shall be complete so that placement of the reinforcing may proceed without reference to the design drawings.

.1 Placement drawings shall show the locations and spacing of reinforcing in the various parts of the structure with details as required, in accordance with ACI SP-66-88. Cutting and bending lists submitted without placement drawings will be returned without review as incomplete.

.2 Review shall not act to relieve the Contractor from responsibility for accuracy of the fabrication details and placing diagrams. Verify dimensions and locations before the preparation of shop drawings.

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

1.3.3 Samples for Architectural Exposed Concrete: Submit 5 samples of each type of reinforcing chair, spacer, tie wire and other accessories.

1.3.4 Submittal procedures and quantities are specified in Section 01 33 40.

1.4 QUALITY ASSURANCE:

1.4.1 Regulatory Requirements: Except as modified by the requirements specified herein or the details indicated, concrete reinforcing shall conform to the 2016 California Building Code (CBC), Chapter 19A - Concrete.

1.4.2 Qualifications: Welders and welding procedures shall be qualified in accordance with the latest edition of AWS D1.4. Welders qualified by another employer and welding procedures previously qualified by others may be accepted as permitted by the latest edition of AWS D1.4. Qualification tests, when required, shall be performed at the Project site and the Contractor shall notify the Architect at least 24 hours before conducting the tests.

1.5 DELIVERY, STORAGE, AND HANDLING:

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

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

1.5.3 Store welding electrodes in accordance with AWS and the electrode manufacturer. Do not use electrodes that have been wetted.

1.6 COORDINATION:

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

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Reinforcing Bars:

.1 New, deformed, billet steel bars, complying with ASTM A 615, grades as indicated.

.2 Where welding of reinforcing steel is required or approved, provide deformed, low alloy steel bars complying with ASTM A 706, Grade 60. At the Contractor's option deformed billet steel bars complying with ASTM A 615, Grade 60, may be used provided they meet the following requirements:

a. The carbon equivalent (C.E.) of reinforcing bars or splice material shall be calculated from the chemical composition as shown in the mill report by the following formula:

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

b. If mill test reports are not available, chemical analysis shall be made of bars representative of the bars to be welded. Bars with a C.E. above 0.75 shall not be welded.

2.1.2 Welded Wire Fabric: New welded steel wire fabric, complying with ASTM A 185 for plain type, and ASTM A 497 for deformed type, gage and center-to-center spacing as indicated.

2.1.3 Accessories: Provide reinforcement accessories, consisting of spacers, chairs, ties, and similar items as required for spacing, assembling, and supporting reinforcement in place. Provide accessories fabricated from galvanized steel or approved plastic accessories, conforming to the applicable requirements of the CRSI MSP-1-90.

2.1.4 Reinforcing Supports for Architectural Exposed Concrete: Devices touching exposed surfaces shall be high density plastic with maximum 1/8 inch round feet where in contact with form surfaces. Chairs shall be laid out in-line with the edge surface of the formwork. Color of plastic shall match the finished concrete.

2.1.5 Tie Wire: 16 gage or heavier, where indicated or specified, black or galvanized steel wire, meeting the requirements of ASTM A 82.

2.1.6 Welding Electrodes: AWS A5.1, grade E70XX for welding grade 40 reinforcing steel and AWS A5.5, grade E90XX for welding grade 60 reinforcing steel.

2.1.7 Mechanical Splicing Devices: Acceptable products or equal:]

Gateway Erectors, Inc.; G-Loc Splices
Erico Products, Inc.; Erico Speed-Sleeve Splices
Erico Products, Inc.; Cadweld Reinforcing Bar Splices

PART 3 - EXECUTION

3.1 FABRICATION:

3.1.1 Fabricate steel reinforcement in accordance with the details indicated. Where specific details are not indicated or noted, comply with the applicable requirements of 2016 CBC Section 1704A; and ACI 318-14.

3.1.2 Bend, cut, and place bars accurately, as indicated. Bend bars cold; heating of bars will not be permitted. Do not bend or straighten bars in any manner that will injure the material.

3.2 PLACING:

3.2.1 General: Place reinforcing steel in accordance with the drawings and the applicable requirements of the CBC and ACI 315R-04. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete.

3.2.2 Reinforcing Supports: Support bars and welded wire fabric larger than 8 gage on metal chairs or spacers on metal hangers, accurately placed and securely fastened to steel reinforcement in place. Support legs of accessories in forms without embedding in form surface. Space chairs and accessories in conformance with CRSI MSP-1-90. No wood will be permitted inside forms. Precast concrete cubes may be used to support footing and slab on ground reinforcing.

3.2.3 Placing and Tying: Set reinforcing in place, space, and rigidly and securely tie or wire with 16 gage steel tie wire at splices and at crossing points and intersections in the position indicated, or as directed. Point ends of wire away from forms.

3.2.4 Spacing: Space bars as indicated. Where not indicated, the clear spacing for main longitudinal column reinforcement shall be not less than 1.5 times the nominal bar diameter, or 1-1/2 inches, or 1-1/3 times the maximum size aggregate, whichever is greater. For other parallel bars, where spacing is not indicated, the minimum clear spacing shall not be less than the nominal bar diameter, or one inch, or 1-1/3 times the maximum size aggregate, whichever is less. The clear distance limitations above also apply between the bars being spliced at a contact lap splice and adjacent bars.

3.2.5 Splices: Except for temperature bars in slabs and horizontal wall reinforcing, no splicing will be allowed for reinforcing bars unless detailed locations are indicated, or approval is given. Splices shall comply with ACI 318-14.

.1 Lapped splices shall not be used for bars larger than No. 11. Stagger lapped splices for horizontal wall reinforcing and slab temperature bars by the required lap splice length minimum.

.2 Welding of reinforcing steel will not be permitted except as specifically approved or detailed. Welding shall comply with 2016 CBC Section 1704A.34.1 and latest edition of AWS D1.4 using specified low hydrogen electrodes. No welds shall be made at bends in reinforcing bars unless specifically approved by the Architect.

a. Preheat and Post Cooling Requirements: All reinforcing steel shall be preheated before welding, except that steel for which special qualification tests are performed. The preheat temperature shall be provided in that part of the reinforcing steel that is within 6 inches of either side of the joint.

b. Arc Strikes: Arc strikes on reinforcing steel outside the area of permanent welds shall be avoided. Crack or blemishes resulting from accidental arc strikes shall be ground to a smooth contour and checked to insure soundness.

c. Tack Welds: Tack welds which do not become a part of a permanent weld are prohibited unless authorized by the Architect and approved by the Governing Authority.

.3 Make mechanical butt splices in accordance with the splicing device manufacturer's recommendations. Mechanical splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars.

3.2.6 Welded Wire Fabric: Furnish wire fabric in as long lengths as practical and wire at laps and splices. Laps shall be one full spacing of the cross wires plus 2 inches at splices. Supply welded wire fabric in flat sheets

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

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

3.3 FIELD QUALITY CONTROL:

3.3.1 Provide notification at least 2 working days ahead of each concrete pour, do not place any concrete until all reinforcing steel has been installed and reviewed. Complete all reinforcing in every way by the end of the working day before concrete placing.

3.3.2 Testing and inspections are specified in Section 01 45 70.

3.3.3 Special inspector will inspect all reinforcement for concrete work for size, dimensions, locations and proper placement. Special inspector shall be present during welding of all reinforcing steel.

3.3.4 Do not use shop or placement drawings for verifying as placed reinforcing in the field. The as placed reinforcing shall be checked with the approved set of design drawings.

3.4 DEFECTIVE WORK:

3.4.1 The following reinforcing steel construction will be considered defective. Remove defective reinforcing steel and provide new steel.

.1 Bars with kinks or bends not indicated.

.2 Bars injured due to bending or straightening.

.3 Bars heated for bending.

.4 Reinforcement not placed in accordance with the drawings or specifications.

3.5 RECORD DRAWINGS:

After all steel has been placed, correct or revise the shop and placement diagrams to correspond with changes made in the field, and submit as part of record drawings specified in Section 01 77 00.

END OF SECTION

38-001 - 09/26/2019

Section 03 90 10

CONCRETE PATCHING

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Patching and surfacing of existing concrete as indicated and specified.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 SUBMITTALS:

1.2.1 Product Data: Submit manufacturer's technical data for epoxy resin binder including recommendations for application and use.

1.2.2 Job Mix Formula: Submit a job mix formula for each use of epoxy resin. The formula shall identify the source of the materials and state the proportions of aggregates and epoxy resin.

1.2.3 Submittal procedures and quantities are specified in Section 01 33 40..

1.3 PROJECT CONDITIONS:

Do not permit heavy traffic during the curing period. Length of time for curing period shall be as recommended by the epoxy manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Epoxy Resin Binder: Meet the requirements of ASTM C 881, Grade 2, Class C. Acceptable products or equal:

Sika Corporation; Sikadur Low-Mod Gel
Sonneborn Building Products; Epolith Patcher

2.1.2 Aggregate: Meet the requirements of ASTM C 33 and shall have minimum sand equivalent of 75 percent. Maximum size for concrete patching shall be 3/4 inch, except where otherwise specified.

2.1.3 Patching Compound: Polymer modified, cement based, rapid setting compound complying with ASTM C 928. Acceptable products or equal:

Euclid Chemical Co.; Euco-Speed
The Quikrete Co.; No. 1240
Sika Corp; SikaSet

2.1.4 Polymer Adhesive: Acceptable products or equal:

Euclid Chemical Co.; Flex Con
The Quikrete Co.; No. 9902
Sika Corp; SikaLatex

PART 3 - EXECUTION

3.1 APPLICATION:

3.1.1 General: Mix the epoxy materials with or without fillers in accordance with the manufacturer's instructions. Apply mixed materials within the working life or pot life of the epoxy resin system. Remove from the project site, unused materials which have reached the end of the working or pot life.

3.1.2 Epoxy Concrete:

.1 Preparation of Patch Area: Remove loose concrete from areas to be patched. Roughen saw cut surfaces by sand blasting. Remove residual fines from all surfaces with air pressure.

.2 Mixing Materials: Make batches small enough to assure placement before binder sets.

.3 Prime Coat: Prime surfaces to be patched with the epoxy resin binder. Scrub prime coat into the surface with a stiff bristle brush. Apply coating 20 mils thick.

.4 Epoxy Concrete Binder: Mix epoxy resin binder and aggregates in accordance with manufacturer's recommendations.

.5 Placement of Epoxy Concrete: Place epoxy concrete in layers not exceeding 2 inches thick. Use vibratory floats, plates, or hand tampers to consolidate the concrete. Level each layer and screed the final surface to match the adjoining surfaces. Remove excess epoxy concrete on adjacent surfaces before the concrete hardens. Feather epoxy concrete out onto adjacent surfaces. After the finishing operations and while the epoxy resin concrete is still tacky, uniformly spread a thin coating of portland cement on the surface of the repaired area and lightly brush the cement into the surface. Upon completion of finishing operations, cure epoxy concrete in accordance with the manufacturer's recommendations.

3.1.3 Epoxy Mortar for Cracks and Saw Kerfs:

.1 Preparation of Area: Concrete to which epoxy mortar is to be applied shall be newly exposed concrete free from loose and unsound materials. Prepare surfaces by sandblasting, scarifying or water-blasting. Surfaces shall be dry before application of epoxy mortar.

.2 Placement of Epoxy Mortar: After the resin components are thoroughly mixed, add the aggregate. Batches shall be small enough to assure placement before the mortar sets. Apply epoxy mortar to concrete surface by trowel, roller or squeegee at a thickness not less than, nor more than, that recommended by the manufacturer. Work mortar into place and consolidate thoroughly so that all contact surfaces are wet by the mortar. Finish surface of mortar to the required texture. Do not feather edge epoxy mortar onto adjacent surfaces.

3.2 CONCRETE AT FLOOR TRANSITIONS:

3.2.1 Polymer Modified Cement Patching Compound.

.1 Preparation of Patch Area: Remove loose concrete from areas to be patched. Roughen saw cut surfaces by sand blasting. Remove residual fines from all surfaces with air pressure.

.2 Mixing Materials: Make batches small enough to assure placement before binder sets.

.3 Prime Coat: Prime surfaces to be patched with the epoxy resin binder. Scrub prime coat into the surface with a stiff bristle brush. Apply coating 20 mils thick.

.4 Polymer Concrete Binder: Mix polymer binder and aggregates in accordance with manufacturer's recommendations.

.5 Placement of Polymer Concrete: Place polymer concrete in layers not exceeding 2 inches thick. Use vibratory floats, plates, or hand tampers to consolidate the concrete. Level each layer and screed the final surface to match the adjoining surfaces. Remove excess polymer concrete on adjacent surfaces before the concrete hardens. Feather polymer concrete out onto adjacent surfaces. After the finishing operations and while the polymer concrete is still tacky, uniformly spread a thin coating of portland cement on the surface of the repaired area and lightly brush the cement into the surface. Upon completion of finishing operations, cure polymer concrete in accordance with the manufacturer's recommendations.

END OF SECTION

Section 05 05 19

POST-INSTALLED CONCRETE ANCHORS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Methods common to multiple Sections for fastening metals, fabrications, manufactured products, hangers, and equipment to in-place concrete, pre-cast concrete, including:

.1 Post-installed mechanical anchors.

.2 Post-installed adhesive anchors.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 DEFINITIONS:

1.2.1 Interior Use: For purposes of this Section, "Interior Use" shall mean interior applications in a non-corrosive environment.

1.2.2 Exterior Use: For purposes of this Section, "Exterior Use" shall mean applications exposed to weather in service and interior applications in a potentially corrosive environment.

1.3 REFERENCES:

1.3.1 The editions of specifications and standards referenced herein, published by the following organizations, apply to the construction only to the extent specified by the reference. Refer to Section 01 42 20 for information concerning availability and use of references.

American Concrete Institute (ACI)
International Code Council Evaluation Service Reports (ICC ESRs)

1.4 SUBMITTALS:

1.4.1 Shop Drawings: Submit shop and erection drawings for review. Review of drawings will cover only the general scheme, design, and character of the details, but not the checking of dimensions nor will such review relieve the Contractor from responsibility for executing the construction in accordance with the contract documents.

.1 Field Measurements: Before starting construction or proceeding with shop and erection drawings, verify measurements, lines, grades, elevations, locations and details of existing field conditions and be responsible for correctness, conformity, accuracy and execution of anchors to conform to actual conditions.

1.4.2 Product Data:

.1 Post-Installed Anchors: Submit for each type proposed for use on Project. Include statement of proposed applications and locations for each type of anchor.

.2 Submit current ICC ESRs for each manufactured anchor product proposed for use on this Project.

.3 Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.

.4 Submit manufacturer's installation instructions.

1.4.3 Submittal procedures and quantities are specified in Section 01 33 40.

1.5 DELIVERY, STORAGE, AND HANDLING:

1.5.1 Protect metal from corrosion.

1.5.2 Store manufactured anchors in accordance with manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 GENERAL:

2.1.1 Basis of Design: Provide stainless steel Hilti KB TZ anchors unless otherwise indicated on Drawings.

2.2 REGULATORY REQUIREMENTS:

2.2.1 Manufactured post-installed anchors shall have been published ICC-ESRs indicating conformance with current applicable ICC ESRs Acceptance Criteria and ICC approval as acceptable method of construction under the IBC. Comply with all limitations on use of anchors stipulated in Evaluation Report.

2.2.2 Post-installed anchors for Supporting Fire Sprinkler Systems: Comply with NFPA 13. Anchors shall be qualified in accordance with UL for use with "Pipe Hanger Equipment and Fire Protection Systems."

2.3 POST-INSTALLED ANCHOR MATERIALS GENERAL:

2.3.1 Wedge Anchors: Wedge type, torque-controlled, with impact section to prevent thread damage complete with required nuts and washers. Provide anchors with length identification markings conforming to ICC ES AC01 or ICC ES AC193. Type and size as indicated on Drawings.

.1 As indicated on the Drawings, provide stainless steel anchors. Stainless steel anchors shall be AISI Type 304 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. All nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals. Acceptable product Hilti Kwik Bolt TZ (KB-TZ). Refer to ICC ESR-1917

2. Description: Wedge type expansion anchor, torque-controlled, complete with required nuts and washers.

3. Provide anchors with length identification markings conforming to ICC ES AC 193.

4. Type and size as indicated on Drawings.

5. Stainless Steel Bolts: Hex cap screws and studs ASTM F593.

6. Stainless Steel Nuts: ASTM F 594.

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 General: Install post-installed anchors and inserts in accordance with applicable ICC-ES Report and with manufacturer's instructions in accurately drilled holes of required diameter and depth.

.1 Avoid installing anchors in contact with galvanically dissimilar metals.

3.1.2 Drilling:

.1 Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, and grout has achieved full design strength.

.2 Drill holes with rotary impact hammer drills using carbide-tipped bits and core drills using diamond core bits. Drill bits shall be of diameters specified by the anchor manufacturer. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.

a. Cored Holes: Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer.
b. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Architect and Structural Engineer if reinforcing steel or other embedded items are encountered during drilling. Take

precautions as necessary to avoid damaging prestressing tendons, electrical, and telecommunications conduit, and gas lines.

3.1.3 Wedge Anchors: Protect threads from damage during anchor installation. heavy-duty sleeve anchors shall be installed with sleeve fully engaged in part to be fastened. Set anchors to manufacturer's recommended torque, using a torque wrench. Following attainment of 10 percent of the specified torque, 100 percent of the specified torque shall be reached within 7 or fewer complete turns of the nut. If the specified torque is not achieved within the required number of turns, the anchor shall be removed and replaced unless otherwise directed by the Architect and Structural Engineer.

3.2 ADJUSTING:

3.2.1 Remove and replace misplaced or malfunctioning anchors. Fill empty anchor holes and patch failed anchor locations with high-strength non-shrink, non-metallic grout. Anchors that fail to meet proof load or installation torque requirements shall be regarded as malfunctioning.

3.3 SITE QUALITY CONTROL:

3.3.1 Special Inspection and Testing, General: Refer to Section 01 45 70. Special inspection and testing of post-installed anchors will be performed by an independent testing agency engaged by the Owner.

3.3.2 Testing of Post-Installed Anchors: Quality control testing shall be performed by independent testing agency. A manufacturer's representative shall be available to consult with the testing agency prior to and during the testing.

1. Testing: Comply with Expansion Anchor Bolt Notes on Structural Drawings.

3.3.3 Special Inspections: Special inspection is required for all post-installed anchor installations. Refer to Section 01 45 70.

END OF SECTION

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Section 05 12 00

STRUCTURAL STEEL

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Structural steel work complete, including architecturally exposed structural steel (AESS) work.

1.1.2 Related Documents:

.1 Miscellaneous steel fabrications not forming a part of the structural framing system are specified in Section 05 50 00.

.2 The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 DEFINITIONS:

1.2.1 Structural Steel Work: That work defined in the AISC "Manual of Practice".

1.2.2 Architecturally Exposed Structural Steel (AESS): Structural steel members that are exposed to view after interior and exterior building enclosures have been installed.

1.3 REFERENCES:

The editions of specifications and standards referenced herein, published by the following organizations, apply to the construction only to the extent specified by the reference. Refer to Section 01 42 20 for information concerning availability and use of references.

American Institute of Steel Construction (AISC)
American Society for Testing and Materials (ASTM)
American Welding Society (AWS)
Steel Structures Painting Council (SSPC)
Research Council on Riveted and Bolted Joints (RCRBJ)

1.4 SUBMITTALS:

1.4.1 Shop Drawings: Submit shop and erection drawings for review. Review of drawings will cover only the general scheme, design, and character of the details, but not the checking of dimensions nor will such review relieve the Contractor from responsibility for executing the construction in accordance with the contract documents.

.1 Field Measurements: Before starting construction or proceeding with shop and erection drawings, verify measurements, lines, grades, elevations, locations and

details of existing field conditions and be responsible for correctness, conformity, accuracy and execution of structural steel construction to conform to actual conditions.

.2 Detailing: Detail in conformance with the AISC Manual "Structural Steel Detailing", except where otherwise indicated.

.3 Field Connections: Clearly show field connections on the erection drawings with complete details as required so that the connections can be made without reference to the design drawings.

.4 Provide setting drawings, templates, and directions for installation of anchor bolt and other anchorages to be installed under other sections.

1.4.2 Product Data:

.1 Submit manufacturer's certification for bolts, nuts, washers, filler material for welding, primer and non-shrink grout.

.2 Submit mill test certificates for mill order steel which can be identified readily by means of heat or melt numbers marked at the mill. Such steel need not be tested as specified in Section 01 45 70.

1.4.3 Submittal procedures and quantities are specified in Section 01 33 40.

1.5 QUALITY ASSURANCE:

1.5.1 Qualification of Welding: Qualify welding procedures and welding operators in accordance with the latest edition of AWS D1.1. Provide certifications that welders to be employed have satisfactorily passed AWS qualification tests. If recertification of welders is required, retesting will be the Contractor's responsibility.

1.5.2 Regulatory Requirements: Except as modified by the requirements indicated or specified herein, structural steel construction shall conform to the California Building Code (CBC), Chapter 22A - Steel.

1.6 DELIVERY, STORAGE, AND HANDLING:

Deliver material in time to insure uninterrupted progress of the construction. Store materials in a manner to preclude damage and permit ready access for inspection and identification of each shipment. Store steel materials, either plain or fabricated, above the ground upon platforms, pallets, skids, or other supports. Keep materials free from dirt, grease, and other foreign matter, and protect from corrosion. Material showing evidence of damage will be rejected; immediately remove from the site.

PART 2 - PRODUCTS

2.1 GENERAL:

Use only new and undamaged materials. Steel which in the opinion of the Architect is badly corroded or physically damaged shall not be incorporated in the construction.

2.2 MATERIALS:

2.2.1 Structural Steel:

.1 Structural Steel, Shapes, Bars and Plates: ASTM A 36 or ASTM 992.

.2 Structural Tubes: ASTM A 500, Grade B or ASTM A 501.

.3 Structural Pipe Members: ASTM A 53, Type E or S, Grade B, with maximum sulfur content of 0.05 percent.

.4 Additional Requirements for Architecturally Exposed Structural Steel (AESS): The cross sectional configuration of abutting members shall match within a tolerance of 1/16 inch. The as fabricated straightness tolerances for members as a whole shall be one half the standard camber and sweep tolerances specified in ASTM A 6. Materials shall be smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of primers.

2.2.2 High Strength Bolts: ASTM A 325.

2.2.3 Common Bolts and Nuts: ASTM A 307. Provide either hexagonal or square heads and nuts except use only hexagonal units for exposed connections.

2.2.4 Filler Metal for Welding: Meet the requirements of the latest edition of AWS D1.1. Electrodes shall be as recommended by their manufacturers for the position and other conditions of actual use. Electrodes shall be E70 series.

2.2.5 Anchor Bolts, Pins and Rods: ASTM A 307, A 36, or A 283, Grade D.

2.2.6 Primer:

.1 Interior AESS and Concealed Structural Steel: Fast curing, lead and chromate free, modified alkyd primer. Acceptable products or equal:

Carboline Co.; No. GP-20 or GP-818
Rust-O-Leum Corp.; No. 678 or 7669
The Sherwin Williams Co.; No. B50 N 2 or B50N Z 6
Tnemec Co., Inc.; 10-99 or P10-99

2.2.7 Galvanizing: ASTM A 123.

2.2.8 Galvanizing Repair Compound: High zinc dust content galvanizing repair paint conforming to ASTM A 780 or hot applied zinc rich material. Acceptable products or equal:

American Solder & Flux; Drygalv
Kenco Div.; Galvicon
Metalloy Products Co.; Galvalloy

2.2.9 Metallic, Nonshrink Grout: For grout in concealed locations use premixed factory packaged, ferrous aggregate, grouting compound meeting the requirements of ASTM C 1107. Acceptable products or equal:

Gifford-Hill & Co., Inc.; Supreme Plus
Master Builders; Embeco 636
Sonneborn Building Products; Ferrolith G-DS

2.2.10 Nonmetallic, Nonshrink Grout: For grout in exposed to view locations use premixed, nonmetallic, non-corrosive, non-staining grouting compound containing silica sands, portland cement, shrinkage compensating agents and water reducing agents, meeting the requirements of ASTM C 1107. Acceptable products or equal:

Gifford Hill & Co., Inc.; Supreme
Master Builders; Masterflow 713
The Upco Company; Upcon Nonshrink

2.3 FABRICATION:

2.3.1 General: Fabricate and assemble materials in the shop to the greatest extent possible. Shearing, flame cutting, and chipping shall be done carefully and accurately. Coordinate connection details to concrete. Verify lines, levels, and dimensions, where possible, just before commencing fabrication of connection details. Correct construction that does not fit. Schedule and coordinate construction under this section with that specified elsewhere. When not otherwise indicated or specified, comply with applicable requirements of AISC "Specifications for Design, Fabrication and Erection of Structural Steel for Buildings".

2.3.2 Architecturally Exposed Structural Steel: All copes, miters, and butt cuts in exposed surfaces shall be made with uniform gaps of 1/8 inch if shown to be open joints, or in reasonable contact if shown without gaps. Run-off tabs and back-up plates shall be removed. Welds shall be ground smooth and holes shall be filled with weld metal or body solder and ground smooth. Members and components shall be plumbed, leveled, and aligned to a tolerance not to exceed one-half the standard erection tolerance specified for structural steel.

2.3.3 Connections: Bolt or weld shop connections as indicated. One sided or other types of eccentric connections will not be permitted unless shown in detail on the shop drawings.

.1 Make welded connections in accordance with AWS D1.1-96. Assemble and weld built-up sections by methods which will produce true alignment of axes without warp.

.2 Grind and dress smooth, welds exposed to view in the finished construction, so that the shape and profile of the item welded is preserved.

2.3.4 Joints: Compression joints depending upon contact bearing shall have bearing surfaces truly milled perpendicular to their axis. Cut or dress other joints straight and true.

2.3.5 Holes: Cut, drill, or punch holes at right angles to the surface of the metal. Do not enlarge holes by burning, however holes may be enlarged by careful reaming. Holes in base or bearing plates shall be drilled. Holes shall be provided in members to permit connecting the construction of other trades.

2.3.6 Marking: Mark members for erection in accordance with shop drawings. Members weighing over 4 tons shall have the weight so marked on the member. Long members shall be loaded onto the trucks and so marked.

2.4 SHOP PAINTING:

2.4.1 General: Shop paint structural steel except galvanized members or those members or portions of members to be embedded in concrete or mortar. On embedded steel which is partially exposed, paint the exposed portion and the initial 2 inches of embedded areas only. Do not paint surfaces to be welded or high strength bolted with friction-type connections. Do not paint surfaces which are scheduled to receive sprayed-on fireproofing.

2.4.2 Surface Preparation: After inspection and before shipping, clean steelwork to be painted. Remove loose rust, loose mill scale and spatter, slag or flux deposits as follows:

.1 Surface preparation for concealed members and for interior AESS members shall be power tool cleaning in accordance with SSPC SP3.

.2 Surface preparation for exterior AESS members shall be commercial blast cleaning in accordance with SSPC SP6.

2.4.3 Painting: Immediately after surface preparation, apply shop primer in accordance with manufacturer's instructions and at a rate to provide a dry film thickness of not less than 1.5 mils. Use painting methods which result in full coverage of joints, corners, edges and exposed surfaces.

2.5 GALVANIZING:

2.5.1 General: All steel and ferrous metal items located on the exterior of the building, or otherwise specifically indicated to be galvanized, shall be galvanized by the hot-dip process, meeting the requirements of ASTM A 123. All required hot-dip

galvanizing shall be done after fabrication, in the largest sections possible. Items too large for available dip tanks shall be sprayed, by approved methods, with molten zinc to coating thickness of 0.003 inch to 0.004 inch.

2.5.2 Coating Weight: Weight of the zinc coating per square foot of actual surface shall average not less than 2.0 ounces and no individual specimen shall show less than 1.8 ounces.

2.5.3 Repair of Coating: Restore shop galvanized metal necessitating field soldering or welding which in any manner removes original galvanizing, by using galvanizing repair compound in accordance with the manufacturer's instructions.

PART 3 - EXECUTION

3.1 PREPARATION:

3.1.1 Field Measurements and Templates: Secure field measurements required for proper and adequate fabrication and installation. Furnish templates for exact location of items to be embedded in concrete and setting instructions required for installation.

3.1.2 Temporary Shoring and Bracing: In accordance with California Code of Regulations (CCR) Title 8, design and provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structure as erection proceeds.

3.1.3 Temporary Planking: Provide temporary planking as required by CCR Title 8 and as necessary to effectively complete the construction.

3.2 ERECTION:

3.2.1 Setting Base and Bearing Plates: After the supported members have been plumbed, aligned and properly positioned, set base and bearing plates. Support plates on adjustable bolt supports or shims until grout has set. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Follow the grout manufacturer's instructions.

3.2.2 Framing: Except as specified herein, erect framing in accordance with the AISC Code of Standard Practice and CBC. Plan and lay out framing so that cutting will not be required. Erect the construction plumb; square; and true to line, level, and position indicated within tolerances established in the AISC Code of Steel Practice.

3.2.3 Holding and Protection: In assembling and during welding, hold the component parts with sufficient clamps or other adequate means to keep parts straight and in close contact. In welding, take precautions to minimize "lock-up" stress and distortion due to heat. In wind, perform welding only after adequate wind protection is furnished and set up.

3.2.4 Connections: Bolt field connections except where welding is indicated. Perform welding as specified for shop welding. Provide high strength bolted connections for principle bolted connections where indicated. Provide common bolted connections for secondary connections and other bolted connections not indicated otherwise. Install high-strength bolts in accordance with AISC/RCRBSJ "Specifications for Structural Joints Using ASTM A 325 or A 490 Bolts".

3.2.5 Camber: Inspect beams and girders in the shop for camber and align so that they are fabricated and erected with their camber turned upwards. Camber shall not exceed the requirements of the governing documents unless approved by the Architect.

3.2.6 On exposed construction, remove erection bolts, temporary welds, run-off plates and backing strips. Fill holes from erection bolts with plug welds and grind smooth.

3.3 FIELD INSPECTION AND TESTING:

3.3.1 Inspection and testing are specified in Section 01 45 70.

3.4 AS ERECTED DRAWINGS:

After all steel has been erected, correct or revise the shop drawings and erection diagrams to correspond with the changes made in the field. Refer to requirements specified in Section 01 77 00.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Cold Formed metal framing systems for load bearing walls and partitions.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 RELATED WORK:

1.2.1 Light gage metal framing and furring systems for interior non-load bearing plaster and gypsum board partitions, and suspension and furring systems for plaster and gypsum board ceilings and soffits is specified in Section 09 10 00.

1.2.2 Furring systems designed for mechanical attachment of semirigid insulation blankets to concrete or masonry walls are specified in Section 07 21 00.

1.3 REFERENCES:

The editions referenced herein of specifications and standards published by the following organizations, apply only to the extent specified by the reference. Refer to Section 01 42 20 for information concerning availability and use of references.

American Society for Testing and Materials (ASTM)
American Welding Society (AWS)
American Iron and Steel Institute (AISI)

1.4 SUBMITTALS:

1.4.1 Product Data: Submit framing manufacturer's literature, including a current ICC Evaluation Service Report, showing tabulation of structural properties, load capacities, dimensions, metal gages and type of coating for all framing and furring members. Submit powder driven fastener manufacturer's current International Code Council Evaluation Service Reports (ICC ESR).

1.4.2 Shop Drawings: Submit shop drawings for wall and partition framing systems and special assemblies where the design is not indicated. Show size, gage and cross sections and spacing of framing members; connections including welding procedures and electrodes; and supplemental strapping, bridging, lateral bracing, accessories, and details required for proper installation. Furnish layout of required clips or slots to the metal deck installer well in advance of deck installation.

1.4.3 Submittal procedures and quantities are specified in Section 01 33 40.

1.5 QUALITY ASSURANCE:

1.5.1 Regulatory Requirements: Furnish and install wall framing and powder driven fasteners in accordance with the framing and fastener manufacturer's current ICC Evaluation Service Reports.

1.5.2 Fire Rated Assemblies: Where framing units are components of assemblies indicated for a fire-resistance rating, including those required for compliance with the 2016 California Building Code (CBC) Title 24 Part 2, Chapter 7 - Fire-Resistant Materials and Construction, provide units which are listed in the current UL "Fire Resistance Directory" and that have been approved by the State Fire Marshal.

1.5.3 Preinstallation Conference: Before beginning installation of the metal framing systems, hold a conference with representatives of the installers of metal framing systems, door frames, plaster, gypsum board, mechanical and electrical construction, Contractor, Owner's representative, and Architect in attendance. The conference shall assure a clear understanding of the drawings and specifications, resolve possible conflicts and establish coordination between all parties involved.

1.6 DELIVERY, STORAGE, AND HANDLING:

Deliver materials to the project site and store them in adequately ventilated dry locations. If it is necessary to store materials outside, stack them off the ground on a platform and fully protected from the weather.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

Acceptable manufacturers or equal:

Allied American Studco; Inc.; ICBO #4943P
California Expanded Metal Products Co.; ICBO #3403-P
Western Metal Lath Co.; ICBO #2274
The Steel Network

2.2 MATERIALS:

2.2.1 Hot-dip Zinc Coated Steel: ASTM A 653, 50,000 psi yield strength or greater for 14 and 16 gage studs, and 33,000 psi yield strength for all other members. Framing shall have hot-dip zinc coating complying with designation G60.

2.2.2 Welding Electrodes: AWS A5.1-91 or A5.5-96, E 70.

2.2.3 Powder Driven Fasteners: Types and sizes indicated on the structural drawings. Acceptable manufacturers or equal:

Hilti Corp.; ICBO #1290
ITW/Ramset/Red Head; ICBO #1147
Powder Power Tool Corp.; Drive-It

Simpson Strong Tie Co.

2.2.4 Screws: No. 8 by 3/8 inch cadmium or zinc coated TEKS screws with pan heads.

2.2.5 Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.

2.2.6 Concrete inserts, expansion anchors, powder driven fasteners, flange clips, and bolts for attachment of hanger wires to overhead construction shall have a rated capacity equal to that of the hanger wire.

2.2.7 Galvanizing Repair Compound: High zinc dust content galvanizing repair paint meeting the requirements of ASTM A 780 or hot applied zinc rich material. Acceptable products or equal:

American Solder & Flux; Drygalv
Kenco Div.; Galvicon
Metalloy Products Co.; Galvalloy

2.3 FRAMING COMPONENTS:

2.3.1 Wall Framing Members: Fabricate studs and runners in accordance with ASTM C 955 from hot dip zinc coated steel, of thickness and depths indicated, minimum flange width of 1-5/8 inches. All studs shall be rolled from new steel sheet material and shall not be produced from re-rolled steel.

2.3.2 Joists: C-shaped joists with minimum 1-5/8 inch wide flat flanges and punched webs fabricated from hot dip zinc coated steel, of thickness indicated. All joists shall be rolled from new steel sheet material and shall not be produced from re-rolled steel.

2.3.3 Bridging: Unpunched channel shaped members designed for use with the studs, formed from hot dip zinc coated steel, of thickness indicated.

2.3.4 Strapping, Lateral Bracing, Clip Angles and other Accessories: Manufacturer's standard components formed from hot dip zinc coated steel.

2.3.5 Backing Plates: Steel, 3/16 inch thick, of proper size to accommodate fastenings.

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 General: Conform to rules and practices set forth in the CBC Title 24 Part 2 and AISI "Specifications for Design for Cold Formed Steel Structural Members," and with the manufacturer's printed instructions and recommendations, as applicable.

3.1.2 Cut stock neat and square. Provide members free of kinks and twists. Do not use damaged or distorted materials.

3.1.3 Erect straight, plumb, square, true to lines, levels or elevations indicated, free from excessive twists and bends and braced against racking.

3.1.4 Runner Tracks: Furnish in 8 feet minimum lengths except where wall lengths are shorter than 8 feet. Make tracks continuous by splicing in accordance with the manufacturer's recommended details. Align runner tracks accurately to the partition layout at both base and tops of studs. Secure runner tracks as recommended by the stud manufacturer in ICBO Evaluation Report for the floor and ceiling construction involved. Provide fasteners at all corners and ends of runner tracks.

3.1.5 Wall Studs: Provide studs in one piece, track to track, no splicing will be permitted. Install bridging as recommended by the framing manufacturer, except as otherwise indicated. Frame both sides of expansion and control joints with separate studs. Do not bridge the joint with components of stud system.

.1 Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges; wire tying of framing components will not be permitted.

.2 Install supplementary framing, blocking, and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Use backing plates of thickness specified herein and of proper size to accommodate fastenings.

.3 Frame wall openings larger than 2 feet square with double stud at each jamb of frame except where more than two are either indicated or recommended by the manufacturer. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall.

3.1.6 Joists: Provide joists with at least 1-1/2 inch bearing and reinforce over bearings where required to prevent web crippling. Splice joists over bearings only. Lap and weld splices as recommended by the manufacturer. Provide manufacturer's standard lateral bracing. Secure joists to interior support systems to prevent lateral movement of bottom flange.

.1 Attach members together by either welding or screw fastening; wire tying of framing components will not be permitted.

3.1.7 Welding shall conform with AWS D1.3-89. Undercut shall not exceed 0.01 inch. Welding operators shall be previously certified for the welding to be done.

3.1.8 Touch up abrasions, burns, and welding, including construction activities of other trades, with primers for primed steel or with approved galvanizing compound if galvanized. Remove oil, grease, rust, loose scale, loose coatings, weld slag and other deleterious material before touch-up.

END OF SECTION

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Section 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Furnishing and installing of all miscellaneous metal fabrications and related connections complete as indicated and as specified.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES:

The editions referenced herein of Federal Specifications (Fed. Spec.) and of the other standards and specifications published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 20 for information concerning availability and use of references.

Aluminum Association (AA)
American National Standards Institute (ANSI)
American Institute of Steel Construction (AISC)
American Society for Testing and Materials (ASTM)
American Welding Society (AWS)
National Association of Architectural Metal Manufacturer's (NAAMM)

1.3 SUBMITTALS:

1.3.1 Shop Drawings:

.1 Submit shop drawings of miscellaneous metal work giving sizes, details of fabrication and construction, methods of assembly and bracing, and locations of hardware, anchors, and accessories.

.2 Submit design calculations prepared by a civil or structural engineer registered in the State of California for prefabricated stairs and railings substantiating the design for vertical and lateral loading in accordance with the 2016 California Building Code (CBC) Title 24 Part 2 requirements.

.4 Include shop and erection details, including cuts, copes, connections, holes, bolts and welds. Indicate welds, both shop and field, by standard welding symbols in the latest edition of AWS D1.1. Show the size, length and type of each weld. All materials to be brazed or soldered shall have connections indicated by symbols which are industry standards.

.5 Contractor shall be responsible for all fabrication and for correct fitting of metal members shown on shop drawings.

1.3.2 Product Data: Submit manufacturer's specifications, anchor details and installation instructions for products used in miscellaneous metal fabrications, including paint products and grout.

1.3.3 Submittal procedures and quantities are specified in Section 01 33 40.

1.4 REGULATORY REQUIREMENTS:

Provide products meeting the accessibility requirements of the 2016 California Building Code (CBC) Title 24 Part 2 Chapter 11 - Accessibility; and ADA Accessibility Guidelines for Buildings and Facilities, dated June 26, 1991 as amended April 5, 1993 and January 18, 1994, and July 2004.

1.5 QUALITY ASSURANCE:

1.5.1 Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M – “Structural Welding Code – Steel”.

1.5.2 Welding Qualifications: Qualify procedures and personnel according to the following:

.1 AWS D1.1/D1.1M – “Structural Welding Code – Steel”.

.2 AWS D1.2/D1.2M – “Structural Welding Code – Aluminum”.

.3 AWS D1.6/D1.6M – “Structural Welding Code – Stainless Steel”.

1.6 DELIVERY, STORAGE AND HANDLING:

Deliver material in time to insure uninterrupted progress of the work. Store materials in a manner to preclude damage and permit ready access for inspection and identification of each shipment. Store steel materials, either plain or fabricated, above the ground upon platforms, pallets, skids, or other supports. Keep materials free from dirt, grease, and other foreign matter, and protect from corrosion. Material showing evidence of damage will be rejected; immediately remove rejected materials from the work.

1.7 FIELD MEASUREMENTS:

Secure all field measurements required for proper and adequate fabrication and installation of the work. Furnish templates for exact location of items to be embedded in concrete and masonry and setting instructions required for all installation work.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Aluminum:

.1 Rolled Structural Shapes: ASTM B 308, 6061 alloy.

.2 Plates: ASTM B 209, 6161-T6 alloy and temper.

.3 Extrusions: ASTM B 221, alloy and temper specified for each item specified herein.

.4 Sheet: ASTM B 209, alloy and temper specified for each item specified herein.

.5 Tubing: ASTM B 241, 6063-T6 alloy and temper.

.6 Castings: ASTM B 26, 214 alloy.

2.1.2 Ferrous Metal:

.1 Steel, Rolled Shapes, Bars and Plates: Standard structural sections, ASTM A 36.

.2 Steel Tubing: ASTM A 501 or ASTM A 500, grade B, seamless.

.3 Steel Pipe: ASTM A 53, Type E or S, Grade B, schedule 40, unless otherwise specified.

.4 Structural Steel Sheet:

a. Uncoated Sheet: Hot-rolled, ASTM A 570; or cold-rolled ASTM A 611, Class 1; of grade required for design loading.

b. Galvanized Sheet: ASTM A 653, Grade SQ, coating designation of G-90 unless otherwise indicated or specified.

.5 Commercial Quality Steel Sheet:

a. Uncoated Sheet: Hot-rolled, ASTM A 569; or cold-rolled ASTM A 366, of grade required for design loading.

b. Galvanized Sheet: ASTM A 653, Grade CQ, coating designation of G-90, unless otherwise indicated or specified.

.6 Wrought Iron: ASTM A 29, weldable quality, low carbon mild steel.

.7 Gray Iron Castings: ASTM A 48, Class 30.

.8 Ductile Iron Castings: ASTM A 536, Class 64-45-12.

.9 Malleable Iron Castings: ASTM A 47, grade as selected by the fabricator.

.10 Anchors, Bolts, and Fastenings: ASTM A 307, Grade A and ASTM A 563.

.11 Electrodes: AWS A5.1-91 or A5.5-96 E60XX or E70XX.

.12 Cable: ASTM A 603, Class C zinc-coating, fiber core, wire rope, [6 x 19 class, 3/8 inch] [7 x 19 class, 7/16 inch] diameter [enclosed within a vinyl sleeve]. Furnish cable with fittings and turnbuckles fabricated from new billet steel conforming to ASTM A 668, Class D, with strength adequate to develop the full strength of the cable.

.13 Pipe Sleeves: Pipe sleeves through concrete walls and footings shall be standard weight, wrought iron, mild steel, or cast iron sleeves with not less than 1/2 inch space all around between the sleeve and pipe.

2.1.3 Stainless Steel:

.1 Structural Shapes and Bars: ASTM A 276.

.2 Sheets: ASTM A 167.

.3 Pipe: ASTM A 269.

.4 Tubing: ASTM A 312.

.5 Cable: ASTM A 492, 6 x 25 Class, IWRC, ½ inch diameter complete with stainless steel cable fittings and turnbuckles with strength adequate to develop the full strength of the cable.

2.1.4 Shop Primer:

.1 Steel Surfaces: Fast curing, lead and chromate free, modified alkyd primer. Acceptable products or equal:

Carboline Co.; No. GP-20 or GP-818
Rust-O-Leum Corp.; No. 678 or 7669
The Sherwin Williams Co.; No. B50 N 2 or B50N Z 6
Tnemec Co., Inc.; 10-99 or P10-99

2.1.5 Galvanizing Repair Compound: High zinc dust content galvanizing repair paint meeting the requirements of ASTM A 780 or hot applied zinc rich material. Acceptable products or equal:

American Solder & Flux; Drygalv
Kenco Div.; Galvicon
Metalloy Products Co.; Galvalloy

2.1.6 Quick Setting Hydraulic Cement: Acceptable products or equal:

The Burke Co.; Burke Plug
Minwax Construction Products Div.; Super Por-Rok

Tamms Industries Co.; Tammstech Rapid Rock
Master Builders; Masterflow 713

2.1.7 Nonmetallic, Nonshrink Grout: For grout in exposed to view locations use premixed, nonmetallic, non-corrosive, non-staining grouting compound containing silica sands, portland cement, shrinkage compensating agents and water reducing agents, meeting the requirements of ASTM C 1107. Acceptable products or equal:

Gifford Hill & Co., Inc.; Supreme
Master Builders; Masterflow 713
The Upco Company; Upcon Nonshrink

2.1.8 Polymer Modified Concrete: High strength, polyester resin polymer concrete having the following physical properties:

Property	Test Method	Requirement
Compressive Strength	ASTM C 39	14,000 psi min.
Tensile Strength	ASTM C 78	1,500 psi min.
Water Absorption	ASTM C 140	1.0 % max.

2.2 FABRICATION:

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

2.2.2 Fabricate and assemble materials in the shop to the greatest extent possible. Perform shearing, flame cutting, and chipping carefully and accurately. Coordinate all connection details to concrete or masonry. Verify all lines, levels, and dimensions, where possible, just before commencing fabrication of connection details. Correct work that does not fit. Schedule and coordinate work under this section with that specified elsewhere in order to produce a workmanlike installation. When not otherwise indicated or specified, comply with applicable requirements of AISC "Specifications for Design, Fabrication and Erection of Structural Steel for Buildings". Finish surfaces of exposed members smooth and free of markings, burrs, or other defects.

2.2.3 Bolt, braze or weld connections as indicated. One-sided or other types of eccentric connections will not be permitted unless indicated, and shown in detail on the shop drawings.

2.2.4 Cut, drill, or punch holes at right angles to the surface of the metal; do not enlarged by burning. Drill holes in base or bearing plates. Provide holes in members to permit connecting the work of other trades.

2.2.5 Weld corners and seams continuously to comply with the following:

.1 Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

.2 Obtain fusion without undercut or overlap.

.3 Remove welding flux immediately.

.4 At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

2.2.6 Galvanizing:

.1 Galvanizing for rolled, pressed and forged steel shapes, plates, bars and strip and for assembled steel products: Zinc coating meeting the requirements of ASTM A 123.

.2 Galvanizing for iron and steel hardware: Zinc coating meeting the requirements of ASTM A 153.

2.2.7 Shop Painting: Apply shop primer to surfaces of metal fabrications except those which are galvanized or indicated to be embedded in concrete or masonry, unless otherwise indicated.

2.3 MISCELLANEOUS ROLLED STEEL PLATES AND SHAPES:

Provide for corner guards, sills, anchor plates for elevator guide rails, mechanical equipment supports and other locations indicated or required to complete the work.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS:

Steel and miscellaneous metal work shall conform with the applicable requirements of the referenced "Codes and Standards". Details indicated are typical, similar details apply to similar conditions. Check drawings for dimensions, elevation, size, and locations of installations. Supply miscellaneous metal items in ample time for incorporation in the work. Include reinforcing angles, plates, straps, brackets, hangers, clips, lugs, holes, sleeves, shims, other hardware as indicated or required for erection of steel and miscellaneous metal work and as required to complete the work as indicated.

3.2 WELDED CONNECTIONS:

3.2.1 All welders shall be certified qualified welders. All welders welding light gage metal shall be qualified for light gage metal welding.

3.2.2 Welded connections shall be made in accordance with AWS D1.1. All welding shall be done in the shop unless otherwise indicated or specified.

3.2.3 All welds and other connections exposed in the finished work shall be ground and dressed smooth and so that the shape and profile of the item welded is preserved.

3.2.4 Field Welding: Comply with the following requirements:

.1 Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

.2 Obtain fusion without undercut or overlap.

.3 Remove welding flux immediately.

.4 At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

3.3 INSTALLATION:

3.3.1 Install miscellaneous metal items as rapidly as the progress of other work will permit. Make splices and field connections with bolts, except where welding or brazing is indicated or approved on the shop drawings. Install fasteners as specified herein.

3.3.2 Set metal work accurately at the established lines and levels. Install work in strict accordance with approved drawings and actual conditions, true and horizontal or perpendicular as the case may be, level and square with angles and edges parallel with related lines of the building.

3.3.3 Anchor bolts, anchors, block-outs and sleeves shall be properly located and built into connecting work. Bolts and anchors shall be preset by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately.

3.3.4 After assembly, the various members forming parts of a completed frame shall be aligned and adjusted accurately before being fastened. Tolerances shall conform to the applicable requirements of AISC "Code of Standard Practice". Contact shall be cleaned before the members are assembled. Poor matching of holes shall be corrected by drilling to the next larger size.

3.3.5 Wall Supported Items: Attach ladders and handrails and other wall hung items by bolting to metal reinforcing installed behind the finish material and welded to the steel studs or by expansion anchors in concrete and masonry walls, and by lag bolting to blocking installed between wood studs.

3.3.6 Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

.1 Cast Aluminum: Heavy coat of bituminous paint.

.2 Extruded Aluminum: Two coats of clear lacquer.

3.4 GALVANIZED FINISH:

Touch up all damaged galvanized finish due to installation, welding, threading or other work with treatment specified herein.

END OF SECTION

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PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes firestopping for through-penetrations through the following fire-resistance rated assemblies, including both blank openings and openings containing penetrating items:

1. Floor-ceiling assemblies.
2. Roof-ceiling assemblies.
3. Walls and partitions.

B. Related Sections include the following:

1. Division 7 – Section 07900 – Joint Sealers
2. Division 9 – Section 09250 – Gypsum Board
3. Mechanical Drawings – Mechanical Insulation
4. Mechanical Drawings – Plumbing
5. Division 16 – Section 16050 – Basic Electrical Materials and Methods

1.3 PERFORMANCE CRITERIA

A. FIRE TEST REQUIREMENTS

1. Underwriters Laboratories, Inc. (UL):

a. ANSI/ UL1479, “Fire Tests of Through Penetration Firestops”.
b. ANSI/ UL2079, “Tests for Fire Resistance of Building Joint Systems”.
c. ANSI/ UL263, “Fire Tests of Building Construction and Materials”.
d. ANSI/ UL723, “Surface Burning Characteristics of Building Materials”.

2. American Society of Testing and Materials (ASTM):
a. ASTM E-814, “Fire Tests of Through Penetration Fire Stops”.

b. ASTM E-1966, “Test Method for Fire Resistive Joint Systems”.
c. ASTM E-119, “Fire Tests of Building Construction and Materials”.
d. ASTM E-84, “Surface Burning Characteristics of Building Materials”.

B. REFERENCES

1. Underwriters Laboratories (UL) of Northbrook, IL “Fire Resistance Directory”.

   a. Through Penetration Firestop Systems (XHEZ)
   b. Joint Systems (XHBN)
   c. Fill, Void or Cavity Materials (XHHW)
   d. Firestop Devices (XHJI)
   e. Forming Materials (XHKU)
   f. Wall Opening Protective Materials (CLIV)

2. All major building codes:

   a. International Building Code published by ICC
   b. California Building Code (CBC) 2016 Edition.

3. National Fire Protection Association (NFPA) of Quincy, MA “NFPA 101: Life Safety Code”.

4. National Fire Protection Association (NFPA) of Quincy, MA “NFPA 70: National Electrical Code”.

5. Factory Mutual Approvals (FM) of Norwood, MA “FM 4991: Standard for Approval of Firestop Contractors”.

C. PERFORMANCE REQUIREMENTS

1. Provide products that upon curing, do not re-emulsify, dissolve, leach, breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.

2. Provide firestop sealants sufficiently flexible to accommodate motion such as pipe vibration, water hammer, thermal expansion and other normal building movement without damage to the seal.

3. Pipe insulation shall not be removed, cut away or otherwise interrupted through wall or floor openings. Provide products appropriately tested for the thickness and type of insulation utilized.

4. Fire rated pathway devices shall be the preferred product and shall be installed in all locations where frequent cable moves, add-ons and changes will occur.

5. When mechanical cable pathways are not practical, openings within walls and floors designed to accommodate voice, data and video cabling shall be provided with re-enterable products specifically designed for retrofit.

6. Penetrants passing through fire-resistance rated floor-ceiling assemblies contained within chase wall assemblies shall be protected with products tested by being fully exposed to the fire outside of the chase wall. Systems within the UL Fire Resistance Directory that meet this criterion are identified with the words “Chase Wall Optional”.

7. Provide fire-resistive joint sealants sufficiently flexible to accommodate movement such as thermal expansion and other normal building movement without damage to the seal.

8. Provide fire-resistive joint sealants designed to accommodate a specific range of movement and tested for this purpose in accordance with a cyclic movement test criteria as outlined in Standards, ASTM E-1399, ASTM E-1966 or ANSI/ UL 2079.

9. Provide fire-resistive joint systems subjected to an air leakage test conducted in accordance with Standard, ANSI/ UL2079 with published L-Ratings for ambient and elevated temperatures as evidence of the ability of the fire-resistive joint system to restrict the movement of smoke.

10. Pipe insulation shall not be removed, cut away,or otherwise interrupted through wall or floor openings. Provide products appropriately tested for the thickness and type of insulation utilized.

11. Provide T-Rating Collar Devices tested in accordance with ASTM E 814 or ANSI/UL1479 for metallic pipe penetrations requiring T-Ratings per the applicable building code.

1.4 SUBMITTALS

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

B. System Drawings: Submit documentation from a qualified third-party testing agency that is applicable to each firestopping system configuration for construction, joint opening width and/or penetrating items.

C. Product Certificates: Certificate of conformance signed by manufacturers of firestopping products certifying that products comply with requirements.

D. Submittal procedures and quantities are specified in Section 01 33 40.

1.5 QUALITY ASSURANCE

A. Provide firestopping systems that comply with the following requirements and those specified in “Performance Criteria” Article:

1. Firestopping tests are performed by a qualified, testing and inspection agency. A qualified testing and inspection agency is UL, or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.

2. Firestopping products bear classification marking of qualified testing and inspection agency.

B. Engage an experienced installer who is certified, licensed, FM Approved in accordance with FM 4991 or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install firestop products per specified requirements. A manufacturer’s willingness to sell its firestopping products to Contractor or to an installer engaged by Contractor does not in itself confer qualifications on buyer.

C. Obtain firestop systems for each type of penetration or joint opening and construction condition indicated from a single manufacturer.

D. Conduct conference at Project site to comply with requirements in Division 1 Section “Project Meetings”.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturer’s labels identifying product and manufacturer, date of manufacture; lot number; shelf life, if applicable; qualified testing and inspection agency’s classification marking; and mixing instructions for multicomponent materials.

B. Store and handle materials for firestopping products to prevent their deterioration or damage due to moisture, temperature changes, contaminants or other causes.

1.7 PROJECT CONDITIONS

A. Do not install firestopping products when ambient or substrate temperatures are outside limitations recommended by manufacturer.

B. Do not install firestopping products when substrates are wet due to rain, frost, condensation, or other causes.

C. Do not use materials that contain flammable solvents.

1.8 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes or cut openings to accommodate through-penetration firestop systems.

C. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.

PART 2 – PRODUCTS

2.1 FIRESTOPPING, GENERAL

A. Provide firestopping products that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by firestopping products manufacturer based on testing and field experience.

B. Provide components for each firestopping system that are needed to install fill materials. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

2.2 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with through-penetration firestop systems (XHEZ) and/or joint systems (XHBN) listed in Volume 2 of the UL Fire Resistance Directory, provide products of the following manufacturers as identified below:

1. Specified Technologies, Inc. (STI), Somerville, New Jersey
800 – 992 – 1180

2. Other manufacturers listed in the UL Fire Resistance Directory – Volume 2.

2.3 MATERIALS

A. General: Use only firestopping products that have been tested for specific fire-resistance-rated construction conditions conforming to construction assembly type, penetrating item type or joint opening width and movement capabilities, annular space requirements, and fire-rating involved for each separate instance.

B. Latex Sealants: Single component latex formulations that upon cure do not re-emulsify during exposure to moisture, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series SSS Intumescent Sealant

2. Specified Technologies, Inc. (STI) SpecSeal Series LCI Intumescent Sealant

3. Specified Technologies, Inc. (STI) SpecSeal Series LC Endothermic Sealant

4. Specified Technologies, Inc. (STI) SpecSeal Series AS Elastomeric Spray

5. Specified Technologies, Inc. (STI) SpecSeal Series ES Elastomeric Sealant

C. Firestop Devices: Factory-assembled steel collars lined with intumescent material sized to fit specific outside diameter of penetrating item, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series SSC Firestop Collars

2. Specified Technologies, Inc. (STI) SpecSeal Series LCC Firestop Collars

D. Fire Rated Cable Pathways: STI EZ-PATH™ Brand device modules comprised of steel raceway with intumescent foam pads allowing 0 to 100 percent cable fill, the following products are acceptable:

1. Specified Technologies Inc. (STI) EZ-PATH™ Fire Rated Pathway

E. Wall Opening Protective Materials: Intumescent, non-curing pads or inserts for protection of electrical switch and receptacle boxes to reduce horizontal separation to less than 24”, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series SSP Firestop Putty Pads

2. Specified Technologies, Inc. (STI) SpecSeal Series EP PowerShield Insert Pads

F. Firestop Putty: Intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibers or silicone compounds, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series SSP Firestop Putty

G. Wrap Strips: Single component intumescent elastomeric strips faced on both sides with a plastic film, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series RED Wrap Strip

2. Specified Technologies, Inc. (STI) SpecSeal Series BLU Wrap Strip

H. Firestop Pillows: Re-enterable, non-curing, mineral fiber core encapsulated with an intumescent coating contained in a flame retardant poly bag, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series SSB Firestop Pillows

I. Mortar: Portland cement based dry-mix product formulated for mixing with water at Project site to form a non-shrinking, water-resistant, homogenous mortar, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series SSM Firestop Mortar

J. Silicone Sealants: Moisture curing, single component, silicone elastomeric sealant for horizontal surfaces (pourable or nonsag) or vertical surface (nonsag), the following products are acceptable:

1. Specified Technologies, Inc. (STI) Pensil 300 Silicone Sealant

2. Specified Technologies, Inc. (STI) Pensil 300 SL Self-Leveling Silicone Sealant

K. Silicone Foam: Multicomponent, silicone-based liquid elastomers, that when mixed, expand and cure in place to produce a flexible, non-shrinking foam, the following products are acceptable:

1. Specified Technologies, Inc. (STI) Pensil 200 Silicone Foam

L. Cast-In-Place Firestop Device: Single component molded firestop device installed on forms prior to concrete placement with totally encapsulated,

tamper-proof integral firestop system and smoke sealing gasket, the following products are acceptable:

1. Specified Technologies, Inc. (STI) Spec-Seal CD Cast-In Firestop Device

M. Fire-Rated HVAC Retaining Angles: Steel angle system with integral intumescent firestop gasket for use on steel HVAC ducts, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal FyreFlange Firestop Angles

N. Firestop Plugs: Re-enterable, foam rubber plug impregnated with intumescent material for use in blank openings and cable sleeves, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Seried FP Firestop Plug

O. Fire Rated T Rating Collar Device: Louverred steel collar system with synthetic aluminized polymer coolant wrap installed on metallic pipes where T Ratings are required by applicable building code requirements, the following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal T-Collar Device

P. Fire-Rated Cable Grommet: Molded two-piece grommet made from plenum grade polymer with a foam inner core for sealing individual cable penetrations up to 0.27 in. (7mm) diameter, the following products are acceptable:

1. Specified Technologies, Inc. (STI) Ready Firestop Grommet

PART 3 – EXECUTION

3.1 PREPARATION

A. Examination of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

B. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, scale, laitance, rust, release agents, water repellents, and any other substances that may inhibit optimum adhesion.

C. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.

D. Do not proceed until unsatisfactory conditions have been corrected.

3.2 FIRESTOPPING INSTALLATION

A. General Requirements: Install through-penetration firestop systems and fire-resistive joint systems in accordance with “Performance Criteria” Article and in accordance with the conditions of testing and classification as specified in the published design.

B. Manufacturer’s Instructions: Comply with manufacturer’s instructions for installation of firestopping products.

1. Seal all openings or voids made by penetrations to ensure an air and water resistant seal.

2. Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of through-penetration firestop systems that might hamper the performance of fire dampers as it pertains to duct work.

3. Protect materials from damage on surfaces subjected to traffic.

4. Apply a suitable bond-breaker to prevent three-sided adhesion in applications where this condition might occur such as the intersection of a gypsum wallboard/steel stud wall to floor or roof assembly where the joint is backed by a steel ceiling runner or track.

5. Where joint application is exposed to the elements, fire-resistive joint sealant must be approved by manufacturer for use in exterior applications and shall comply with ASTM C-920, “Specification for Elastomeric Joint Sealants”.

3.3 FIELD QUALITY CONTROL

A. Inspections: Owner shall engage a qualified independent inspection agency to inspect through-penetration firestop systems.

B. Keep areas of work accessible until inspection by authorities having jurisdiction.

C. Where deficiencies are found, repair or firestopping products so they comply with requirements.

3.4 ADJUSTING AND CLEANING

A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

B. Clean all surfaces adjacent to sealed openings to be free of excess firestopping materials and soiling as work progresses.

END OF SECTION

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Section 07 90 00

JOINT SEALERS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Sealant work, except as otherwise specified, required to weatherproof the building(s), and including interior sealant work. This section contains requirements pertaining to all weather and interior sealant work throughout the project and becomes a part of each and every section calling for sealant and calking, unless otherwise specified, as though written in full in each section.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.1.3 Related Work:

.1 Sealants for firestopping systems are specified in Section 07 84 00.

1.2 REFERENCES:

The editions of American Society for Testing and Materials (ASTM) Standards referenced herein apply to the work only to the extent specified by the reference thereto. Refer to Section 01 42 20 for information concerning availability and use of references.

1.3 SUBMITTALS:

1.3.1 Product Data: Submit copies of manufacturer's specifications, recommendations and installation instructions for each type of sealant and related material required.

.1 Include manufacturer's letter of certification, or certified test reports indicating that each material complies with the requirements specified herein and is suitable for the applications indicated. Indicate by transmittal that a copy of each instruction has been forwarded to the installer.

.2 Include manufacturer's letter of certification indicating that sealants, primers and cleaners comply with regulations controlling use of volatile organic compounds.

1.3.2 Samples: Submit samples indicating the color range available for each sealant material intended for installation in locations exposed to view. Materials installed before approval of color will be subject to removal and replacement with approved material.

1.3.3 Submittal procedures and quantities are specified in Section 01 33 40.

1.4 QUALITY ASSURANCE:

1.4.1 Manufacturer's Qualifications: Obtain joint sealants from a single manufacturer for each different product required. Obtain elastomeric sealants only from manufacturers who will, if required by the Architect, send a qualified technical representative to the Project site to advise the installer of proper procedures and precautions for the use of these materials.

1.4.2 Installer's Qualifications: Employ a firm having a minimum of 5 years successful experience in the application of the types of materials required.

1.4.3 Regulatory Requirements. The quantity of volatile organic compounds (VOC) used in sealants, primers and cleaners shall not exceed the limits permitted under the current regulations for architectural coatings of the San Diego County Air Pollution Control District.

1.5 DELIVERY, STORAGE, AND HANDLING:

1.5.1 Deliver sealants to the Project site in unopened containers, labeled with the manufacturer's name, brand designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.

1.5.2 Store sealants in an area where they will not be subject to temperatures above 100 degrees F or below 40 degrees F. Do not store materials that have exceeded the manufacturer's recommended shelf life.

1.6 PROJECT CONDITIONS:

Do not apply sealants when the ambient temperature is above 100 degrees F or below 40 degrees F, when the weather is foggy, or rainy, or when joint substrates are wet.

1.7 WARRANTY:

In addition to the warranty and correction of work requirements of the General Conditions, warrant work under this section against moisture penetration for a period of 5 years from the date of "Notice of Completion". The written warranty shall include materials and labor required to repair leaks that develop. The warranty shall be signed by the sealant manufacturer, the sealant installer and the Contractor and shall be submitted in accordance with Section 01 77 00.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS:

2.1.1 Type A Sealant: Multiple component, self-leveling polyurethane based sealant meeting the requirements of ASTM C 920, Type M, Grade P, Class 25. Acceptable products or equal:

Mameco International; Vulkem 245

Pecora Corp.; Urexpan NR-200
L.M. Scofield Co.; Lithoseal Buildingcalk-3S
Sika Corp.; Sikaflex-2c-SL
Sonneborn Building Products; Sonolastic SL 2

2.1.2 Type B Sealant: Single or multiple component, nonsag polyurethane based sealant meeting the requirements of ASTM C 920, Type S or M, Grade NS, Class 25. Do not use single component sealants when excessive movement is expected within the curing time of the sealant. Acceptable products or equal:

Mameco International; Vulkem 116 or 227
Pecora Corp.; Dynatrol I or II
Sika Corp; Sikaflex 1a or 2c-NS
Sonneborn Building Products; Sonolastic NP 1 or NP 2
Tremco; Dymonic or Dymeric

2.1.3 Type C Sealant: Butyl rubber based sealant meeting the requirements of ASTM C 920, Type S, Grade NS, Class 7.5. Acceptable products or equal:

Adco Seal; No. B-100
Pecora Corp.; BC-158
PTI Sealants; PTI 757
Tremco; Butyl Sealant

2.1.4 Type D Sealant: Latex acrylic based sealant meeting the requirements of ASTM C 834. Acceptable products or equal:

Pecora Corp.; AC-20
Sonneborn Building Products; Sonolac
Tremco; Acrylic Latex 834

2.1.5 Type E Sealant: Low modulus silicone sealant meeting the requirements of ASTM C 920, Type S, Grade NS, Class 50. Acceptable products or equal:
Dow Corning Corp.; No. 795
General Electric Co.; Silpruf
Pecora; Corp.; 864 Silicone
Sonneborn Building Products; Sonolastic Omniseal
Tremco; Spectrem 2

2.1.6 Type F Sealant: Not used.

2.1.7 Type G Sealant: Not used.

2.1.8 Acoustical Sealant: Sealant shall be one of the following types at the Contractor's option:

.1 Polyvinyl chloride foam tape with pressure sensitive tape on one side 3/4 inch wide by the thickness required to accommodate uneveness of substrates and completely

fill openings between partition framing and building floors and concrete or masonry wall. Acceptable products or equal:

Norton Co.; Norseal V730 Series
Arlon; Series 6A

.2 Permanently resilient compound manufactured specifically for acoustical applications. Acceptable products or equal:

Ohio Sealants; Sound Calk (solvent type)
Pecora Corp.; BA-98
Tremco; Acoustical Sealant

2.1.9 Colors: Provide sealant colors as follows:

Concrete flatwork - to match concrete.
Concrete walls - to match concrete.
Masonry Walls - to match mortar color.
Aluminum to concrete - to match concrete.
Aluminum to aluminum - aluminum color.
Ceramic tile - to match grout.
Other locations - to match color of adjacent surface.

2.2 MISCELLANEOUS MATERIALS:

2.2.1 Joint Filler: Preformed, compressible, resilient, nonstaining, polyurethane, open or closed cell nonoutgassing foam, round in shape, with diameter never less than 30 percent greater than width of joint. Sealant manufacturer shall guarantee filler as being suitable for its intended use and entirely compatible with the sealant.

2.2.2 Primer: Product of manufacturer of sealant used.

2.2.3 Lacquer Sealer: Clear, as recommended by sealant manufacturer.

2.2.4 Bond Breaker Tape: Polyethylene tape or other tape as recommended by the sealant manufacturer. Provide self-adhesive tape wherever applicable.

PART 3 - EXECUTION

3.1 EXAMINATION:

Examine the joint surfaces, backing, and anchorages of units forming sealant rabbet, and the conditions under which the sealant work is to be performed for conditions that would adversely affect the performance of the sealant. Do not proceed with the sealant work until unsatisfactory conditions have been corrected. Start of sealant work constitutes acceptance of conditions.

3.2 PREPARATION:

3.2.1 Surface Cleaning of Joints: Completely clean joints and spaces to be sealed of all dirt, dust, mortar, oil, and other foreign materials which might adversely affect the joint sealing work. Where necessary, degrease with an approved solvent or commercial degreasing agent. Dry surfaces thoroughly before application of sealants.

.1 If recommended by manufacturer, remove paint and other protective coatings from surfaces to be sealed before priming and sealant application.

.2 Prepare surfaces to receive sealant to conform to the sealant manufacturer's specifications. Use air pressure or other approved methods to achieve required results. Use masking tape to keep sealants off surfaces that will be exposed in the finished work.

3.2.2 Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 JOINT DIMENSIONS:

3.3.1 Butyl Base Type Sealant: Minimum joint width of 1/4 inch, and the depth of 3 times the width of the joint, with the maximum depth 3/4 inch.

3.3.2 Silicone Rubber Sealant: Minimum joint width of 1/4 inch, and depth of approximately one-half the width, but in no case less than 1/4 inch. Other width-to-depth ratios as follows:

JOINT WIDTH:		JOINT DEPTH:	
<u>For Nonporous Surfaces</u>:		<u>Minimum</u>	<u>Maximum</u>
1/4" (minimum)		1/4"	1/4"
1/4" to 1/2"	1/2 of width	Equal to width	
Over 1/2"		Not Permitted	
<u>For Porous Surfaces</u>			
1/4" (minimum)		1/4"	1/4"
1/4" to 1/2"	1/4"	Equal to width	
1/2" to 1"		1/2"	Equal to width
Over 1"		Not Permitted	

3.3.3 Acrylic and Polyurethane: Minimum joint width of 1/4 inch, and depth equal to width, but in no case deeper than 1/2 inch. Other width-to-depth ratios as follows:

JOINT WIDTH:		JOINT DEPTH:	
For Nonporous Surfaces:		Minimum	Maximum
1/4" (minimum)		1/4"	1/4"
1/4" to 1/2"	Equal to width		Equal to width
Over 1/2" to 1" maximum		1/2"	1/2"
For Porous Surfaces			
1/4" (minimum)		1/4"	1/4"
1/4" to 1/2"	1/4"	Equal to width	
1/2" to 1"		1/2"	Equal to width
Over 1"		Not Permitted	

3.4 SEALANT APPLICATION SCHEDULE:

3.4.1 Type A Sealant: Use for all joints in interior concrete, marble, and paved surfaces subject to foot traffic.

3.4.2 Type B Sealant: Use for all vertical joints in marble, plaster, and concrete, exposed on the exterior of the building and for sealing around metal door, window and louver frames penetrating these surfaces.

3.4.3 Type C Sealant: Use for interior wall penetrations for pipe or conduit that will be concealed by escutcheons or other trim or plates and for lap joints in sheet metal work.

3.4.4 Type D Sealant: Use for joints, voids, and penetrations in interior surfaces exposed to view and requiring painting.

3.4.5 Type E Sealant: Use for all joints in contact with organically coated aluminum and for joints between precast and tilt-up concrete panels.

3.4.6 Type F Sealant: Not used.

3.4.7 Type G Sealant: Not used.

3.4.8 Acoustical Sealant: Use to seal all perimeter joints around sound retardant partitions and around electrical boxes and other penetrations in these partitions.

3.5 APPLICATION:

3.5.1 Installation of Sealant Filler: Install sealant fillers to provide support for sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths as specified herein and to allow optimum sealant movement capability.

.1 Do not leave gaps between ends of joint filler.

.2 Do not stretch, twist, puncture, or tear joint fillers.

.3 Remove absorbent joint fillers that have become wet before sealant application and replace with dry material.

.4 Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.

3.5.2 Install sealants in compliance with the details, square and perpendicular to the adjoining surfaces. Rounded off finishing will not be allowed.

3.5.3 Seal around all openings in exterior walls, and other locations indicated or required for waterproofing the building(s). Seal all other joints as herein specified, indicated, and required to properly complete the building(s).

3.5.4 Apply sealants using specified materials and proper tools. Prepare surfaces (cleaning, etc.) and apply sealant as specified herein and in accordance with the manufacturer's printed instruction and recommendations.

3.5.5 Do not use sealants when they become too jelled to be discharged in a continuous flow from the gun. Modification of sealants by addition of liquids, solvents, or powders will not be permitted.

3.5.6 Apply sealants with guns having proper size nozzles. Use sufficient pressure to fill all voids and joints solid. In sealing around openings, include entire perimeter of each opening, unless indicated or specified otherwise. Where the use of the gun is impracticable, use suitable hand tools.

3.5.7 Neatly point sealed joints on flush surfaces with beading tool, and internal corners with eaving tool. Remove excess material. Sealant, where exposed, shall be free of wrinkles and uniformly smooth. Complete sealing before final coats of paint are applied.

3.6 MISCELLANEOUS JOINT SEALING WORK:

The entire extent of sealing work is not necessarily fully or individually described herein. Provide sealing wherever required to prevent light leakage as well as moisture leakage. Refer to drawings for conditions and related parts of the work.

3.7 CLEANING:

Clean all types of surfaces materials adjoining sealed joints of smears of sealant or other soiling due to sealant application.

END OF SECTION

Section 09 10 00

METAL SUPPORT SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Light gage metal framing and furring systems for interior non-load bearing plaster and gypsum board partitions, and suspension and furring systems for plaster and gypsum board ceilings and soffits.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES:

The editions referenced herein of specifications and standards published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 20 for information concerning availability and use of references.

American Society for Testing and Materials (ASTM)
American Iron and Steel Institute (AISI)
Western Lath/Plaster/Drywall Industries Association (WLPDIA)

1.3 DESIGN REQUIREMENTS:

1.3.1 Where design of studs, bracing and other framing members are not indicated or specified they shall be determined in accordance with the tabulation of structural properties and load capacities shown on the manufacturer's current International Code Council Evaluation Service Reports (ICC ESR's) for the following criteria:

.1 Interior Wall Framing: Design to withstand a lateral load of 5 psf with deflection limited to L/240, except for walls finished with ceramic tile, limit deflection to L/360.

.2 Interior Ceiling Framing: Design to withstand a live load of 10 psf with deflection limited to L/360.

1.3.2 Compute structural properties of studs, bracing, and other framing members in accordance with AISI "Specifications for Design of Cold-Formed Steel Structural Members".

1.4 SUBMITTALS:

1.4.1 Product Data: Submit framing manufacturer's literature, including a current ICC ESR Evaluation Report, showing tabulation of structural properties, load capacities, dimensions, metal gages and type of coating for all framing and furring members.

Submit powder driven fastener manufacturer's current International Code Council Evaluation Service Reports (ICC ESR's).

1.4.2 Submittal procedures and quantities are specified in Section 01 33 40.

1.5 REGULATORY REQUIREMENTS:

1.5.1 Support framing for walls and ceilings shall conform to the California Code of Regulations (CCR) Title 24 Part 2, California Building Code, Chapter 25 - Gypsum Board and Plaster. Support framing for fire resistive walls, partitions and ceilings shall also conform to CCR Title 24 Part 2 Chapter 7 - Fire-Resistant Materials and Construction, and which are listed in the current UL "Fire Resistance Directory".

1.5.2 Furnish and install wall framing and powder driven fasteners in accordance with the framing and fastener manufacturer's current ICC ESR's Evaluation Reports.

1.6 DELIVERY, STORAGE, AND HANDLING:

Deliver materials to the project site and store them in adequately ventilated dry locations. If it is necessary to store materials outside, stack them off the ground on a platform and fully protect them from the weather.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

Acceptable manufacturers or equal:

Allied American Studco, Inc.
California Expanded Metal Products Co.
Unimast, Inc.
Western Metal Lath Co.

2.2 MATERIALS:

2.2.1 Hot-dip Zinc Coated Steel: ASTM A 653, designation G60.

2.2.2 Carbon Steel: ASTM A 568. Provide framing components with electro-galvanized finish, conforming to ASTM A 633, Type RS or shop-applied red-oxide, zinc chromate or other similar primer.

2.2.3 Powder Driven Fasteners: Types and sizes indicated on the structural drawings. Acceptable manufacturers or equal:

Hilti Corp.; ICC ESR
ITW/Ramset/Red Head; ICC ESR
Kwik Bolt; ICC ESR
Simpson ICC ESR

2.2.4 Screws: No. 8 by 3/8 inch cadmium or zinc coated TEKS screws with pan heads.

2.2.5 Concrete inserts, expansion anchors, powder driven fasteners, flange clips, and bolts for attachment of hanger wires to overhead construction shall have a rated capacity equal to that of the hanger wire.

2.2.6 Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.

2.3 WALL FRAMING AND FURRING MEMBERS:

2.3.1 Framing for Non-Load Bearing Interior Partitions: Fabricate framing members in accordance with ASTM C 645 from hot dip zinc coated steel, of thickness indicated. All studs shall be rolled from new steel sheet material and shall not be produced from re-rolled steel.

2.3.2 Furring Channels: Hat-shaped, ASTM C 645, from hot dip zinc coated steel minimum 0.0179 inch thick.

.1 Resilient Furring Channels: ASTM C 645, from hot dip zinc coated steel minimum 0.0179 inch thick, manufacturer's special type designed to reduce sound transmission.

2.3.3 Backing Plates: Steel, not lighter than 16 gage, of proper size to accommodate fastenings.

2.4 SUSPENSION SYSTEMS FOR PLASTER AND GYPSUM BOARD CEILINGS:

2.4.1 Channels: Cold-rolled steel, protected with rust-inhibitive paint or galvanized complying with ASTM A 653 with G60 coating.

.1 Main Runners: 1-1/2 inches deep by 7/16 inch wide flanges, weighing not less than 475 pounds per 1000 lineal feet.

.2 Furring Channels: 1-1/2 inch and 3/4 inch deep as required, by 7/16 inch flanges, weighing not less than 475 pounds and 300 pounds per 1000 lineal feet, respectively.

.3 Hat-shaped Furring Channels: ASTM C 645, minimum 0.0179 inch thick.

.4 Provide galvanized channels for exterior installations.

PART 3 - EXECUTION

3.1 INSTALLATION OF WALL FRAMING:

3.1.1 Runner Installation: Align runners accurately at the floor and ceiling. Where partitions abut underside of steel or concrete construction, maintain a minimum of 1/2 inch clearance between web of runner and underside of the steel or concrete. Restrain lateral movement of the runners with bent plate channels unless otherwise indicated. Securely anchor all other runners to the structure approximately 2 inches from runner ends and not more than 24 inches on center between ends. Attach runners to concrete with powder driven fasteners and to suspended ceilings with toggle bolts. At sound retardant partitions, set runners in two beads of acoustical sealant or two strips of acoustical tape as specified in Section 07 90 00.

3.1.2 Stud Installation: Position studs vertically and engage floor and ceiling runners. Space studs not to exceed 16 inches on center. Anchor studs located adjacent to door and window frames, partition intersection and corners. Also anchor studs carrying loads of wall mounted cabinets, shelving, handrails, ladders, toilet and urinal partitions, lavatory counters, toilet fixtures and other fixtures and equipment. Anchorage shall consist of one screw at each stud flange. Provide tripled studs at partition corners and intersections. Frame both sides of expansion and control joints with separate studs. Do not bridge expansion and control joints with components of stud system.

3.1.3 Reinforce and stiffen partitions with 3/4 inch (or larger as necessary) steel channels placed horizontally not more than 4'-6" apart. Wire-tie or bolt stiffeners to inside surfaces of studs.

3.1.4 Framing at Doors: Unless otherwise indicated, provide not lighter than 20 gage studs at each side of all doors or other openings through partitions. Over metal door frames, place a cut-to-length section of runner with a web-flange bent at each end and fastened to adjacent vertical studs with 2 screws in each flange. Position a cut-to-length stud at the location of vertical joints over door frame header extending to the ceiling. Install a horizontal stiffener channel above each door extending to engage first stud beyond each jamb stud and attach channel to each stud.

3.1.5 Blocking and Reinforcing for Wall Hung Items: Provide cut sections of not lighter than 20 gage runner channel or zinc coated steel backing plates and other items as indicated for the support of wall hung fixtures, shelving, cabinets, hand rails, and toilet accessories. Cut ends of runner and backing plates to each stud. Fasten studs carrying the weight of wall hung items to the bottom runner channel. Where the type of supplementary support is not otherwise indicated comply with the stud manufacturer's recommendations and industry standards. In each case consider the weight and load resulting from the item supported.

3.1.6 Resilient Channel Installation: Install resilient channels at right angles to the framing members spaced 24 inches on center. Attach channels through flange at each framing member with pan head screws. Install channels with mounting flange down. Locate channels 2 inches from floor and within 6 inches of ceiling. Extend channels into all corners and attach to corner framing. Cantilever channel ends no more than 6 inches. Splice channel by nesting directly over stud; screw attach through both flanges. Reinforce with screws located at both ends of splice.

3.1.7 Wall Furring: Install wall furring spaced 16 inches on center unless otherwise indicated.

3.2 CLEAN-UP AND PROTECTION:

Perform clean-up of the premises as specified in Section 01 74 00.

END OF SECTION

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Section 09 25 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Gypsum board construction complete with accessories.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.1.3 Related Work:

.1 Non-load-bearing steel framing is specified in Section 09 10 00.

1.2 REFERENCES:

The editions referenced herein of specifications and standards published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 20 for information concerning availability and use of references.

American Society of Testing and Materials (ASTM)
Gypsum Association (GA)
Western Lath/Plaster/Drywall Industries Association (WLPDIA)

1.3 SUBMITTALS:

1.3.1 Product Data: Submit product data for each type of product specified.

1.3.2 Certificates: Submit manufacturer's certification that products meet or exceed requirements of the referenced specifications.

1.3.3 Submittal procedures and quantities are specified in Section 01 33 40.

1.4 QUALITY ASSURANCE:

1.4.1 Gypsum Board Construction: Meet the requirements of the California Code of Regulations (CCR) Title 24 Part 2, California Building Code, Chapter 25 - Gypsum Board and Plaster.

1.4.2 Fire-Resistive Construction: Meet the requirements of CCR Title 24 Part 2 Chapter 7 - Fire-Resistant Materials and Construction. Provide fire-resistance rated assemblies identical to those in Chapter 7 of the CCR Title 24 Part 2 or in listing of other testing agencies acceptable to the State Fire Marshal.

1.4.3 Fire Resistive Gypsum Board: Bear the Underwriter's Laboratories Inc. (UL) label or label of another organization acceptable to the State Fire Marshal.

1.4.4 Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1.4.5 Field Samples: On actual gypsum board surfaces, prepare field samples of at least 100 square feet in surface area for the applications listed below. Simulate finished lighting conditions for review of in-place unit of work.

.1 Wall surfaces indicated or specified for non-textured finish.

.2 Ceiling surfaces indicated or specified for non-textured finish.

1.5 DELIVERY, STORAGE, AND HANDLING:

1.5.1 Deliver gypsum board and accessories in the manufacturer's original unopened containers, bundles or rolls bearing the manufacturer's name and brand designation.

1.5.2 Store materials inside the building or in other dry weather tight enclosure. Stack gypsum board flat and off the floor. Do not stack long lengths over shorter lengths.

1.5.3 Store flammable adhesives away from fire, sparks and smoking areas.

1.5.4 Handle gypsum board to prevent damage to edges, ends, and surfaces.

1.6 PROJECT CONDITIONS:

1.6.1 Maintain temperature range between 55 degrees F and 70 degrees F for a period extending from 24 hours before installation until the permanent heating system is in operation. Provide ventilation during and following adhesive and joint treatment application. Use temporary air circulators in enclosed areas lacking natural ventilation.

1.6.2 Do not apply gypsum board until insulation, pipes, conduits, ducts, vents, supports and other items that will be concealed by the gypsum board have been inspected, tested and approved by the governing authorities and unsatisfactory conditions have been corrected.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

Acceptable manufacturers, or equal:

Domtar Gypsum.
Georgia-Pacific Corp.

National Gypsum Co.; Gold Bond Building Products Division.
United States Gypsum Co.

2.2 MATERIALS:

2.2.1 Gypsum Board: Conform to the following standards.

.1 Regular Type X Gypsum Board: ASTM C 36, with tapered edges, 5/8 inch thick.

.2 Fire Retardant Gypsum Board: ASTM C 36, Type X, with tapered edges, 5/8 inch thick unless otherwise indicated.

2.2.2 Wood Fiber Sound Board: Cellulosic cellulose fiber insulating board meeting the requirements of ASTM C 208, 1/2 inch thick, 0.82 pounds per square foot density, Sound Deadening Grade. Acceptable product or equal:

Celotex Corp.; Soundstop

2.2.3 Screws: Conform to the standards specified below for attaching gypsum board to the various substrates listed.

.1 Metal Framing, 20 Gage and Heavier: ASTM C 954.

.2 Metal Framing and Furring, 25 Gage: ASTM C 1002, Type S.

.3 Wood Framing: ASTM C 1002, Type W.

.4 Gypsum Backing Board: ASTM C 1002, Type G.

2.2.4 Nails for Attaching Gypsum Board to Wood Framing: ASTM C 514.

2.2.5 Resilient Channels: Fabricate resilient furring members in accordance with ASTM C 645, from hot dip zinc coated steel minimum 0.0179 inch thick. Provide manufacturer's special type designed to reduce sound transmission. Acceptable products or equal:

Gold Bond Building Products; Resilient Furring Channels
U.S. Gypsum Co.; RC-1 Resilient Channels

2.2.6 Metal Trim: ASTM C 1047, fabricated from hot-dip zinc-coated sheet steel.

2.2.7 Taping and Finishing Materials: ASTM C 475, all purpose type.

.1 Joint Tape: Paper reinforcing tape.

.2 Joint Compound: Factory-packaged vinyl-based, ready-mixed formulation, all-purpose type formulated for both taping and topping compounds.

2.2.8 Acoustical Sealant: Specified in Section 07 90 00.

2.2.9 Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.

PART 3 - EXECUTION

3.1 EXAMINATION:

Before applying gypsum board ensure that corners and framing are plumb, true and solid and that framing members are properly spaced. Edges and ends of board shall have solid bearing. Do not start work until deficiencies have been corrected. Start of work of this section constitutes acceptance of the surfaces.

3.2 INSTALLATION OF GYPSUM BOARD:

3.2.1 Applications:

.1 Use fire retardant gypsum board where indicated or required to achieve fire rated partitions and ceilings.

.2 Use Type X or regular gypsum board in all locations not otherwise indicated or specified.

3.2.2 General: Install and finish gypsum boards to comply with ASTM C 840 and GA-216.

.1 Use gypsum board of maximum practicable lengths to minimize end joints. Stagger end joints when they occur. Locate end joints as far as possible from the center of walls and ceilings.

.2 Install gypsum boards in moderate contact, without forcing them in place. Do not place square or cut ends or cut edges against tapered edges.

.3 Except for face layer of double layer construction, support ends and edges of gypsum boards on framing or furring members. Joints on opposite sides of the same partition shall not occur on the same stud.

.4 Cover both faces of steel stud partition framing with gypsum board in concealed spaces above ceiling where required for sound, fire, air, or smoke ratings.

.5 Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board over wood framing with floating internal corner construction.

3.2.3 Fastening: Locate fasteners not less than 3/8 inch nor more than 1/2 inch from edges and ends of gypsum board. Drive fasteners perpendicular to the gypsum

board surface with heads set slightly below the gypsum board surface for finish layers and even with the surface for base layers. Attach gypsum board starting from the center of each panel and proceeding toward the outer edges. Fasten gypsum board in place with screws over metal framing and with nails or screws over wood framing.

3.2.4 Sound Rated Partitions: Where sound rated partitions are indicated, seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Acoustical sealant specified in Section 07900. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

3.2.5 Nonrated Single Layer Construction:

.1 Apply gypsum board with the long dimension at right angles to ceiling framing and [at right angles or] parallel to wall framing members. Use maximum-length panels to minimize end joints.

.2 Apply ceiling panels before wall/partition board application to the greatest extent possible.

.3 Attach gypsum board with nails spaced 7 inches on center for ceilings and 8 inches on center for walls or screws spaced 12 inches on center for ceilings and 16 inches on center for walls. Use 5d nails for 1/2 inch thick gypsum board and 6d nails for 5/8 inch thick gypsum board. Use 1 inch long screws for metal framing and furring and 1-1/4 inch long screws for wood framing.

3.2.6 Nonrated Double Layer Construction: Provide one of the following methods at the Contractor's option.

.1 Mechanically Fastened Face Layer: Apply base layer with the long dimension at right angles to the framing members. Attach the base layer with screws spaced 24 inches on center or nails spaced 16 inches on center. Use 5d nails for 1/2 inch thick gypsum board and 6d nails for 5/8 inch thick gypsum board. Use 1 inch long screws for metal framing and 1-1/4 inch long screws for wood framing. Apply face layer with long dimension at right angles to the base layer. Attach the face layer with nails 16 inches on center or screws 24 inches on center. Use 7d nails or 1-5/8 inch long screws.

.2 Adhesive Applied Face Layer: Apply base layer with the long dimension at right angles to the framing members. Attach the base layer with nails or screws of sizes and spacings as specified for single layer construction. Apply the face layer with long dimension perpendicular to the base layer. Laminate the face layer to the base layer with all purpose joint compound applied to the back of the panel with a notched spreader. Hold the face layer in position until adequate bond is achieved using temporary fasteners or bracing. Remove temporary fasteners or bracing and fill all holes with joint compound as specified herein.

3.2.7 Rated Fire Resistive Partitions: Install and fasten gypsum board in accordance with CCR Title 24 Part 2 Table 7-B.

3.2.8 Resilient Channels: Install resilient channels at right angles to the framing members. Attach channels through alternate flanges at each framing member with nails or screws. Nails shall be 1-1/4 inch GWB-54 type. Screws shall be 1 inch long for metal framing and 1-1/4 inch long for wood framing. Splice channels by nesting directly over framing members and attaching through each resilient channel flanges with one fastener.

3.2.9 Metal Trim: Attach corner and edge trim and control joints with screws spaced not more than 9 inches on center.

.1 Install the gypsum board metal corner trim where indicated and at vertical and horizontal external corners and angles.

.2 Install metal edge trim where indicated and at junctions of gypsum board and walls of other materials and where there are exposed edges.

.3 Provide control joints where indicated on the drawings. If no control joints are indicated, provide joints to ensure that unbroken wall surfaces are limited to 30 feet in length and unbroken ceiling surfaces are limited to 2500 square feet or 50 feet in either direction.

3.2.10 Edge Sealing: Cut edges, utility holes, and joints of water resistant gypsum board shall be treated with the gypsum board manufacturer's recommended waterproof sealant before installation.

3.2.11 Tolerances: Gypsum board surfaces shall have a maximum variation of 1/8 inch in 10 feet when a straight edge is laid on the surface in any direction and no measurable variation in any 2 foot direction.

3.2.12 Wood Fiber Sound Board: Locate fasteners not less than 3/8 inch nor more than 1/2 inch from edges and ends of board. Drive fasteners perpendicular to the board surface with heads set even with the surface. Attach board starting from the center of each panel and proceeding toward the outer edges. Fasten in place with screws.

3.3 TAPING AND FINISHING:

3.3.1 Tape and finish joints, corners, fastener heads, and other imperfections in accordance with the manufacturer's specifications and recommendations to provide a smooth finish.

3.3.2 Reinforce joints, wall and ceiling angles, and inside vertical corners with tape embedded in joint compound. Finish joints with not less than 2 applications of joint compound, allowing each application to dry thoroughly and sanding between coats as required.

3.3.3 Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish in accordance with GA-214.

.1 Level 1: Not used.

.2 Level 2: Not used.

.3 Level 3: Not used.

.4 Level 4: Not used.

.5 Level 5: Provide for gypsum board surfaces indicated to receive non-textured finish and gloss or semi-gloss enamels. Where Level 5 gypsum board finish is indicated or specified, embed tape in finishing compound plus 2 separate coats applied over joints, inside angles, fastener heads, and accessories using ready-mixed, drying type, all-purpose taping compound, plus a thin skim coat of joint compound over the entire gypsum board surface. After drying, lightly sand or otherwise treat the surface of the compound to provide a smooth even surface free of porosity or other surface variations.

3.3.4 Treat external corners, edges, and ends with metal beads and edge trim. Finish with 3 coats of joint compound and feather out between 8 inches and 10 inches from the nose.

3.3.5 The final application of compound and sanding shall leave all gypsum board surfaces uniformly smooth and in condition to receive specified finish.

3.4 REPAIR, CLEAN-UP AND PROTECTION:

3.4.1 Repair fastener pops by driving a new fastener approximately 1-1/2 inches from the fastener pop and reset the popped fastener. When face paper is punctured, drive a new fastener approximately 1-1/2 inches from the defective fastener. Fill damaged surfaces with compound.

3.4.2 Upon completion of the work, remove from adjacent surfaces, overspray, splatter and daubs of taping and finish compound and textured finishes. Remove tools, equipment, unused material and cuttings and leave the work in a clean orderly manner.

END OF SECTION

Section 09 67 20

EPOXY MARBLE CHIP FLOORING

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Epoxy [marble] [quartz] chip flooring system.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 SUBMITTALS:

1.2.1 Samples: Submit samples on flat particle board not less than 12"by 12" in size showing approximate applied thickness, quality of work, texture and color.

1.2.2 Refer to Section 01 33 40 for number and manner of submittals.

1.3 QUALITY ASSURANCE:

1.3.1 Installer Qualifications: Engage an installer who has successfully completed within the last 3 years at least 3 epoxy chip flooring applications similar in type and size to that of this project

1.3.2 Single Source Responsibility: Obtain primary resinous flooring materials including primers, resins, hardening agents, finish or sealing coats from a single manufacturer with not less than 3 years of successful experience in supplying materials for work of type specified.

1.3.3 Requirements for Physically Disabled: Provide elastomeric liquid flooring meeting the slip resistant requirements of California Code of Regulations (CCR) Title 24 Part 2; and ADA Accessibility Guidelines for Buildings and Facilities, dated June 26, 1991 as amended April 5, 1993 and January 18, 1994, and July 2006.

1.4 PROJECT CONDITIONS:

Environmental Conditions: Comply with flooring manufacturer's directions for maintenance of substrate temperatures, ventilation, and other conditions required to execute and protect work.

1.5 DELIVERY, STORAGE, AND HANDLING:

1.5.1 Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name and directions for storage and mixing with other components.

1.5.2 Store materials to comply with manufacturer's directions to prevent deterioration from moisture, heat, cold, direct sunlight, or other causes.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Epoxy-Marble Chip Flooring: Manufacturer's standard decorative type floor surfacing system consisting of primer; topping, including epoxy resin, hardener and #0 size marble aggregate; and finish coat or coats. Provide marble aggregates complying with manufacturer's specifications for incorporation into factory-packaged resin and hardener components, blended to produce color as selected by the Architect.

.1 Acceptable Products: Acceptable products or equal:

Crossfield Products Corp.; Dex-O-Tex Colorstone
Selby-Battersby & Co.; Selbalux

2.1.2 Epoxy-Quartz Chip Flooring: Manufacturer's standard decorative type floor surfacing system consisting of primer; topping, including epoxy resin, hardener and ceramic-coated quartz aggregate; and finish coat or coats. Provide only factory-packaged materials including aggregate for all components, blended to produce color as selected by the Architect.

.2 Acceptable Products: Acceptable products or equal:

Crossfield Products Corp.; Dex-O-Tex Decor Flor
Macnaughton-Brooks Div.; Quartzite
Selby-Battersby & Co.; Selbatwede 41
Stonehard, Inc.; Stoneshield SLT

PART 3 - EXECUTION

3.1 PREPARATION:

3.1.1 Surface Preparation: Perform preparation and cleaning procedures in compliance with flooring manufacturer's instructions for particular substrate conditions involved, and as herein specified.

3.1.2 Mixing: Carefully mix and prepare materials in compliance with manufacturer's instructions.

3.2 APPLICATION:

3.2.1 General: Apply each component of flooring system in compliance with manufacturer's directions to produce a uniform monolithic wearing surface, uninterrupted except at divider strips, sawn joints or other types of joints (if any).

3.2.2 Prime Coat: Apply primer over prepared substrate at manufacturer's recommended spreading rate with timing of application coordinated with subsequent application of topping mix to insure optimum adhesion between flooring materials and substrate.

3.2.3 Topping Mix: Trowel apply neat binder over freshly applied primer at spreading rate and number of coats recommended by manufacturer to produce minimum thickness of 3/16 inch. Saturate wet binder with aggregate by sprinkling aggregate so that it falls vertically into the resin. Remove excess and projecting aggregate and apply finish coats of binder and perform power sanding in sequence recommended by manufacturer.

3.2.4 Seal Coats: After topping mix has cured sufficiently, apply seal coat of type required to produce non-slip finish and in number of coats and spreading rates recommended by manufacturer.

3.2.5 Cove Base: Apply floor system to wall surfaces at locations indicated for form base with cove to a height of 4 inches unless otherwise indicated. Round interior and exterior corners.

3.2.6 Joints: Where substrate is interrupted by expansion or control joints, provide joint in liquid flooring to comply with manufacturer's recommendations. Apply joint materials as specified in Section 07 90 00 using materials compatible with flooring materials.

3.3 CURING, CLEANING AND PROTECTION:

3.3.1 Curing: Cure flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application.

3.3.2 Protection: Protect flooring materials from damage and wear during construction operations. Provide temporary covering if recommended by the manufacturer. Remove temporary covering just before cleaning for final inspection.

3.3.3 Cleaning: Clean flooring just before final inspection. Use materials and procedures recommended by flooring manufacturer.

END OF SECTION

38-001 – 04/16/2019

Section 09 90 00

PAINTS AND COATINGS

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: Furnishing of materials and equipment and completion of painting and painter's finish on exposed exterior surfaces as required to complete the painting and finishing as indicated and specified.

1.1.2 Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 SUBMITTALS:

1.2.1 Samples: Prepare samples of colors and textures based upon the Architect's selections and submit them for review.

.1 Painted Wall Samples: Prepare on 8" by 10" matt board in a stair step manner so all required coats show.

1.2.2 Submittal procedures and quantities are specified in Section 01 33 40.

1.3 QUALITY ASSURANCE:

1.3.1 The intent and requirements of this section, is that materials, items and surfaces which are normally painted and finished in construction of this type and quality, shall be so included, whether or not said materials, items or surfaces are specifically called out and included in the schedules and notes on the drawings, or is, or is not, specifically mentioned in these specifications.

1.3.2 The following general categories of construction and items are included under other sections, and shall not be a part of this section:

.1 Shop prime painting of structural and miscellaneous iron or steel.

.2 Shop prime painting of hollow metal.

.3 Shop finished construction and items.

1.3.3 Paint exposed mechanical, plumbing and electrical construction, which is not factory finished.

1.3.4 The Room Finish Schedules indicated, show the location of surfaces to be painted or finished. The schedule indications are general and do not necessarily define the detail requirements. Include detailed refinements and further instructions as may be given for the required complete finishing of spaces and rooms.

1.3.5 Regulatory Requirements. The quantity of volatile organic compounds (VOC) used in paint products shall not exceed the limits permitted under the current regulations for architectural coatings of the San Diego County Air Pollution Control District.

1.4 DELIVERY, STORAGE AND HANDLING:

1.4.1 Delivery:

.1 Deliver paint in manufacturer's labeled and sealed containers. Labels shall include manufacturer's name, brand, type, batch number, color of paint and instructions for reducing. Thin only in accordance with printed directions of manufacturer. Thinning shall comply with the regulations of the air pollution control district having jurisdiction.

.2 Do not deliver or use materials other than those specified, or approved.

1.4.2 Storage and Handling: Store paint materials and equipment, when not in actual use, in places specifically assigned for that purpose. Ventilate storage space and provide fire protection. Mix and handle paint in these assigned areas; use metal containers for mixing and handling and designed for safety. Remove paint materials, including rags, tarpaulins, mixers, empty containers and filled or partially filled containers from the building areas at the close of each working day.

1.5 PROJECT CONDITIONS:

1.5.1 Examine the drawings and the specifications of other trades and consult with the other trades to determine the full extent of surfaces and items which are specified to include shop priming and shop finish painting.

1.6 WARRANTY:

In addition to the warranty and correction of work requirements of the General Conditions, warrant painting and finishing against peeling, fading, cracking, blistering, or crazing for a period of 2 years from the date of "Notice of Completion". The written warranty shall include materials and labor. The warranty shall be signed by the paint manufacturer, the painter and the Contractor and shall be submitted in accordance with Division 1.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Substitutions: Materials will be considered for substitution subject to requirements specified in Division 1. Submit chemical formulations of materials proposed for substitution to demonstrate that formulation of substitution is similar to formulation of specified product; or results of test showing that performance of substitution is equivalent to performance of specified product.

2.1.2 Acceptable Manufacturers: Unless otherwise specified in the Paint Schedule, acceptable manufacturers include the following:

ICI Paint
Sherwin-Williams Co.
Vista Paint

2.1.3 Primer and sealer coats may be thinned no more than 10 percent, with paint manufacturer's thinner. Use other materials as they come from the can, except as otherwise approved.

2.1.4 Secure the Color Schedule before undercoating. Unless otherwise specified, tint undercoats slightly to approximate the color of the finish coat. Obtain approval of colors before proceeding with the finishing operations.

2.1.5 Where a specific name is not given for a product or ingredient, provide item of the best quality of the approved manufacturer, which is normally used for the intended purpose.

2.2 COLOR SELECTION:

2.2.1 The Architect will select the finish colors and determine the basic hues of all surfaces to be painted or finished.

2.2.2 After the actual painting and finishing has started, the Architect retains the right to make minor modifications in tone and shade on the various surfaces to suit the actual lighting conditions encountered. Submit additional samples, as required, to assist the Architect in his final selection.

2.2.3 The number of colors to be used in any given room or space, and on the entire project, will be determined by the Architect.

2.3 PAINTING SCHEDULE:

2.3.1 Refer to Finish Schedule on the Drawings.

2.3.2 Miscellaneous: Construction visible through screen vents and grilles shall have one heavy coat of flat black paint.

PART 3 - EXECUTION

3.1 EXAMINATION:

Examine surfaces to be painted before beginning painting operations. Construction of other trades that has been left or installed in a condition not suitable to receive paint, stain, other specified finish shall be repaired or corrected by the applicable trade before painting. Painting of defective or unsuitable surface implies acceptance of the surface.

3.2 PREPARATION:

3.2.1 Protection:

.1 Before painting remove hardware, accessories, plates, lighting fixtures and similar items or provide protection of such items. On completion of each space, replace above items. Use only skilled mechanics for removing and connecting above items. Protect adjacent surfaces as required or directed.

.2 Wherever painting and finishing is being performed, protect floors, surfaces and items from damage by the painting operations. Provide clean drop cloths wherever necessary. Orderly and carefully arrange and protect supplies, materials, paints, and containers.

3.2.2 Surface Preparation:

.1 General: Surfaces shall be clean and dry before painting and finishing. Remove dirt and dust by stiff bristle brush and wiping with cloths. Remove oil and grease by cleaning using a materials and methods recommended by the paint manufacturer. Thoroughly rinse surfaces with water which have been contaminated with chemicals. Apply the first coat of paint as soon as possible after cleaning and drying the surfaces.

.2 Shop Primed Ferrous Metal Surfaces: Wash free of grease, dirt, oil, and dust, using materials and methods recommended by the paint manufacturer. Repair shop primed surfaces and touch up wherever shop priming is damaged, and at all welds.

.3 Galvanized Metal Surfaces: Pretreat surfaces by cleaning with a vinyl wash coat or wash and etch with a phosphoric acid etching compound, as recommended by the paint manufacturer. If phosphoric acid etching is used, rinse with water and allow to dry. If vinyl wash coat is used, apply primer the same day as vinyl wash coat is applied.

.4 Concrete Surfaces: Thoroughly clean form oil and other deposits from form surfaces and remove laitance and powder. Do not start painting operations until surfaces are clean and sound and thoroughly cured and dried.

.5 Wood Surfaces: Sand smooth and clean before application of the first coat. Putty and spackle smooth, holes, splits and scratches after first coat application.

3.2.3 Preparation of Existing Surfaces:

.1 Metals: Remove all chalk, dirt and mildew thoroughly. If it is difficult to thoroughly remove all chalk, dirt and mildew by washing thoroughly and rinsing, apply one coat of exterior oil-based primer when the surface is completely dry. This will aid in obtaining proper adhesion properties. Make certain to make the paint application as soon as possible after cleaning to prevent possible mildew spore growth from returning.

.2 Aluminum: Dull all glossy areas with sandpaper. Remove any loose dirt, paint or other material prior to painting, using a scraper or power brush if necessary.

Wipe clean and dry thoroughly. Prime with a zinc chromate primer or acrylic primer prior to finish coating.

.3 Galvanized Steel: Wash all previously painted galvanized surfaces with a quality paint thinner to remove grease and deposits. If the galvanized surface is broken and rust is evident, remove the rust to bare metal by wire brushing, sanding or blasting. Clean thoroughly and spot prime the bare metal with acrylic primer.

.4 Fill holes and blemished wood surfaces with wood patching compound and spot prime.

3.3 APPLICATION:

3.3.1 Application: Apply paints by brush or roller except as otherwise specified. Use paint of proper consistency for each coat, well brushed out or flowed on to obtain a uniform finish free from holidays, brush marks, sags, crawls, or other defects.

3.3.2 Materials shall be applied in accordance with the approved manufacturer's directions and specifications. Accomplish thinning required in the manner and with the type of reducer recommended by manufacturer.

3.3.3 The proper number of coats of paints and other finishes specified, properly applied, will result in the desired effect. Should this effect not be attained, apply additional coats of the specified materials and methods.

3.3.4 Each coat of paint shall vary in shade from the proceeding coat in a manner that will make each coat readily distinguishable without affecting the finish color.

3.3.5 Sand enamel and varnish coats smooth before recoating. Repair defects and unevenness in previously applied coatings before applying the next coat.

3.3.6 Paint and finish surfaces indicated in the Room Finish Schedule and as specified herein. Where questions occur as to the indicated surfaces inform the Architect and receive clarification therefrom.

3.3.7 Millwork: Prime or back-paint (other than shop painted or prefinished surfaces) within 24 hours after delivery to Project site. Apply 2 coats paint (primer and filler or undercoat) on top and bottom edges of doors after being cut and fit but preferably before being hung. Prime or seal edges and cut surfaces of boarding or paneling.

3.3.8 Wood Exterior Finish, Including Frames, Trim, Siding and Natural-Finished Wood: Back-prime surfaces which will be concealed after installation. Use Olympic clear prime seal and apply immediately upon delivery of material to project.

3.3.9 Sheet Metal: Back-prime raw sheet metal before installation.

3.4 CLEANING, TOUCH-UP AND REFINISHING:

3.4.1 Touch-Up and Refinishing: Touch up, refinish, or repaint runs, sags, misses, holidays, stains and other defects in the painted surfaces, including inadequate coverage and mil thickness as necessary to produce a first-class workmanlike job.

3.4.2 Cleaning:

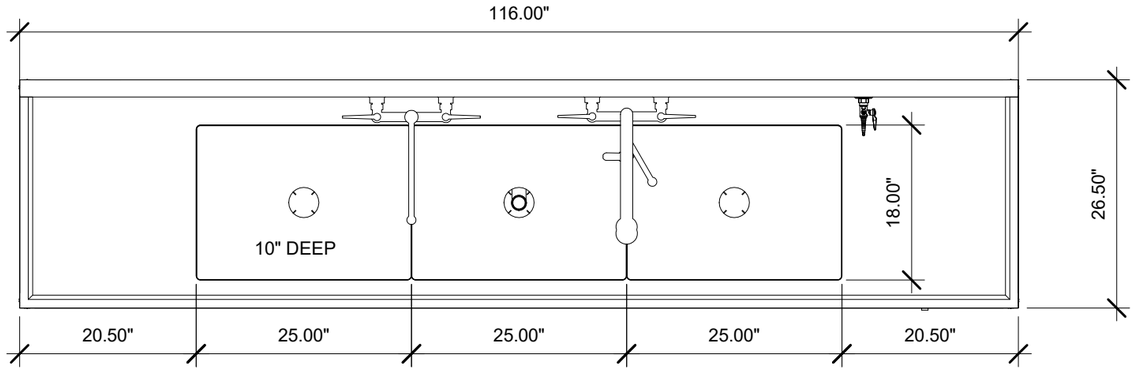
.1 Immediately remove accidental spatter and spillage and restore the damaged surfaces to perfect condition. Completely remove paint spots and spatter on glass, porcelain fixtures, other surfaces and clean the surfaces.

.2 At the completion of finishing operations in each space or room, remove materials, supplies, debris and rubbish from the areas and leave in a clean, orderly condition.

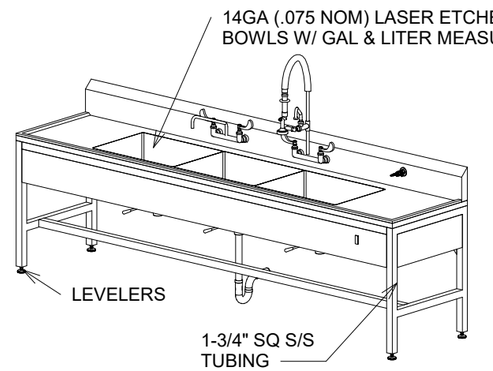
END OF SECTION

38-001 – 04/15/2019

APPENDICES



1 Top
3/4" = 1'-0"



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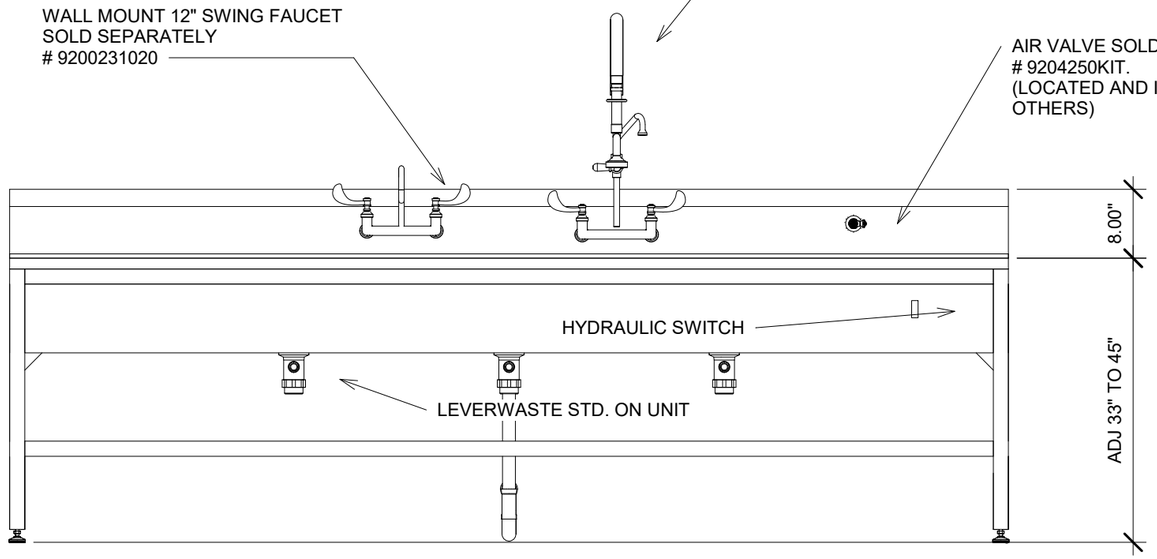
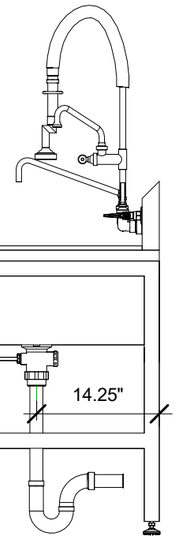


2 Front
3/4" = 1'-0"



3 Right
3/4" = 1'-0"

NOTE:
ALL DIMENSIONS ARE FOR REFERENCE ONLY. FLEX HOSE CONNECTIONS FOR SUPPLY LINES (LOCATED & SUPPLIED BY OTHERS) TO ADDRESS 12" VERTICAL STROKE.

TELESCOPING "P" TRAP NEEDS TO ADDRESS 12" OF STROKE. (ALL "P" TRAP COMPONENTS SUPPLED BY OTHERS)

Equipment #
003

BLICKMAN

PO#: _____ DATE: _____

APPROVAL: _____ TITLE: _____

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
BEND RADIUS = MTL. THK.
TOLERANCES:
FRACTION: + 0" / - 1/8"
DECIMAL: + 0" / -.125"

	NAME	DATE
DRAWN	PJM	3/30/14
ENG APPR.		

MATERIAL: 304 S/S
FINISH: POL # 4
APPRX WEIGHT = lbs
DO NOT SCALE DRAWING

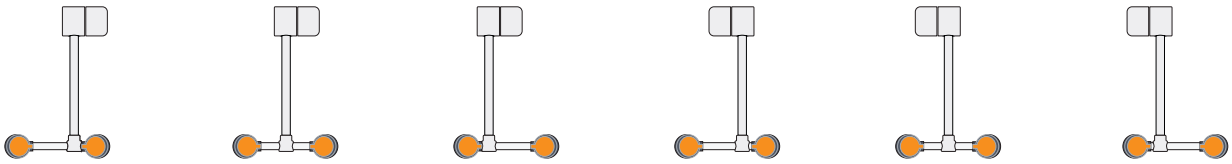
BLICKMAN INDUSTRIES
CLIFTON,NJ

TITLE: DECONTAMINATION STATION, HYDRAULIC 116" X 26.5"

SIZE B | DWG. NO. 162DSHY001 | REV

SHEET 1 OF 1

☐ G1849 Eyewash, Deck Mounted, AutoFlow™ 90° Swing-Down



☐ G1849LH-L ☐ G1849LH ☐ G1849LH-R ☒ G1849L ☐ G1849 ☐ G1849R

Model G1849LH-L Shown

Application: AutoFlow™ eyewash for mounting on counter. Spray heads swing down from storage to operational position, activating water flow. Available in a variety of spray head configurations to minimize obstructions at a sink. *Note: If unit is not installed at a sink, floor drain should be provided underneath unit to prevent accumulation of water on floor.*

Spray Head Assembly: Two GS-Plus™ spray heads. Each head has a "flip top" dust cover, internal flow control and filter to remove impurities from the water flow.

Valve: 1/2" IPS plug-type valve with PTFE coated O-ring seals. Swinging head assembly down from storage to operational position opens orifice and activates water flow. Unit remains in operation until spray head assembly is returned to storage position.

Strainer: Unit is furnished with in-line strainer to protect valve and spray heads from debris in water line.

Mounting: Valve is installed in chrome plated brass housing. Unit mounts on countertop behind sink. Furnished with mounting hardware for securing unit to counter.

Construction: Polished chrome plated brass.

Supply: 1/2" NPT female inlet.

Sign: ANSI-compliant identification sign.

Quality Assurance: Unit is completely assembled and water tested prior to shipment.

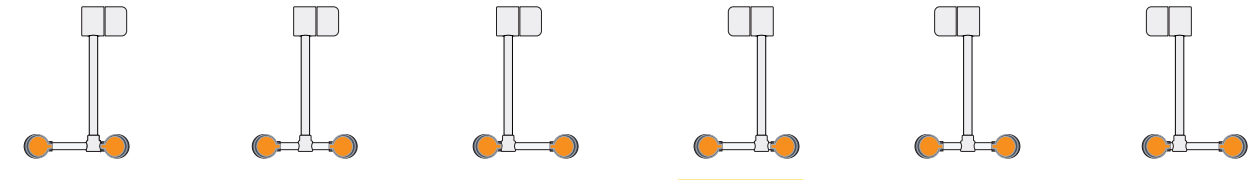
Available Options

☐ **G3600LF** Thermostatic mixing valve precisely blends hot and cold water to deliver warm (tepid) water as required by ANSI Z358.1-2014. Refer to "Tempering Valves" section for complete technical and product selection information.

Guardian Equipment
1140 N North Branch St
Chicago, IL 60642

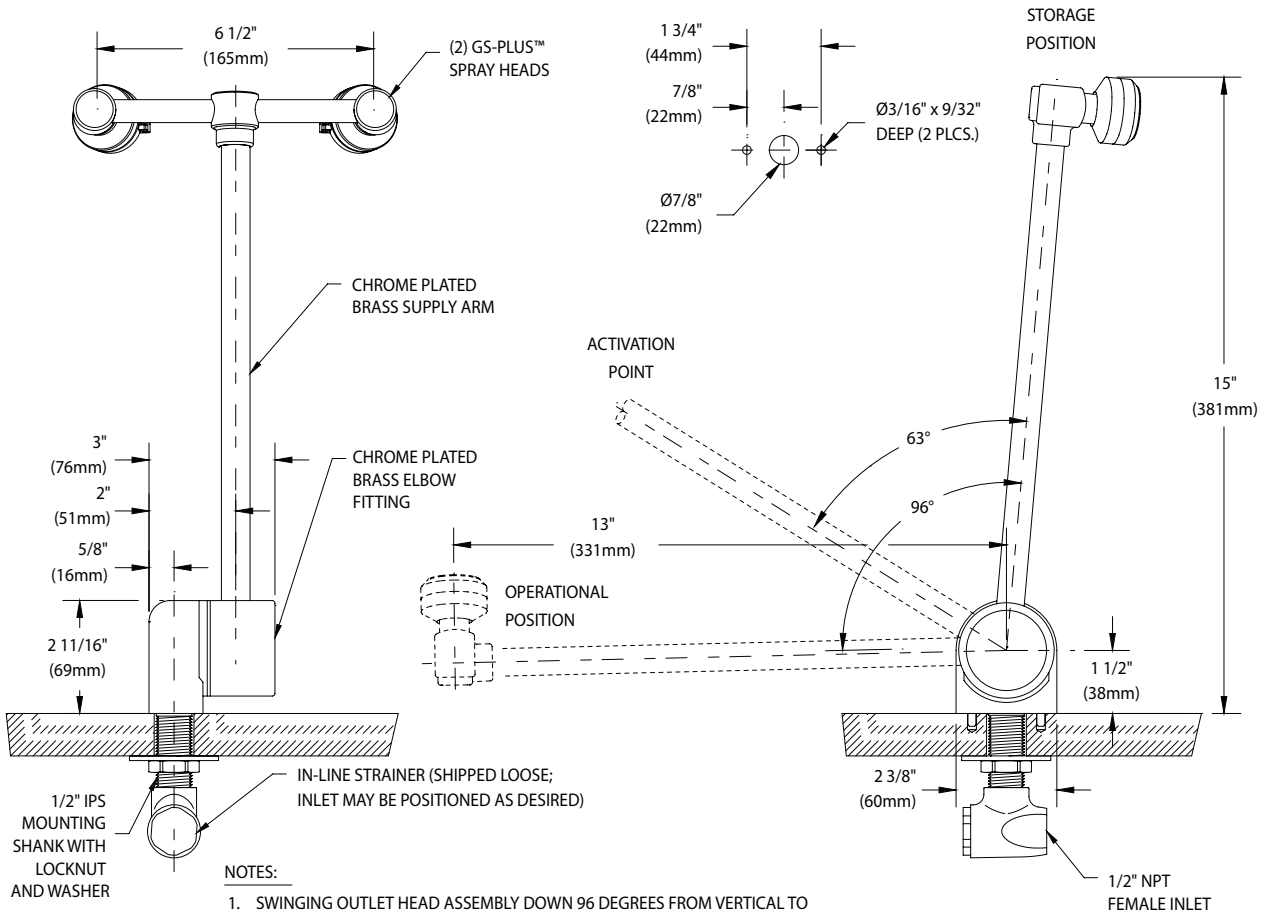
312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com

☐ G1849 Eyewash, Deck Mounted, AutoFlow™ 90° Swing-Down



☐ G1849LH-L ☐ G1849LH ☐ G1849LH-R ☐ G1849L ☐ G1849 ☐ G1849R

DETAIL OF MOUNTING PINS



NOTES:

1. SWINGING OUTLET HEAD ASSEMBLY DOWN 96 DEGREES FROM VERTICAL TO HORIZONTAL POSITION ACTIVATES WATER FLOW.
2. EACH GS-PLUS™ SPRAY HEAD HAS A "FLIP-TOP" DUST COVER, INTERNAL FLOW CONTROL AND FILTER TO REMOVE IMPURITIES FROM THE WATER FLOW.
3. UNIT MOUNTS INTO COUNTERTOPS UP TO 1 1/2" THICK. BASE OF UNIT HAS PINS TO PREVENT UNIT FROM TURNING ON COUNTER.
4. UNIT IS FURNISHED WITH IN-LINE STRAINER TO PROTECT SPRAY HEADS AND VALVE COMPONENTS FROM DEBRIS IN WATER LINE.
5. VALVE BEGINS TO OPEN AT "ACTIVATION POINT" SHOWN ABOVE.

THIS SPACE FOR ARCHITECT/ENGINEER APPROVAL

Sign Included

Due to continuing product improvement, the information contained in this document is subject to change without notice. All dimensions are ± 1/4" (6mm). rev. 080918

Guardian Equipment
1140 N North Branch St
Chicago, IL 60642

312 447 8100 TELEPHONE
312 447 8101 FACSIMILE
gesafety.com

Listed 8116. Units have been tested to and comply with ANSI Z358.1-2014 and the Uniform Plumbing Code.

PROJECT NAME: _____

LOCATION: _____

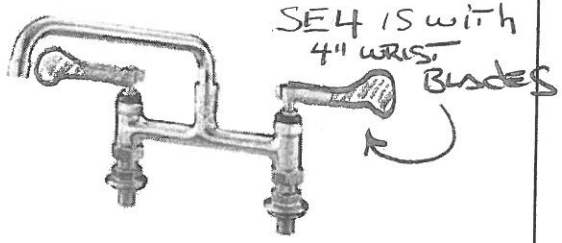
SPECIFIER ITEM NO. _____ **QTY:** _____

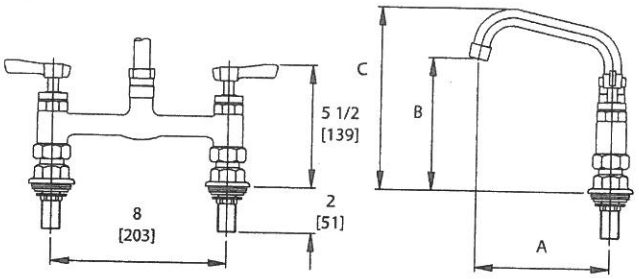
ENCORE PART NO. _____

Encore® 8" Deck Mount Faucet with Swing Spout & Lever Handles

KL61-8xxx-SE1 Series

KL61-8106-SE1	6" Spout, Ceramic Valves
KL61-8006-SE1	6" Spout, Compression Valves
KL61-8108-SE1	8" Spout, Ceramic Valves
KL61-8008-SE1	8" Spout, Compression Valves
KL61-8110-SE1	10" Spout, Ceramic Valves
KL61-8010-SE1	10" Spout, Compression Valves
KL61-8112-SE1	12" Spout, Ceramic Valves
KL61-8012-SE1	12" Spout, Compression Valves
KL61-8114-SE1	14" Spout, Ceramic Valves
KL61-8014-SE1	14" Spout, Compression Valves
KL61-8116-SE1	16" Spout, Ceramic Valves
KL61-8016-SE1	16" Spout, Compression Valves





Dimensions shown in inches (mm) are for reference only and are subject to change.

1-1/8" (29mm) hole for deck are recommended to accommodate 1/2" supply nipples.
1/2" NPSM Male Inlets
Operating Temperature: 40-180°F (5-83°C)
Operating Pressure: 15-125psi

Approximate shipping weight - 5 lbs
Warranty - 2 years parts

Solid heavy duty cast body is specification and commercial quality

Commercial Quality Features

- Tubular swing spout design
- ADA-compliant lever handles
- Built-in check valve to prevent cross-flow and back-flow
- Leak proof double O-ring spout design
- Stainless steel spout

SPECIFICATIONS:

8" Deck Mount Faucet to be Encore KL61 Series in the following configuration:

____	KL61-8106-SE1	6" Spout, Ceramic Valves
____	KL61-8006-SE1	6" Spout, Compression Valves
____	KL61-8108-SE1	8" Spout, Ceramic Valves
____	KL61-8008-SE1	8" Spout, Compression Valves
____	KL61-8110-SE1	10" Spout, Ceramic Valves
____	KL61-8010-SE1	10" Spout, Compression Valves
____	KL61-8112-SE1	12" Spout, Ceramic Valves
____	KL61-8012-SE1	12" Spout, Compression Valves
____	KL61-8114-SE1	14" Spout, Ceramic Valves
____	KL61-8014-SE1	14" Spout, Compression Valves
____	KL61-8116-SE1	16" Spout, Ceramic Valves
____	KL61-8016-SE1	16" Spout, Compression Valves

Faucet body to be constructed of polished chrome plated brass with total lead content less than 0.25% by weighted average. Faucet to have 8" adjustable inlet centers and lever handles. Valve to be 1/4-turn with integral check valve to prevent cross-flow and back-flow. Spout to be stainless steel tubular swing style with leak proof double O-ring seal design. Color coded temperature indexes shall meet international standards. 2.2gpm aerator @ 60psi standard with full flow stream bubbler screen spout tip.

Model No.	A	B	C
KL61-8106-SE1	6" (152mm)	3-5/16" (84mm)	5-9/16" (141mm)
KL61-8006-SE1	6" (152mm)	3-5/16" (84mm)	5-9/16" (141mm)
KL61-8108-SE1	8" (203mm)	3-13/16" (96mm)	6-1/16" (154mm)
KL61-8008-SE1	8" (203mm)	3-13/16" (96mm)	6-1/16" (154mm)
KL61-8110-SE1	10" (254mm)	4-1/4" (108mm)	6-1/2" (165mm)
KL61-8010-SE1	10" (254mm)	4-1/4" (108mm)	6-1/2" (165mm)
KL61-8112-SE1	12" (305mm)	4-11/16" (120mm)	6-15/16" (176mm)
KL61-8012-SE1	12" (305mm)	4-11/16" (120mm)	6-15/16" (176mm)
KL61-8114-SE1	14" (356mm)	5-3/16" (131mm)	7-7/16" (187mm)
KL61-8014-SE1	14" (356mm)	5-3/16" (131mm)	7-7/16" (187mm)
KL61-8116-SE1	16" (406mm)	5-5/8" (143mm)	7-7/8" (200mm)
KL61-8016-SE1	16" (406mm)	5-5/8" (143mm)	7-7/8" (200mm)

COMPLIES WITH:
ASME A112.18.1-2005
CSA B125.1-05
NSF/ANSI 61/9, ANNEX G
SECTION 116875 OF THE CALIFORNIA HEALTH & SAFETY CODE (COMMONLY KNOW AS AB1953)
VERMONT ACT 193
UNIFORM PLUMBING CODE

NSF 61/9 UP CODE

ADA

PROJECT NAME: _____

LOCATION: _____

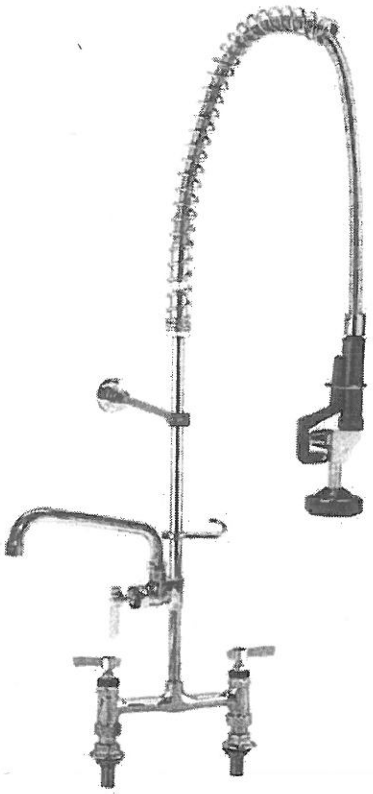
SPECIFIER ITEM NO. _____ **QTY:** _____

ENCORE PART NO. _____

Encore® Deck Mount Pre-Rinse Assembly with Add-On Faucet

KL60-1000-AFx Series

KL60-1000-AF1 6" Add-On
KL60-1000-AF2 8" Add-On
KL60-1000-AF3 10" Add-On
KL60-1000-AF4 12" Add-On
KL60-1000-AF5 14" Add-On
KL60-1000-AF6 16" Add-On
KL60-1000-AF7 18" Add-On



Approximate shipping weight - 13 lb
Warranty - 3 years parts

Heavy duty pre-rinse assembly designed to withstand the demands of commercial operations.

Low-Flow Spray Valve

- 1.6gpm Flat Spray
- Spray head hook holds spray head away from work area when not in use
- Heat resistant, non-marring, impact resistant bumper will not fatigue under extreme operating temperatures

Encore Premium Hose Feature

- 3-ply nylon reinforced Santoprene® inner hose provides maximum durability
- Interlocking helical coils of stainless steel outer hose shroud protect inner hose
- Patented stainless steel strain relief spring transfers and distributes load stress to significantly improve hose life
- High pressure hydraulic fittings on hose ends tested to 400psi
- Washerless design incorporates temperature resistant O-rings to provide leak-proof seal on all hose assemblies and hose grips

Kool Grip™ Hose Grip

- Reduces heat transfer to the hand; stays up to 30 degrees cooler than competitors' grips
- Ergonomic spray handle fits comfortably in even small hands and is easy to use

SPECIFICATIONS:

Deck Mount Pre-Rinse Assembly to be Encore KL60-1000 Series in the following configuration:

____ KL60-1000-AF1 6" Add-On
____ KL60-1000-AF2 8" Add-On
____ KL60-1000-AF3 10" Add-On
____ KL60-1000-AF4 12" Add-On
____ KL60-1000-AF5 14" Add-On
____ KL60-1000-AF6 16" Add-On
____ KL60-1000-AF7 18" Add-On

Pre-rinse faucet body to be constructed of polished chrome plated brass. Pre-rinse hose to be constructed of 3-ply nylon reinforced Santoprene® permanently secured with high pressure hydraulic fittings pressure tested to 400 psi. Hose to be of washerless, leak-proof design, protected by interlocking helical stainless steel coils for maximum protection and flexibility. Patented stainless steel strain relief spring transfers load stress. Heavy-duty ergonomic gooseneck spring ensures proper hose position. A patented wall bracket with compression fitting is provided to facilitate installation and give 360° of support. Riser to include spray head hook to hold spray head away from work area when not in use. Spray head to be furnished with 1.6gpm* Water Saver Spray. Spray assembly to be equipped with Kool Grip™ handle to reduce heat transfer to hand.

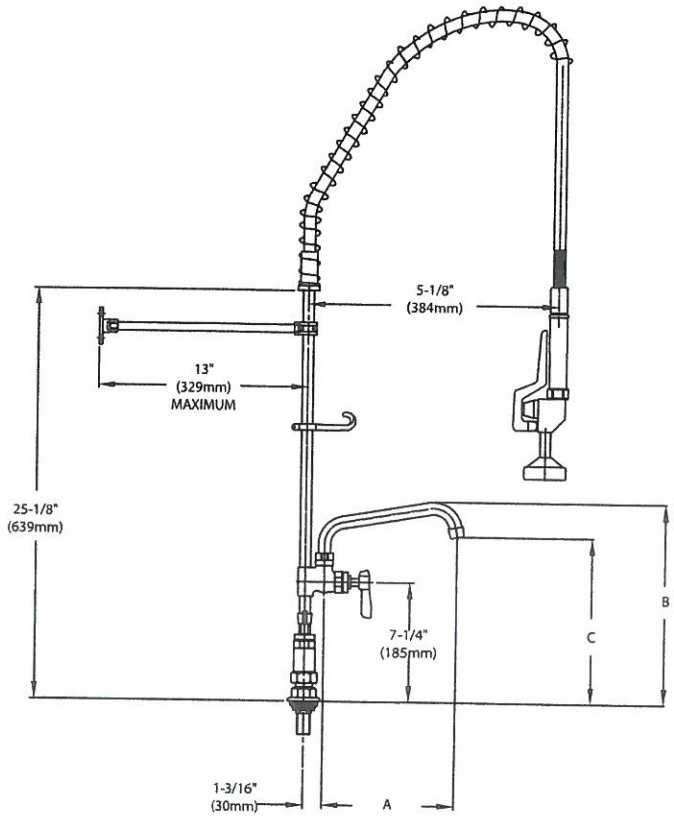
*All flow rates are @ 60psi

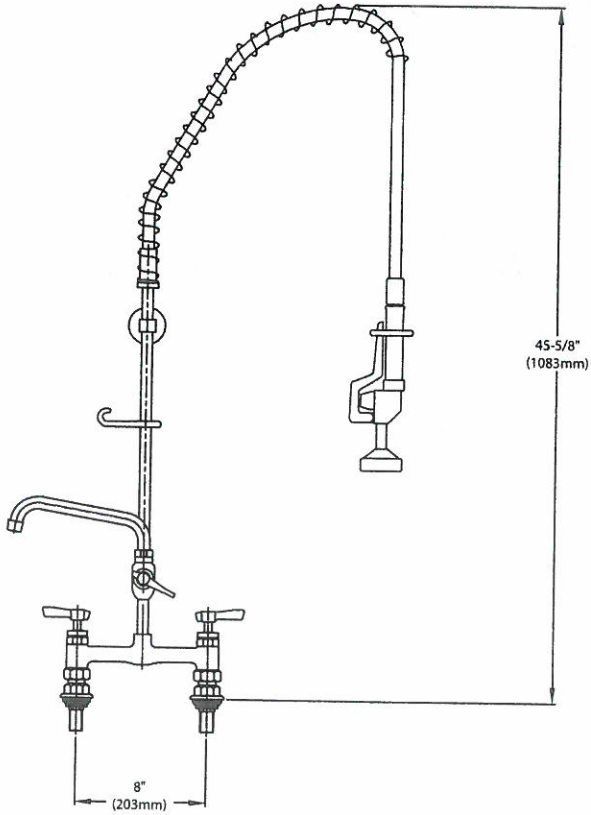
COMPLIES WITH:
THE FEDERAL "REDUCTION OF LEAD IN DRINKING WATER ACT" – 2011 – US SENATE BILL NO. S.3874 NSF/ANSI 61/9, ANNEX G

NSF c US NSF 61/9 UP CODE ADA

KL60-1000-AFx Series

Deck Mount Pre-Rinse Assembly with Add-On Faucet





Model No.	A	B	C
KL60-1000-AF1	6" (152mm)	11-13/16" (300mm)	9-9/16" (243mm)
KL60-1000-AF2	8" (203mm)	12-1/4" (311mm)	10-1/8" (257mm)
KL60-1000-AF3	10" (254mm)	12-9/16" (319mm)	10-1/2" (266mm)
KL60-1000-AF4	12" (305mm)	13-3/16" (335mm)	10-15/16"(278mm)
KL60-1000-AF5	14" (356mm)	13-35/48" (348mm)	11-3/8" (289mm)
KL60-1000-AF6	16" (406mm)	14-1/8" (359mm)	11-7/18" (302mm)

44" (1118mm) hose standard.

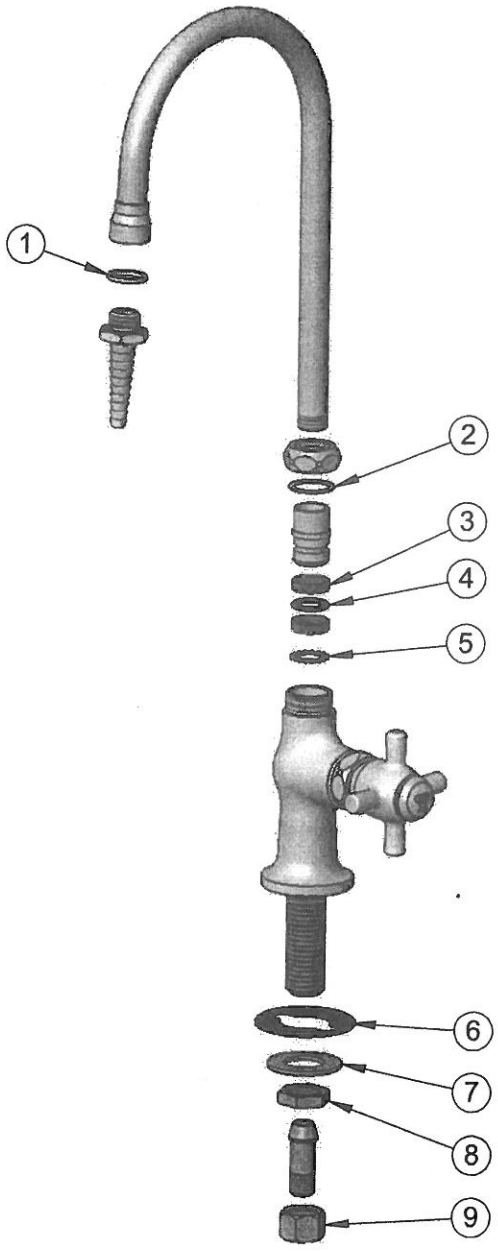
For different hose length, specify:

Model No.	Hose Length
KL60-1060-AFx	60" (1524mm)
KL60-1072-AFx	72" (1829mm)
KL60-1096-AFx	96" (2438mm)

1-1/2" (29mm) holes for deck are recommended to accommodate 1/2" supply nipples.
1/2" NPT Female Inlets
Operating Temperature: 40-180°F (5-83°C)
Operating Pressure: 15-125psi

Dimensions shown in inches (mm) are for reference only and are subject to change.

Model No.
BL-5850-01TL
Item No.



ITEM NO.	SALES NO.	DESCRIPTION
1	001051-45	Washer
2	009538-45	Swivel Washer
3	011429-45	Swivel Sleeves (2)
4	001074-45	O-Ring
5	014200-45	Star Washer, Anti-Rotation
6	144L	Black Plastic Gasket
7	000999-45	Brass Lock Washer
8	002954-45	Shank Lock Nut
9	000958-20	Coupling Nut

Product Specifications:
Single Hole Single Temperature Tin-Lined Laboratory Faucet, Fast Self Closing Cartridge, Swivel/Rigid Gooseneck, Serrated Tip & 1/2" NPSM Male Inlet

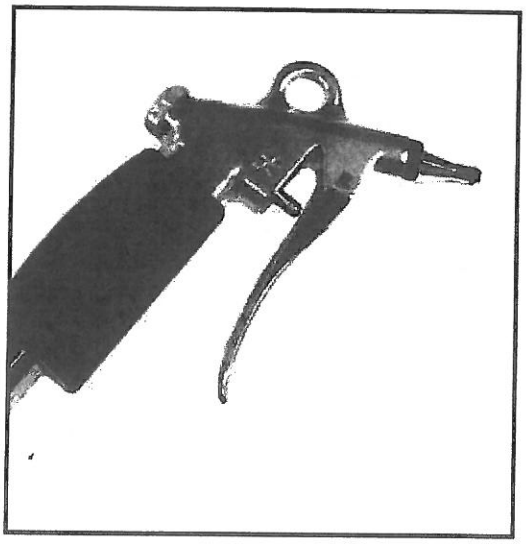
Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 372 (Low Lead Content)

Drawn:	DMH	Checked:	JRM	Approved:	JHB	Date:	08/04/17	Scale:	NTS	Sheet: 2 of 2

Cleaning Spray Gun

Cleaning Spray Gun

Healthmark's new Spray Gun is the ideal tool for cleaning cannulas, endoscopes, glassware, pipettes, syringes, catheters, curettes, cystoscopes and a variety of other instruments, and articles used in surgery, clinics, laboratories, and doctor offices in other words, anywhere that the highest level of cleanliness is necessary. The cleaning process is quick, efficient and inexpensive, because the Spray Gun uses either water or pressurized air.



Use with Quick Connect

All attachments are connected to the Spray Gun by seating them on the safety cone located at the Spray Gun tip. Even high pressure cannot disconnect them. The gun grip is heat insulated.

Spray Gun Accessories

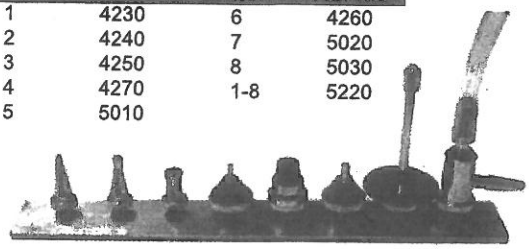
The Counter/Sink Top Rosette

A threaded hollow cylinder facilitates the installation of the Spray Gun in the sink or a countertop. The spray gun is then within easy reach. The tubing with the respective connector to the water or air supply is stored away underneath the counter or sink, thus keeping the work area clutter-free.

Code No	Description
6000	Spray Gun only
6000-6025	Spray Gun with plastic hose & 3/4" connector. Includes 1.5 meter hose (58 inches), 4230 spray tip and wall hook
6020	Spray Gun w/ 1.5 meter hose, 3/4" connector & complete tip set & rack
6000-6045	Spray Gun with plastic hose & 3/4" connector. Includes: 3 meter hose (117 inches), 4230 TIP spray tip and wall hook
5070	Table-top Rosette
80-00-44	Replacement Kit - Flow Control
5120	Plumbing 3/4" connector
5110	Plumbing 1/2" connector
4230	Universal Tip
4240	For drainage tube
4250	Spray jet for rinsing out glassware, etc.
5220	Tip attachments - complete set of all 8 sizes
80-10-12	"O" Rings, 10 per package
4270	For syringes and cannulae with record cone
5010	For measuring and blood pipettes
4260	For syringes and cannulae with Luer cone
5020	For bottles and Erlenmeyer flasks
5030	Water jet pump for suction
14RVT	Replacement hose for Spray gun
64-20810-00	Stainless Steel Spray Gun Kit

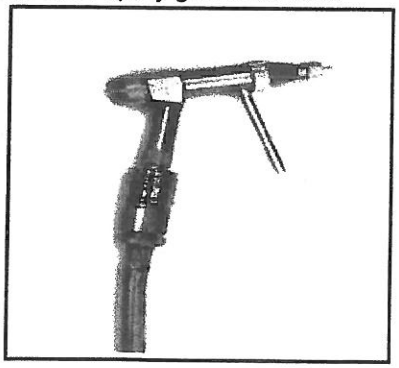
SELECTION OF TIPS

No.	Part No.	No.	Part No.
1	4230	6	4260
2	4240	7	5020
3	4250	8	5030
4	4270	1-8	5220
5	5010		



1	2	3	4	5	6	7	8

One of the greatest advantages of the stainless steel spray gun is its resistance to cold demineralized water. The stainless steel spray gun is able to sterilize, thus the pistols can be used in the operating room or in the clean room



64-20810-00

Scales Tables

Scale Table
Model 008037

Equipment #
004

High-density solid core

Flat top

All stainless-steel construction

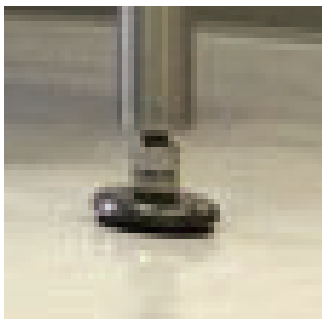
Available in any size

Available in Type 304 or 316 stainless steel

Sealed underside for ease of cleaning

Fully welded construction

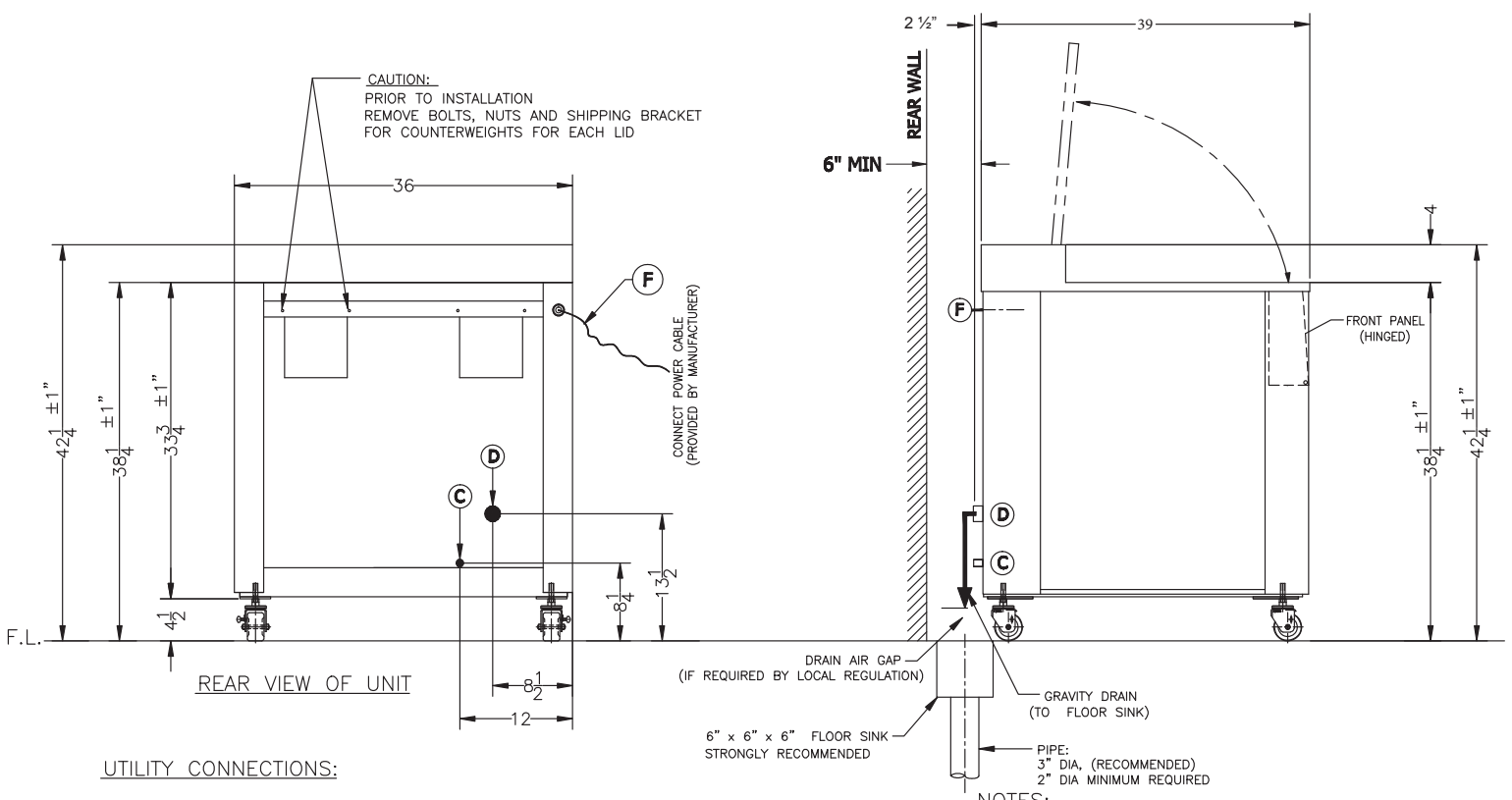
Available with or without shelf



Anti -vibration feet

cGMP stainless steel leveling adjustable feet

DATE: 05/03/13 DRAWN BY: YAKOV G. CHECKED BY: _____ E. C. A. NO. SVC14-026 DATE 01-24-14 REV. 4 DWG. NO. 764335-353



UTILITY CONNECTIONS:

C – HOT TAP WATER, 1/2"NPT, Female CPVC Fitting
D – DRAIN, GRAVITY TO FLOOR SINK, 1 1/4" CPVC PIPE (slip no threads)
F – POWER CONNECTION:
CONNECT POWER CABLE TO CUSTOMER WALL DISCONNECT

NOTES:

1. SEE DOCUMENT: INSTALLATION SPECIFICATIONS AND UTILITY REQUIREMENTS
2. ALL UTILITIES LOCATION DIMENSIONS ARE ± 1"
3. LOCK CASTERS AFTER INSTALLING THE UNIT IN PLACE
4. IF WALL DRAIN IS USED, DRAIN CONNECTION MUST BE AT OR BELOW 13 1/2 INCHES ON CENTER, ABOVE FLOOR.

CAUTION !
PRIOR TO INSTALLATION
REMOVE BOLTS, NUTS
AND SHIPPING BRACKET
FOR COUNTERWEIGHTS AT UNIT REAR.

SHT. 1 OF 5

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) ALSO REFER TO GENERAL NOTES APPLICABLE TO EQUIPMENT DRAWINGS DWG. NO. 62941-091	CAVIWAVE 20 - W ULTRASONIC CLEANER	EQUIPMENT DRAWING NO. 764335-353
STERIS® STERIS Corporation Mentor, OH	GENERAL INSTALLATION LAYOUT DWG.	ITEM _____ LOCATION(S) _____

AUTOCAD DWG.

Equipment #
001

KURTZON
SPECIFICATION GRADE LIGHTING
ILLUMINATING YOUR WORLD

PROJECT
DATE TYPE
NOTES

REV: 3/26/2018

Cleanroom **KL Corner Mount**

Linear Corner Mount High Efficiency LED Wet Location Luminaires

- **Rated IP66**
- **Suitable for ISO 3-9 Cleanspaces**
- **Suitable for 209E class 1-100,000 Cleanspaces**
- **ETL listed for Wet Locations**
- **One piece overlapping Doorframe**
- **Robotically seam welded housing**
- **0-10v 1% Dimming Standard.**

5/10 YEAR WARRANTY · NSF · Intertek · ISO 3-9 (ISO 14644-1 CLASS 3) · IP66 (IEC 60529) · BSL 3&4 (BIO SAFETY LEVELS) · 209E 1 (FED STD 209E CLASS 1) · 1700 PSI (HOSEDOWN)

ORDERING GUIDE

Series	Installation Type	Material	Size	Source	CCT	Voltage	Options
KL							

Series	Installation Type	Material	Size	Source	CCT	Voltage	Options
KL	**COR:** Surface Corner	**1:** White CRS Hsg. & White CRS Door	**40:** 4' Housing	**1/LEDR**	**83 CRI:**	**120V**	**FC:** Fuse & Holder (One Supplied Per Circuit)
		2: White CRS Hsg. & Polished 304 SS Door		**2/LEDR**	**830** = 3000K CCT	**277V**	**2/ED**: Two Drivers (Two Circuits)
		3: Polished 304 SS Hsg. & Polished 304 SS Door			**835** = 3500K CCT	**UNV**	**EDL:** -40F Electronic Driver
		4: White AL Hsg. & Polished 304 SS Door			**840** = 4000K CCT	**347V***	**EM10:** 10W integral LED EM
					850 = 5000K CCT		**WHT:** White Finished Door & HSG
							LEX: .125" Prismatic Polycarbonate
					90+ CRI:		**A19**: .156" Prismatic P19 Pattern Clear Acrylic
					935 = 3500K CCT		**HIA:** .140" High Impact P12 Pattern Clear Acrylic
					940 = 4000K CCT		**TG:** .156" Prismatic Tempered Glass
							SW: Wet Locatoin Hub Supplied (not installed)
							PxL: Programmed to User Specified Lumen Value.◊∞
							PxW: Programmed to User Specified Wattage Value.◊∞
							10KV: 10KV Parallel Surge Protection (One Supplied Per Circuit)
							GTD: Generator Transfer Device
							WHIP: Must Specify Length and Wire Qty
							TP: Torx Head SS Tamperproof Fasteners
							.125 FROST: 1/8" Frost Acrylic Lens
							OCCMW: Internal microwave OCC Sensor
							AH: Allen Head SS Tamperproof Fasteners

KURTZON
SPECIFICATION GRADE LIGHTING
ILLUMINATING YOUR WORLD

REV: 3/26/2018

Cleanroom **KL Corner Mount**

Linear Corner Mount High Efficiency LED Wet Location Luminaires

SPECIFICATIONS

HOUSING: One piece, hole free, robotically seam welded housing has flattened knockouts for a superior seal. Available in .040" 3003 Aluminum, 20Ga 304 Stainless Steel, or 20Ga Cold Rolled Steel.

DOOR FRAME: One piece door frame with welded corners overlaps the fixture allowing the NSF approved microcellular gasket to seal to the mounting surface. Door frame is hinged by aircraft cables and is supplied with captive stainless steel flush head screws to allow easy wiping of the surface. Available in 20Ga 304 Polished SS, or 18Ga 1008 Powder coated CRS.

GASKETS: NSF Listed closed cell microcellular extruded KleanLock SealPro gasket with vulcanized corners making a one-piece oil and solvent resistant gasket system.

LENS: Impact resistant .135" thick virgin acrylic with P12 prismatic pattern inverted. See "Options" for other choices.

LEDS: Commercially available in a wide variety of Color Temperature (CCT), FLUX, and CRI. Highly efficient and consistent color maintained to 3 SDMC for color critical applications. B50/L70 and compliant with Zhaga recognized hole patterns. Consult factory for LED options or configurations not listed below.

DRIVERS: Standard Universal Voltage Class 2 drivers are 0-10v Dimmable to 1% for most LED configurations. They come with at least 2.5Kv surge protection, have less than 10% THD at max load, Ballast Factor Greater than .95 and are programmable to match specific lumen or wattage requirements. Drivers with higher input voltage ratings are available, consult factory for driver specifications.

REFLECTOR: Die formed metal with high reflectance white polyester powder coat finish. Typical reflectivity 92%.

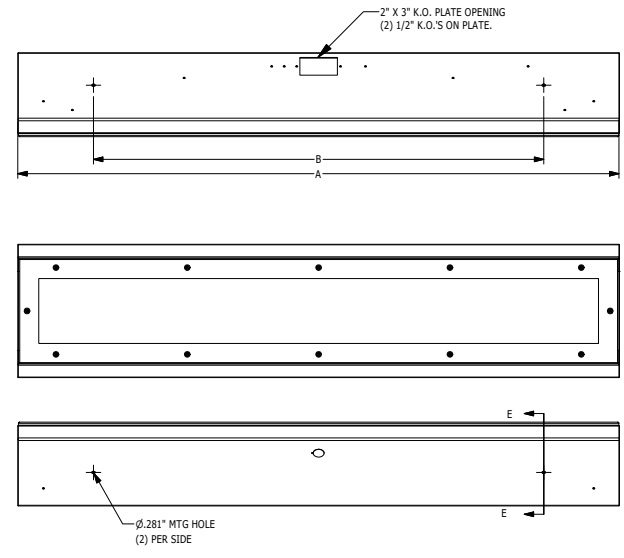
INSTALL SURFACE: Four .312" holes for surface mounting. Knockouts provided for conduit entry in six locations. Suitable for through wiring.

FINISH: Gloss white high reflectance 1000 hr. salt spray polyester powder coat finish standard for aluminum or CRS housings and CRS doorframes. Stainless steel housings and doorframes are satin polished unless option WHT is chosen.

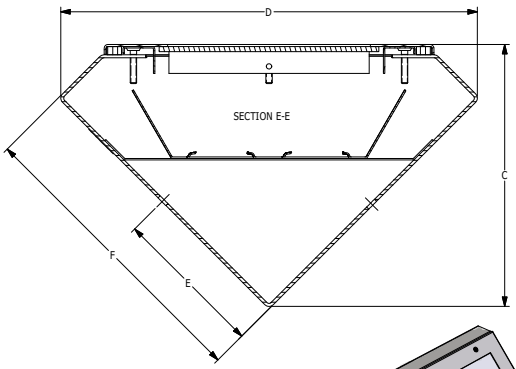
LISTINGS: IP66 rated for dust and water ingress. Suitable for 1700 PSI high pressure hosedowns. ETL listed per UL_1598 for wet locations. Certified ISO-14644-1 for class 3 through class 9 cleanspaces. Certified Fed Std 209E for Class 1 through Class 100,000 cleanspaces. NSF2 Listed for Food Zones. Drivers and LEDs are covered by a 5 year warranty, the remaining fixture is covered by a 10 year warranty.

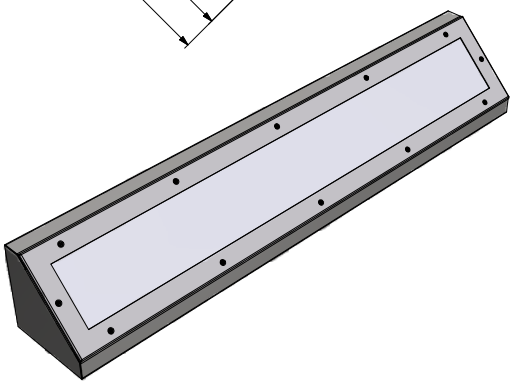
PRODUCT DRAWINGS

CORNER OVERLAP REFERENCE DIMENSIONS						
SIZE	DIM A	DIM B	DIM C	DIM D	DIM E	DIM F
40	48.10"	36.00"	6.77"	10.75"	3.75"	7.63"



06-BA-L-40 COR OVERLAP DWG DATE: 03/30/2017





KURTZON
SPECIFICATION GRADE LIGHTING
ILLUMINATING YOUR WORLD

REV: 3/26/2018

Cleanroom **KL Corner Mount**

Linear Corner Mount High Efficiency LED Wet Location Luminaires

ENERGY DATA

OVERLAP DOOR CORNER MOUNT SURFACE FIXTURE											
ENCLOSURE SIZE	LED SELECTION	STANDARD DIMMING	83 CRI (3000K - 5000K)				90+ CRI (3500K - 4000K)			
			LUMENS[1]	WATTS[2]	EFFICACY[3]	MAX AMB TEMP[4]	LUMENS[1]	WATTS[2]	EFFICACY[3]	MAX AMB TEMP[4]
40	1LEDR	0-10V 1%	2,700	28	96	40°C	2,209	30	74	40°C
40	2LEDR	0-10V 1%	5,242	56	94	40°C	4,288	58	74	40°C
40	EM10[5]	NA	940-960	4	NA	35°C	740	4	NA	35°C

1 DELIVERED LUMEN DATA IS EXTRAPOLATED FROM MEASURED DATA @25C WITH NO EXTRA OPTIONS. VARIANCES WILL OCCUR WHEN OTHER SELECTIONS ARE MADE

2 WATTAGE IS MEASURED WITH 4000K SELECTION @ 120vAC AND Tambient = 25C. WATTAGES MAY VARY WITH ALTERNATE CONFIGURATIONS

3 EFFICACY CALCULATED USING 4000K CCT DATA.

4 MAX AMBIENT TEMP RATING. TEMP RATING MAY VARY WITH ALTERNATE SPECIFIED DRIVERS OR ANY NON STANDARD SELECTION

5 90 MINUTE 10W EMERGENCY DRIVER; LUMENS CALCULATED BASED ON FIXTURE EFFICACY.

PHOTOMETRICS

KL-COR-1-40-2/LEDR40-UNV

Report No: 19803.0

Total Lumens: 5,266

Wattage: 56.138

Efficacy: 93.8 (Lumens Per Watt)

Fixture Size: 4'

Key:

0

45

90