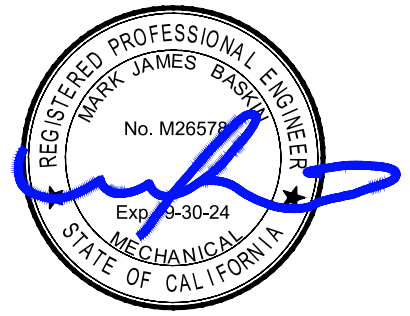


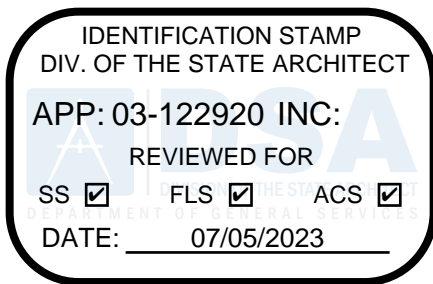
SC ARCHITECT, INC.

1601 New Stine Rd., Ste. 280
Bakersfield, CA 93309
(661) 397-4377 Fax (661) 397-4378



BASKIN MECHANICAL ENGINEERS

175 Fulton Street
Fresno, CA 93721
(559) 237-0376



**ROOSEVELT ELEMENTARY
SCHOOL MODERNIZATION**

AT

**2324 VERDE STREET
BAKERSFIELD, CA 93304**

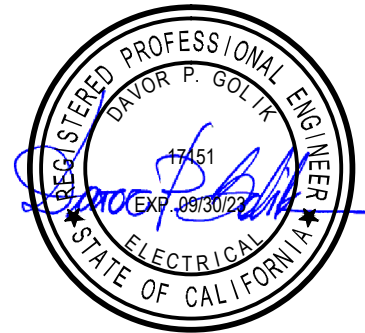
FOR

**BAKERSFIELD CITY SCHOOL DISTRICT
BAKERSFIELD, KERN COUNTY, CALIFORNIA**



JOHN A. MARTIN & ASSOCIATES, INC.

950 Grand Avenue, 4th Floor
Los Angeles, CA 90015
(213) 483-6490 Fax (213) 744-1515



DPG ENGINEERING, INC.

5096 North Blythe Avenue, Ste. 20
Fresno, CA. 93722
(559)276-5144 Fax (559)276-5167

APPROVED

BAKERSFIELD CITY SCHOOL DISTRICT

By _____
Board Resolution

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NOT USED

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access Conditions and Requirements;
- B. Special Conditions.

1.02 SUMMARY OF WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of this Contract consists of the following:

Selective demolition and construction necessary for the Modernization to existing school buildings, including associated civil, architectural, structural, plumbing, mechanical and/or electrical work as indicated in the Drawings and Specifications. Generally, these categories of work involve new finishes, adaptive re-use and modification of certain selected areas, new cabinetry, handicap accessibility retrofits, re-roofing, and adding HVAC to instructional areas, library and administrative areas and pertain to changing and expanding selected infrastructure utilities, and extensive modifications. The Project will involve the "phasing" and barricading of work areas as indicated on the Plans and enumerated in these Specifications.

More specifically;

General Alterations to Roosevelt Elementary School Building #'s A, B, C, D & E - to include but not limited to, interior demolition of ; non-bearing walls, fire alarm, lighting, plumbing, HVAC, ceiling finishes etc as required for the installation of ; all non-bearing walls, fire alarm, plumbing, HVAC, roofing, ceilings, lighting, interior finishes, doors and hardware etc. The structural scope is sistering the existing 2x roof joists to handle the load of the added HVAC unit to the roof deck.

1.03 CONTRACTS

- A. Perform the Work under a multiple-prime contractor delivery method, fixed-price Contracts. Any references to "Contractor" or "General Contractor" shall mean "Prime Contractor" throughout.

1.04 WORK BY OTHERS

- A. Work on the Project that will be performed and completed prior to the start of the Work of this Contract:

- (1) Interim (temporary) Housing

1.05 CODES, REGULATIONS, AND STANDARDS

- A. The codes, regulations, and standards adopted by the state and federal agencies having jurisdiction shall govern minimum requirements for this Project. Where codes, regulations, and standards conflict with the Contract Documents, these conflicts shall be brought to the immediate attention of the District and the Architect.
- B. Codes, regulations, and standards shall be as published effective as of date of bid opening, unless otherwise specified or indicated.

1.06 PROJECT RECORD DOCUMENTS

- A. Contractor shall maintain on Site one set of the following record documents; Contractor shall record actual revisions to the Work:
 - (1) Contract Drawings.
 - (2) Specifications.
 - (3) Addenda.
 - (4) Change Orders and other modifications to the Contract.
 - (5) Reviewed shop drawings, product data, and samples.
 - (6) Field test records.
 - (7) Inspection certificates.
 - (8) Manufacturer's certificates.
- B. Contractor shall store Record Documents separate from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.
- C. Contractor shall record information concurrent with construction progress.
- D. Specifications: Contractor shall legibly mark and record at each product section of the Specifications the description of the actual product(s) installed, including the following:
 - (1) Manufacturer's name and product model and number.
 - (2) Product substitutions or alternates utilized.
 - (3) Changes made by Addenda and Change Orders and written directives.

1.07 EXAMINATION OF EXISTING CONDITIONS

- A. Contractor shall be held to have examined the Project Site and acquainted itself with the conditions of the Site and of the streets or roads approaching the Site.
- B. Prior to commencement of Work, Contractor shall survey the Site and existing buildings and improvements to observe existing damage and defects such as cracks, sags, broken, missing or damaged glazing, other building elements and Site improvements, and other damage.
- C. Should Contractor observe cracks, sags, and other damage to and defects of the Site and adjacent buildings, paving, and other items not indicated in the Contract Documents, Contractor shall immediately report same to the District and the Architect.

1.08 CONTRACTOR'S USE OF PREMISES

- A. If unoccupied and only with District's prior written approval, Contractor may use the building(s) at the Project Site without limitation for its operations, storage, and office facilities for the performance of the Work. If the District chooses to beneficially occupy any building(s), Contractor must obtain the District's written approval for Contractor's use of spaces and types of operations to be performed within the building(s) while so occupied. Contractor's access to the building(s) shall be limited to the areas indicated.
- B. If the space at the Project Site is not sufficient for Contractor's operations, storage, office facilities and/or parking, Contractor shall arrange and pay for any additional facilities needed by Contractor.
- C. Contractor shall not interfere with use of or access to occupied portions of the building(s) or adjacent property.
- D. Contractor shall maintain corridors, stairs, halls, and other exit-ways of building clear and free of debris and obstructions at all times.
- E. No one other than those directly involved in the demolition and construction, or specifically designated by the District or the Architect shall be permitted in the areas of work during demolition and construction activities.
- F. The Contractor shall install the construction fence and maintain that it will be locked when not in use. Keys to this fencing will be provided to the District.

1.09 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show above-grade and below-grade structures, utility lines, and other installations that are known or believed to exist in the area of the Work. Contractor shall locate these existing installations before proceeding with excavation and other operations that could damage same; maintain them in service, where appropriate; and repair damage to them caused by the performance of the Work. Should damage occur to these existing installations, the costs of repair shall be at the Contractor's expense and made to the District's satisfaction.

- B. Contractor shall be alert to the possibility of the existence of additional structures and utilities. If Contractor encounters additional structures and utilities, Contractor will immediately report to the District for disposition of same as indicated in the General Conditions.

1.10 UTILITY SHUTDOWNS AND INTERRUPTIONS

- A. Contractor shall give the District a minimum of three (3) days written notice in advance of any need to shut off existing utility services or to effect equipment interruptions. The District will set exact time and duration for shutdown, and will assist Contractor with shutdown. Work required to re-establish utility services shall be performed by the Contractor.
- B. Contractor shall obtain District's written approval as indicated in the General Conditions in advance of deliveries of material or equipment or other activities that may conflict with District's use of the building(s) or adjacent facilities.

1.11 STRUCTURAL INTEGRITY

- A. Contractor shall be responsible for and supervise each operation and work that could affect structural integrity of various building elements, both permanent and temporary.
- B. Contractor shall include structural connections and fastenings as indicated or required for complete performance of the Work.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ALLOWANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Non-specified work.

1.2 RELATED SECTIONS

A. Document 01 10 00 (Summary of Work)

B. Document 01 29 00 (Payments and Completion)

C. Document 01 32 19 (Submittal Procedures)

1.3 ALLOWANCES

- A. Included in the Contract, a stipulated sum/price, as identified in document 00 41 13 Bid Form and Proposal, and 00 21 13.1 Work Scope Summary, as an allowance for Unforeseen Conditions and further described in the aforementioned documents, for each bid package, within the limits set forth in the Contract Documents. This Allowance shall not be utilized without written approval by the District.
- B. Contractor's costs, without overhead and profit, for products, delivery, installation, labor, insurance, payroll, taxes, bonding and equipment rental will be included in Allowance Expenditure Directive authorizing expenditure of funds from this Allowance. No overhead and profit shall be added to the Allowance Expenditure Directive.
- C. Funds will be drawn from Allowance only with District approval evidenced by an Allowance Expenditure Directive.
- D. At Contract closeout, funds remaining in Allowance will be credited to District by Change Order.
- E. Whenever costs are more than the Allowance, the amount covered by the Allowance will be approved at cost. The Contract Price shall be adjusted by Change Order for amounts in excess of the Allowance.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF DOCUMENT

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. Instructions to Bidders;
- B. General Conditions, including, without limitation, Substitutions For Specified Items; and
- C. Special Conditions.

1.02 SUBSTITUTIONS OF MATERIALS AND EQUIPMENT

- A. Catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of quality, utility, and appearance required. Substitutions which are equal in quality, utility, and appearance to those specified may be reviewed subject to the provisions of the General Conditions.
- B. Wherever more than one manufacturer's product is specified, the first-named product is the basis for the design used in the work and the use of alternative-named manufacturers' products or substitutes may require modifications in that design. If such alternatives are proposed by Contractor and are approved by the District and/or the Architect, Contractor shall assume all costs required to make necessary revisions and modifications of the design resulting from the substitutions requested by the Contractor.
- C. When materials and equipment are specified by first manufacturer's name and product number, second manufacturer's name and "or approved equal," supporting data for the second product, if proposed by Contractor, shall be submitted in accordance with the requirements for substitutions. The District's Board has found and determined that certain item(s) shall be used on this Project based on the purpose(s) indicated pursuant to Public Contract Code section 3400(c). These findings, as well as the products and brand or trade names, have been identified in the Notice to Bidders.
- D. The Contractor will not be allowed to substitute specified items unless the request for substitution is submitted as follows:
 - (1) District must receive any notice of request for substitution of a specified item a minimum of ten (10) calendar days prior to bid opening.

- (2) Within 35 days after the date of the Notice of Award, the Contractor shall submit data substantiating the request(s) for all substitution(s) containing sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the technical Specifications. Insufficient information shall be grounds for rejection of substitution.
- E. If the District and/or Architect, in reviewing proposed substitute materials and equipment, require revisions or corrections to be made to previously accepted Shop Drawings and supplemental supporting data to be resubmitted, Contractor shall promptly do so. If any proposed substitution is judged by the District and/or Architect to be unacceptable, the specified material or equipment shall be provided.
- F. Samples may be required. Tests required by the District and/or Architect for the determination of quality and utility shall be made at the expense of Contractor, with acceptance of the test procedure first given by the District.
- G. In reviewing the supporting data submitted for substitutions, the District and/or Architect will use for purposes of comparison all the characteristics of the specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Contract Documents. If more than two (2) submissions of supporting data are required, the cost of reviewing the additional supporting data shall be borne by Contractor, and the District will deduct the costs from the Contract Price. The Contractor shall be responsible for any re-design costs occasioned by District's acceptance and/or approval of any substitute.
- H. The Contractor shall, in the event that a substitute is less costly than that specified, credit the District with one hundred percent (100%) of the net difference between the substitute and the originally specified material. In this event, the Contractor agrees to execute a deductive Change Order to reflect that credit. In the event Contractor furnishes a material, process, or article more expensive than that specified, the difference in the cost of that material, process, or article so furnished shall be borne by Contractor.
- I. In no event shall the District be liable for any increase in Contract Price or Contract Time due to any claimed delay in the evaluation of any proposed substitute or in the acceptance or rejection of any proposed substitute.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

PROJECT MEETINGS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions; and
- B. Special Conditions.

1.02 PROGRESS MEETINGS:

- A. Construction Manager shall schedule and hold regular weekly progress meetings after a minimum of one week's prior written notice of the meeting date and time to all Invitees as indicated below.
- B. Location: Construction Manager's field office.
- C. The Construction Manager shall notify and invite the following entities ("Invitees"):
 - (1) District Representative.
 - (2) Prime Contractors.
 - (3) Prime Contractor's Project Manager.
 - (4) Prime Contractor's Superintendent.
 - (5) Subcontractors, as appropriate to the agenda of the meeting.
 - (6) Suppliers, as appropriate to the agenda of the meeting.
 - (7) Construction Manager, if any.
 - (8) Architect
 - (9) Engineer(s), if any and as appropriate to the agenda of the meeting.
 - (10) Others, as appropriate to the agenda of the meeting.
- D. The District's and/or the Architect's Consultants will attend at their discretion, in response to the agenda.
- E. The District representative, the Construction Manager, and/or another District Agent shall take and distribute meeting notes to attendees and other concerned parties. If exceptions are taken to anything in the meeting notes,

those exceptions shall be stated in writing to the District Representative within two (2) working days following District's distribution of the meeting notes.

1.03 PRE-INSTALLATION/PERFORMANCE MEETING:

- A. Contractor shall schedule a meeting prior to the start of each of the following portions of the Work: cutting and patching of plaster and roofing, and other weather-exposed and moisture-resistant products. Contractor shall invite all Invitees to this meeting, and others whose work may affect or be affected by the quality of the cutting and patching work.
- B. Contractor shall review in detail prior to this meeting, the manufacturer's requirements and specifications, applicable portions of the Contract Documents, Shop Drawings, and other submittals, and other related work. At this meeting, invitees shall review and resolve conflicts, incompatibilities, or inadequacies discovered or anticipated.
- C. Contractor shall review in detail Project conditions, schedule, requirements for performance, application, installation, and quality of completed Work, and protection of adjacent Work and property.
- D. Contractor shall review in detail means of protecting the completed Work during the remainder of the construction period.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SCHEDULING OF WORK

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Summary of Work; and
- D. Submittals.

1.02 SECTION INCLUDES

- A. Scheduling of Work under this Contract shall be performed by Contractor in accordance with requirements of this Section.
 - (1) Development of schedule, cost and resource loading of the schedule, monthly payment requests, and project status reporting requirements of the Contract shall employ computerized Critical Path Method ("CPM") scheduling ("CPM Schedule").
 - (2) CPM Schedule shall be cost loaded based on Schedule of Values as approved by District.
 - (3) Submit schedules and reports as specified in the General Conditions.
- B. Upon Award of Contract, Contractor shall immediately commence development of Initial and Original CPM Schedules to ensure compliance with CPM Schedule submittal requirements.

1.03 CONSTRUCTION SCHEDULE

- A. Within ten (10) days of issuance of the Notice to Proceed and before request for first progress payment, the Contractor shall prepare and submit to the Project Manager a construction progress schedule conforming to the Milestone Schedule below.
- B. The Construction Schedule shall be continuously updated, and an updated schedule shall be submitted with each application for progress payment. Each revised schedule shall indicate the work actually accomplished during the previous period and the schedule for completion of the remaining work.

C. Milestone Schedule:

ACTIVITY DESCRIPTION

REQUIRED COMPLETION

CONSTRUCTION STARTS

[DATE]

FINAL PROJECT COMPLETION

[DATE]

1.04 QUALIFICATIONS

- A. Contractor shall employ experienced scheduling personnel qualified to use the latest version of [i.e., Primavera Project Planner]. Experience level required is set forth below. Contractor may employ such personnel directly or may employ a consultant for this purpose.
- (1) The written statement shall identify the individual who will perform CPM scheduling.
 - (2) Capability and experience shall be verified by description of construction projects on which individual has successfully applied computerized CPM.
 - (3) Required level of experience shall include at least two (2) projects of similar nature and scope with value not less than three fourths ($\frac{3}{4}$) of the Total Bid Price of this Project. The written statement shall provide contact persons for referenced projects with current telephone and address information.
- B. District reserves the right to approve or reject Contractor's scheduler or consultant at any time. District reserves the right to refuse replacing of Contractor's scheduler or consultant, if District believes replacement will negatively affect the scheduling of Work under this Contract.

1.05 GENERAL

- A. Progress Schedule shall be based on and incorporate milestone and completion dates specified in Contract Documents.
- B. Overall time of completion and time of completion for each milestone shown on Progress Schedule shall adhere to times in the Contract, unless an earlier (advanced) time of completion is requested by Contractor and agreed to by District. Any such agreement shall be formalized by a Change Order.
- (1) District is not required to accept an early completion schedule, i.e., one that shows an earlier completion date than the Contract Time.
 - (2) Contractor shall not be entitled to extra compensation in event agreement is reached on an earlier completion schedule and Contractor completes its Work, for whatever reason, beyond completion date shown in its early completion schedule but within the Contract Time.

- (3) A schedule showing the work completed in less than the Contract Time, and that has been accepted by District, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the work and the Completion Date. Project Float is a resource available to both District and the Contractor.
- C. Ownership Project Float: Neither the District nor Contractor owns Project Float. The Project owns the Project Float. As such, liability for delay of the Completion Date rests with the party whose actions, last in time, actually cause delay to the Completion Date.
 - (1) For example, if Party A uses some, but not all of the Project Float and Party B later uses remainder of the Project Float as well as additional time beyond the Project Float, Party B shall be liable for the time that represents a delay to the Completion Date.
 - (2) Party A would not be responsible for the time since it did not consume the entire Project Float and additional Project Float remained; therefore, the Completion Date was unaffected by Party A.
- D. Progress Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. Responsibility for developing Contract CPM Schedule and monitoring actual progress as compared to Progress Schedule rests with Contractor.
- E. Failure of Progress Schedule to include any element of the Work, or any inaccuracy in Progress Schedule, will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract. District's acceptance of schedule shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests and shall not, in any manner, impose a duty of care upon District, or act to relieve Contractor of its responsibility for means and methods of construction.
- F. Software: Use **[i.e., District Project Planner for Windows, latest version]**. Such software shall be compatible with Windows operating system. Contractor shall transmit contract file to District on compact disk at times requested by District.
- G. Transmit each item under the form approved by District.
 - (1) Identify Project with District Contract number and name of Contractor.
 - (2) Provide space for Contractor's approval stamp and District's review stamps.
 - (3) Submittals received from sources other than Contractor will be returned to the Contractor without District's review.

1.06 INITIAL CPM SCHEDULE

- A. Initial CPM Schedule submitted for review at the pre-construction conference shall serve as Contractor's schedule for up to ninety (90) calendar days after the Notice to Proceed.

- B. Indicate detailed plan for the Work to be completed in first ninety (90) days of the Contract; details of planned mobilization of plant and equipment; sequence of early operations; procurement of materials and equipment. Show Work beyond ninety (90) calendar days in summary form.
- C. Initial CPM Schedule shall be time scaled.
- D. Initial CPM Schedule shall be cost and resource loaded. Accepted cost and resource loaded schedule will be used as basis for monthly progress payments until acceptance of the Original CPM Schedule. Use of Initial CPM Schedule for progress payments shall not exceed ninety (90) calendar days.
- E. District and Contractor shall meet to review and discuss the Initial CPM Schedule within seven (7) calendar days after it has been submitted to District.
 - (1) District's review and comment on the schedule shall be limited to Contract conformance (with sequencing, coordination, and milestone requirements).
 - (2) Contractor shall make corrections to schedule necessary to comply with Contract requirements and shall adjust schedule to incorporate any missing information requested by District. Contractor shall resubmit Initial CPM Schedule if requested by District.
- F. If, during the first ninety (90) days after Notice to Proceed, the Contractor is of the opinion that any of the Work included on its Initial CPM Schedule has been impacted, the Contractor shall submit to District a written Time Impact Evaluation ("TIE") in accordance with Article 1.12 of this Section. The TIE shall be based on the most current update of the Initial CPM Schedule.

1.07 ORIGINAL CPM SCHEDULE

- A. Submit a detailed proposed Original CPM Schedule presenting an orderly and realistic plan for completion of the Work in conformance with requirements as specified herein.
- B. Progress Schedule shall include or comply with following requirements:
 - (1) Time scaled, cost and resource (labor and major equipment) loaded CPM schedule.
 - (2) No activity on schedule shall have duration longer than fifteen (15) work days, with exception of submittal, approval, fabrication and procurement activities, unless otherwise approved by District.
 - (a) Activity durations shall be total number of actual work days required to perform that activity.
 - (3) The start and completion dates of all items of Work, their major components, and milestone completion dates, if any.

- (4) District furnished materials and equipment, if any, identified as separate activities.
- (5) Activities for maintaining Project Record Documents.
- (6) Dependencies (or relationships) between activities.
- (7) Processing/approval of submittals and shop drawings for all material and equipment required per the Contract. Activities that are dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.
 - (a) Include time for submittals, re-submittals and reviews by District. Coordinate with accepted schedule for submission of Shop Drawings, samples, and other submittals.
 - (b) Contractor shall be responsible for all impacts resulting from re-submittal of Shop Drawings and submittals.
- (8) Procurement of major equipment, through receipt and inspection at jobsite, identified as separate activity.
 - (a) Include time for fabrication and delivery of manufactured products for the Work.
 - (b) Show dependencies between procurement and construction.
- (9) Activity description; what Work is to be accomplished and where.
- (10) The total cost of performing each activity shall be total of labor, material, and equipment, excluding overhead and profit of Contractor. Overhead and profit of the Prime Contractor shall be shown as a separate activity in the schedule. Sum of cost for all activities shall equal total Contract value.
- (11) Resources required (labor and major equipment) to perform each activity.
- (12) Responsibility code for each activity corresponding to Contractor or Subcontractor responsible for performing the Work.
- (13) Identify the activities which constitute the controlling operations or critical path. No more than twenty-five (25%) of the activities shall be critical or near critical. Near critical is defined as float in the range of one (1) to (10) days.
- (14) Twenty (20) workdays for developing punch list(s), completion of punch-list items, and final clean up for the Work or any designated portion thereof. No other activities shall be scheduled during this period.
- (15) Interface with the work of other contractors, District, and agencies such as, but not limited to, utility companies.

- (16) Show detailed Subcontractor Work activities. In addition, furnish copies of Subcontractor schedules upon which CPM was built.
 - (a) Also furnish for each Subcontractor, as determined by District, submitted on Subcontractor letterhead, a statement certifying that Subcontractor concurs with Contractor's Original CPM Schedule and that Subcontractor's related schedules have been incorporated, including activity duration, cost and resource loading.
 - (b) Subcontractor schedules shall be independently derived and not a copy of Contractor's schedule.
 - (c) In addition to Contractor's schedule and resource loading, obtain from electrical, mechanical, and plumbing Subcontractors, and other Subcontractors as required by District, productivity calculations common to their trades, such as units per person day, feet of pipe per day per person, feet of wiring per day per person, and similar information.
 - (d) Furnish schedule for Contractor/Subcontractor CPM schedule meetings which shall be held prior to submission of Original CPM schedule to District. District shall be permitted to attend scheduled meetings as an observer.
- (17) Activity durations shall be in Work days.
- (18) Submit with the schedule a list of anticipated non-Work days, such as weekends and holidays. The Progress Schedule shall exclude in its Work day calendar all non-Work days on which Contractor anticipates critical Work will not be performed.
- C. Original CPM Schedule Review Meeting: Contractor shall, within sixty (60) days from the Notice to Proceed date, meet with District to review the Original CPM Schedule submittal.
 - (1) Contractor shall have its Project Manager, Project Superintendent, Project Scheduler, and key Subcontractor representatives, as required by District, in attendance. The meeting will take place over a continuous one (1) day period.
 - (2) District's review will be limited to submittal's conformance to Contract requirements including, but not limited to, coordination requirements. However, review may also include:
 - (a) Clarifications of Contract Requirements.
 - (b) Directions to include activities and information missing from submittal.
 - (c) Requests to Contractor to clarify its schedule.

- (3) Within five (5) days of the Schedule Review Meeting, Contractor shall respond in writing to all questions and comments expressed by District at the Meeting.

1.08 ADJUSTMENTS TO CPM SCHEDULE

- A. Adjustments to Original CPM Schedule: Contractor shall have adjusted the Original CPM Schedule submittal to address all review comments from original CPM Schedule review meeting and resubmit network diagrams and reports for District's review.
 - (1) District, within ten (10) days from date that Contractor submitted the revised schedule, will either:
 - (a) Accept schedule and cost and resource loaded activities as submitted, or
 - (b) Advise Contractor in writing to review any part or parts of schedule which either do not meet Contract requirements or are unsatisfactory for District to monitor Project's progress, resources, and status or evaluate monthly payment request by Contractor.
 - (2) District may accept schedule with conditions that the first monthly CPM Schedule update be revised to correct deficiencies identified.
 - (3) When schedule is accepted, it shall be considered the "Original CPM Schedule" which will then be immediately updated to reflect the current status of the work.
 - (4) District reserves right to require Contractor to adjust, add to, or clarify any portion of schedule which may later be discovered to be insufficient for monitoring of Work or approval of partial payment requests. No additional compensation will be provided for such adjustments, additions, or clarifications.
- B. Acceptance of Contractor's schedule by District will be based solely upon schedule's compliance with Contract requirements.
 - (1) By way of Contractor assigning activity durations and proposing sequence of Work, Contractor agrees to utilize sufficient and necessary management and other resources to perform work in accordance with the schedule.
 - (2) Upon submittal of schedule update, updated schedule shall be considered "current" CPM Schedule.
 - (3) Submission of Contractor's schedule to District shall not relieve Contractor of total responsibility for scheduling, sequencing, and pursuing Work to comply with requirements of Contract Documents, including adverse effects such as delays resulting from ill-timed Work.

- C. Submittal of Original CPM Schedule, and subsequent schedule updates, shall be understood to be Contractor's representation that the Schedule meets requirements of Contract Documents and that Work shall be executed in sequence indicated on the schedule.
- D. Contractor shall distribute Original CPM Schedule to Subcontractors for review and written acceptance, which shall be noted on Subcontractors' letterheads to Contractor and transmitted to District for the record.

1.09 MONTHLY CPM SCHEDULE UPDATE SUBMITTALS

- A. Following acceptance of Contractor's Original CPM Schedule, Contractor shall monitor progress of Work and adjust schedule each month to reflect actual progress and any anticipated changes to planned activities.
 - (1) Each schedule update submitted shall be complete, including all information requested for the Original CPM Schedule submittal.
 - (2) Each update shall continue to show all Work activities including those already completed. These completed activities shall accurately reflect "as built" information by indicating when activities were actually started and completed.
- B. A meeting will be held on approximately the twenty-fifth (25th) of each month to review the schedule update submittal and progress payment application.
 - (1) At this meeting, at a minimum, the following items will be reviewed: Percent (%) complete of each activity; Time Impact Evaluations for Change Orders and Time Extension Request; actual and anticipated activity sequence changes; actual and anticipated duration changes; and actual and anticipated Contractor delays.
 - (2) These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a minimum, these meetings shall be attended by Contractor's General Superintendent and Scheduler.
 - (3) Contractor shall plan on the meeting taking no less than four (4) hours.
- C. Within five (5) working days after monthly schedule update meeting, Contractor shall submit the updated CPM Schedule update.
- D. Within five (5) work days of receipt of above noted revised submittals, District will either accept or reject monthly schedule update submittal.
 - (1) If accepted, percent (%) complete shown in monthly update will be basis for Application for Payment by the Contractor. The schedule update shall be submitted as part of the Contractor's Application for Payment.

- (2) If rejected, update shall be corrected and resubmitted by Contractor before the Application for Payment is submitted.
- E. Neither updating, changing or revising of any report, curve, schedule, or narrative submitted to District by Contractor under this Contract, nor District's review or acceptance of any such report, curve, schedule or narrative shall have the effect of amending or modifying in any way the Completion Date or milestone dates or of modifying or limiting in any way Contractor's obligations under this Contract.

1.10 SCHEDULE REVISIONS

- A. Updating the Schedule to reflect actual progress shall not be considered revisions to the Schedule. Since scheduling is a dynamic process, revisions to activity durations and sequences are expected on a monthly basis.
- B. To reflect revisions to the Schedule, the Contractor shall provide District with a written narrative with a full description and reasons for each Work activity revised. For revisions affecting the sequence of work, the Contractor shall provide a schedule diagram which compares the original sequence to the revised sequence of work. The Contractor shall provide the written narrative and schedule diagram for revisions two (2) working days in advance of the monthly schedule update meeting.
- C. Schedule revisions shall not be incorporated into any schedule update until the revisions have been reviewed by District. District may request further information and justification for schedule revisions and Contractor shall, within three (3) days, provide District with a complete written narrative response to District's request.
- D. If the Contractor's revision is still not accepted by District, and the Contractor disagrees with District's position, the Contractor has seven (7) calendar days from receipt of District's letter rejecting the revision to provide a written narrative providing full justification and explanation for the revision. The Contractor's failure to respond in writing within seven (7) calendar days of District's written rejection of a schedule revision shall be contractually interpreted as acceptance of District's position, and the Contractor waives its rights to subsequently dispute or file a claim regarding District's position.
- E. At District's discretion, the Contractor can be required to provide Subcontractor certifications of performance regarding proposed schedule revisions affecting said Subcontractors.

1.11 RECOVERY SCHEDULE

- A. If the Schedule Update shows a completion date twenty-one (21) calendar days beyond the Contract Completion Date, or individual milestone completion dates, the Contractor shall submit to District the proposed revisions to recover the lost time within seven (7) calendar days. As part of this submittal, the Contractor shall provide a written narrative for each revision made to recapture the lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work.

- B. The revisions shall not be incorporated into any schedule update until the revisions have been reviewed by District.
- C. If the Contractor's revisions are not accepted by District, District and the Contractor shall follow the procedures in paragraph 1.09.C, 1.09.D and 1.09.E above.
- D. At District's discretion, the Contractor can be required to provide Subcontractor certifications for revisions affecting said Subcontractors.

1.12 TIME IMPACT EVALUATION ("TIE") FOR CHANGE ORDERS, AND OTHER DELAYS

- A. When Contractor is directed to proceed with changed Work, the Contractor shall prepare and submit within fourteen (14) calendar days from the Notice to Proceed a TIE which includes both a written narrative and a schedule diagram depicting how the changed Work affects other schedule activities. The schedule diagram shall show how the Contractor proposes to incorporate the changed Work in the schedule and how it impacts the current schedule-update critical path. The Contractor is also responsible for requesting time extensions based on the TIE's impact on the critical path. The diagram must be tied to the main sequence of schedule activities to enable District to evaluate the impact of changed Work to the scheduled critical path.
- B. Contractor shall be required to comply with the requirements of Paragraph 1.09.A for all types of delays such as, but not limited to, Contractor/Subcontractor delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc.
- C. Contractor shall be responsible for all costs associated with the preparation of TIEs, and the process of incorporating them into the current schedule update. The Contractor shall provide District with four (4) copies of each TIE.
- D. Once agreement has been reached on a TIE, the Contract Time will be adjusted accordingly. If agreement is not reached on a TIE, the Contract Time may be extended in an amount District allows, and the Contractor may submit a claim for additional time claimed by contractor.

1.13 TIME EXTENSIONS

- A. The Contractor is responsible for requesting time extensions for time impacts that, in the opinion of the Contractor, impact the critical path of the current schedule update. Notice of time impacts shall be given in accord with the General Conditions.
- B. Where an event for which District is responsible impacts the projected Completion Date, the Contractor shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact can be mitigated. The Contractor shall also include a detailed cost breakdown of the labor, equipment, and material the Contractor would expend to mitigate District-caused time impact. The Contractor shall submit its mitigation plan to District within fourteen (14)

calendar days from the date of discovery of the impact. The Contractor is responsible for the cost to prepare the mitigation plan.

- C. Failure to request time, provide TIE, or provide the required mitigation plan will result in Contractor waiving its right to a time extension and cost to mitigate the delay.
- D. No time will be granted under this Contract for cumulative effect of changes.
- E. District will not be obligated to consider any time extension request unless the Contractor complies with the requirements of Contract Documents.
- F. Failure of the Contractor to perform in accordance with the current schedule update shall not be excused by submittal of time extension requests.
- G. If the Contractor does not submit a TIE within the required fourteen (14) calendar days for any issue, it is mutually agreed that the Contractor does not require a time extension for said issue.

1.14 SCHEDULE REPORTS

- A. Submit four (4) copies of the following reports with the Initial CPM Schedule, the Original CPM Schedule, and each monthly update.
- B. Required Reports:
 - (1) Two activity listing reports: one sorted by activity number and one by total Project Float. These reports shall also include each activity's early/late and actual start and finish dates, original and remaining duration, Project Float, responsibility code, and the logic relationship of activities.
 - (2) Cost report sorted by activity number including each activity's associated cost, percentage of Work accomplished, earned value- to date, previous payments, and amount earned for current update period.
 - (3) Schedule plots presenting time-scaled network diagram showing activities and their relationships with the controlling operations or critical path clearly highlighted.
 - (4) Cash flow report calculated by early start, late start, and indicating actual progress. Provide an exhibit depicting this information in graphic form.
 - (5) Planned versus actual resource (i.e., labor) histogram calculated by early start and late start.
- C. Other Reports:

In addition to above reports, District may request, from month to month, any two of the following reports. Submit four (4) copies of all reports.

- (1) Activities by early start.
 - (2) Activities by late start.
 - (3) Activities grouped by Subcontractors or selected trades.
 - (4) Activities with scheduled early start dates in a given time frame, such as fifteen (15) or thirty (30) day outlook.
- D. Furnish District with report files on compact disks containing all schedule files for each report generated.

1.15 PROJECT STATUS REPORTING

- A. In addition to submittal requirements for CPM scheduling identified in this Section, Contractor shall provide a monthly project status report (i.e., written narrative report) to be submitted in conjunction with each CPM Schedule as specified herein. Status reporting shall be in form specified below.
- B. Contractor shall prepare monthly written narrative reports of status of Project for submission to District. Written status reports shall include:
- (1) Status of major Project components (percent (%) complete, amount of time ahead or behind schedule) and an explanation of how Project will be brought back on schedule if delays have occurred.
 - (2) Progress made on critical activities indicated on CPM Schedule.
 - (3) Explanations for any lack of work on critical path activities planned to be performed during last month.
 - (4) Explanations for any schedule changes, including changes to logic or to activity durations.
 - (5) List of critical activities scheduled to be performed next month.
 - (6) Status of major material and equipment procurement.
 - (7) Any delays encountered during reporting period.
 - (8) Contractor shall provide printed report indicating actual versus planned resource loading for each trade and each activity. This report shall be provided on weekly and monthly basis.
 - (a) Actual resource shall be accumulated in field by Contractor, and shall be as noted on Contractor's daily reports. These reports will be basis for information provided in computer-generated monthly and weekly printed reports.
 - (b) Contractor shall explain all variances and mitigation measures.

- (9) Contractor may include any other information pertinent to status of Project. Contractor shall include additional status information requested by District at no additional cost.
- (10) Status reports, and the information contained therein, shall not be construed as claims, notice of claims, notice of delay, or requests for changes or compensation.

1.16 WEEKLY SCHEDULE REPORT

At the Weekly Progress Meeting, the Contractor shall provide and present a time-scaled three (3) week look-ahead schedule that is based and correlated by activity number to the current schedule (i.e., Initial, Original CPM, or Schedule Update).

1.17 DAILY CONSTRUCTION REPORTS

On a daily basis, Contractor shall submit a daily activity report to District for each workday, including weekends and holidays when worked. Contractor shall develop the daily construction reports on a computer-generated database capable of sorting daily Work, manpower, and man-hours by Contractor, Subcontractor, area, sub-area, and Change Order Work. Upon request of District, furnish computer disk of this data base. Obtain District's written approval of daily construction report data base format prior to implementation. Include in report:

- A. Project name and Project number.
- B. Contractor's name and address.
- C. Weather, temperature, and any unusual site conditions.
- D. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work of Subcontractors. Descriptions shall be referenced to CPM scheduled activities.
- E. Worker quantities for its own Work force and for Subcontractors of any tier.
- F. Equipment, other than hand tools, utilized by Contractor and Subcontractors.

1.18 PERIODIC VERIFIED REPORTS

Contractor shall complete and verify construction reports on a form prescribed by the Division of the State Architect and file reports on the first day of February, May, August, and November during the preceding quarter year; at the completion of the Contract; at the completion of the Work; at the suspension of Work for a period of more than one (1) month; whenever the services of Contractor or any of Contractor's Subcontractors are terminated for any reason; and at any time a special verified report is required by the Division of the State Architect. Refer to section 4-336 and section 4-343 of Part 1, Title 24 of the California Code of Regulations.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Contractor's Submittals and Schedules, Drawings and Specifications;
- B. Special Conditions.

1.02 SECTION INCLUDES:

- A. Definitions:
 - (1) Shop Drawings and Product Data are as indicated in the General Conditions and include, but are not limited to, fabrication, erection, layout and setting drawings, formwork and falsework drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams. In addition, there are other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment or systems and all positions conform to the requirement of the Contract Documents, including, without limitation, the Drawings.
 - (2) "Manufactured" applies to standard units usually mass-produced; "fabricated" means specifically assembled or made out of selected materials to meet design requirements. Shop Drawings shall establish the actual detail of manufactured or fabricated items, indicated proper relation to adjoining work and amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure.
 - (3) Manufacturer's Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed, at a minimum, in accordance with a specified product manufacturer's instructions, the Contractor shall procure and distribute copies of these to the District, the Architect, and all other concerned parties and shall furnish, install, or perform the work, at a minimum, in accordance with those instructions.
- B. Samples, Shop Drawings, Product Data, and other items as specified, in accordance with the following requirements:
 - (1) Contractor shall submit all Shop Drawings, Product Data, and Samples to the District, the Architect, the Project Inspector, and the Construction Manager.

- (2) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall submit required information in sufficient time to permit proper consideration and action before ordering any materials or items represented by such Shop Drawings, Product Data, and/or Samples.
- (3) Contractor shall allow sufficient time so that no delay occurs due to required lead time in ordering or delivery of any item to the Site. Contractor shall be responsible for any delay in progress of Work due to its failure to observe these requirements.
- (4) Time for completion of Work shall not be extended on account of Contractor's failure to promptly submit Shop Drawings, Product Data, and/or Samples.
- (5) Reference numbers on Shop Drawings shall have Architectural and/or Engineering Contract Drawings reference numbers for details, sections, and "cuts" shown on Shop Drawings. These reference numbers shall be in addition to any numbering system that Contractor chooses to use or has adopted as standard.
- (6) When the magnitude or complexity of submittal material prevents a complete review within the stated time frame, Contractor shall make this submittal in increments to avoid extended delays.
- (7) Contractor shall certify on submittals for review that submittals conform to Contract requirements. Also certify that Contractor-furnished equipment can be installed in allocated space. In event of any variance, Contractor shall specifically state in transmittal and on Shop Drawings, portions vary and require approval of a substitute. Submittals shall not be used as a means of requesting a substitution.
- (8) Unless specified otherwise, sampling, preparation of samples, and tests shall be in accordance with the latest standard of the American Society for Testing and Materials.
- (9) Upon demand by Architect or District, Contractor shall submit samples of materials and/or articles for tests or examinations and consideration before Contractor incorporates same in Work. Contractor shall be solely responsible for delays due to sample(s) not being submitted in time to allow for tests. Acceptance or rejection will be expressed in writing. Work shall be equal to approved samples in every respect. Samples that are of value after testing will remain the property of Contractor.

C. Submittal Schedule:

- (1) Contractor shall prepare its proposed submittal schedule that is coordinated with the proposed construction schedule and submit both to the District in accordance with the Baseline Construction Schedule, provided by the Construction Manager, and no later than ten (10) days after the date of the Notice to Proceed. Contractor's proposed schedules shall become the Project Construction Schedule and the Project Submittal Schedule after each is approved by the District.

- (2) Contractor is responsible for all lost time should the initial submittal be rejected, marked "revise and resubmit", etc.
- (3) All Submittals shall be forwarded to the District by the date indicated on the approved Submittal Schedule, unless an earlier date is necessary to maintain the Construction Schedule, in which case those Submittals shall be forwarded to the District so as not to delay the Construction Schedule.
- (4) Contractor may be assessed \$500 a day for each day it is late in submitting a shop drawing or sample. No extensions of time will be granted to Trade Contractor or any Subcontractor because of its failure to have shop drawings and samples submitted in accordance with the Schedule.

1.03 SHOP DRAWINGS:

- A. Contractor shall submit via electronic upload, PDF(s) files through Procore online document control software, as provided by the Construction Manager, to the District and District Representative(s). The District will review and return, electronically, via Procore to Contractor. Contractor is responsible for providing one (1) complete hard copy to the Construction Manager upon final approval of each shop drawing.
- B. Before commencing installation of any Work, the Contractor shall submit and receive approval of all drawings, descriptive data, and material list(s) as required to accomplish Work.
- C. Review of Shop Drawings is regarded as a service to assist Contractor and in all cases original Contract Documents shall take precedence as outlined under General Conditions.
- D. No claim for extra time or payment shall be based on work shown on Shop Drawings unless the claim is (1) noted on Contractor's transmittal letter accompanying Shop Drawings and (2) Contractor has complied with all applicable provisions of the General Conditions, including, without limitation, provisions regarding changes and payment, and all required written approvals.
- E. District shall not review Shop Drawings for quantities of materials or number of items supplied.
- F. District's and/or Architect's review of Shop Drawing will be general. District and/or Architect review does not relieve Contractor of responsibility for dimensions, accuracy, proper fitting, construction of Work, furnishing of materials, or Work required by Contract Documents and not indicated on Shop Drawings. The District's and/or Architect's review of Shop Drawings is not to be construed as approving departures from Contract Documents.
- G. Review of Shop Drawings and Schedules does not relieve Contractor from responsibility for any aspect of those Drawings or Schedules that is a violation of local, County, State, or Federal laws, rules, ordinances, or rules and regulations of commissions, boards, or other authorities or utilities having jurisdiction.

- H. Before submitting Shop Drawings for review, Contractor shall check Shop Drawings of its subcontractors for accuracy, and confirm that all Work contiguous with and having bearing on other work shown on Shop Drawings is accurately drawn and in conformance with Contract Documents.
- I. Submitted drawings and details must bear stamp of approval of Contractor:
 - (1) Stamp and signature shall clearly certify that Contractor has checked Shop Drawings for compliance with Drawings.
 - (2) If Contractor submits a Shop Drawing without an executed stamp of approval, or whenever it is evident (despite stamp) that Drawings have not been checked, the District and/or Architect will not consider them and will return them to the Contractor for revision and resubmission. In that event, it will be deemed that Contractor has not complied with this provision and Contractor shall bear risk of all delays to same extent as if it had not submitted any Shop Drawings or details.
- J. Submission of Shop Drawings (in either original submission or when resubmitted with correction) constitutes evidence that Contractor has checked all information thereon and that it accepts and is willing to perform Work as shown.
- K. Contractor shall pay for cost of any changes in construction due to improper checking and coordination. Contractor shall be responsible for all additional costs, including coordination. Contractor shall be responsible for costs incurred by itself, the District, the Architect, the Project Inspector, the Construction Manager, any other Subcontractor or contractor, etc., due to improperly checked and/or coordination of submittals.
- L. Shop Drawings must clearly delineate the following information:
 - (1) Project name and address.
 - (2) Specification number and description.
 - (3) Architect's name and project number.
 - (4) Shop Drawing title, number, date, and scale.
 - (5) Names of Contractor, Subcontractor(s) and fabricator.
 - (6) Working and erection dimensions.
 - (7) Arrangements and sectional views.
 - (8) Necessary details, including complete information for making connections with other Work.
 - (9) Kinds of materials and finishes.
 - (10) Descriptive names of materials and equipment, classified item numbers, and locations at which materials or equipment are to be

installed in the Work. Contractor shall use same reference identification(s) as shown on Contract Drawings.

- M. Contractor shall prepare composite drawings and installation layouts when required to solve tight field conditions.
 - (1) Shop Drawings shall consist of dimensioned plans and elevations and must give complete information, particularly as to size and location of sleeves, inserts, attachments, openings, conduits, ducts, boxes, structural interferences, etc.
 - (2) Contractor shall coordinate these composite Shop Drawings and installation layouts in the field between itself and its Subcontractor(s) for proper relationship to the Work, the work of other trades, and the field conditions. The Contractor shall check and approve all submittal(s) before submitting them for final review.

1.04 PRODUCT DATA OR NON REPRODUCIBLE SUBMITTALS:

- A. Contractor shall submit manufacturer's printed literature in original form. Any fading type of reproduction will not be accepted. Contractor must submit via electronic upload, complete PDF(s) through Procore online document control software, as provided by the Construction Manager, to the District and District Representative(s). District shall return one (1) to the Contractor via Procore, who shall reproduce whatever additional copies it requires for distribution. Contractor is responsible for providing one (1) complete hard copy to the Construction Manager upon final approval of each submittal.
- B. Contractor shall upload PDF(s) through Procore online document control software, as provided by the Construction Manager, a complete list of all major items of mechanical, plumbing, and electrical equipment and materials in accordance with the approved Submittal Schedule, except as required earlier to comply with the approved Construction Schedule. Other items specified are to be submitted prior to commencing Work. Contractor shall submit items of like kind at one time in a neat and orderly manner. Partial lists will not be acceptable.
- C. Submittals shall include manufacturer's specifications, physical dimensions, and ratings of all equipment. Contractor shall furnish performance curves for all pumps and fans. Where printed literature describes items in addition to that item being submitted, submitted item shall be clearly marked on sheet and superfluous information shall be crossed out. If highlighting is used, Contractor shall mark all copies.
- D. Equipment submittals shall be complete and include space requirements, weight, electrical and mechanical requirements, performance data, and supplemental information that may be requested.
- E. Imported Materials Certification must be submitted at least ten (10) days before material is delivered.

1.05 SAMPLES:

- A. Contractor shall submit for approval Samples as required and within the time frame in the Contract Documents. Materials such as concrete, mortar, etc., which require on-site testing will be obtained from Project Site.
- B. Contractor shall submit four (4) samples except where greater or lesser number is specifically required by Contract Documents including, without limitation, the Specifications.
 - (1) Samples must be of sufficient size and quality to clearly illustrate functional characteristics, with integrally related parts and attachment devices.
 - (2) Samples must show full range of texture, color, and pattern.
- C. Contractor shall make all Submittals, unless it has authorized Subcontractor(s) to submit and Contractor has notified the District in writing to this effect.
- D. Samples to be shipped prepaid or hand-delivered to the District.
- E. Contractor shall mark samples to show name of Project, name of Contractor submitting, Contract number and segment of Work where representative Sample will be used, all applicable Specifications Sections and documents, Contract Drawing Number and detail, and ASTM or FS reference, if applicable.
- F. Contractor shall not deliver any material to Site prior to receipt of District's and/or Architect's completed written review and approval. Contractor shall furnish materials equal in every respect to approved Samples and execute Work in conformance therewith.
- G. District's and/or Architect's review, acceptance, and/or approval of Sample(s) will not preclude rejections of any material upon discovery of defects in same prior to final acceptance of completed Work.
- H. After a material has been approved, no change in brand or make will be permitted.
- I. Contractor shall prepare its Submittal Schedule and submit Samples of materials requiring laboratory tests to specified laboratory for testing not less than ninety (90) days before such materials are required to be used in Work.
- J. Samples which are rejected must be resubmitted promptly after notification of rejection and be marked "Resubmitted Sample" in addition to other information required.
- K. Field Samples and Mock-Ups are to be removed by Contractor at District's direction:
 - (1) Size: As Specified.
 - (2) Furnish catalog numbers and similar data, as requested.

1.06 REVIEW AND RESUBMISSION REQUIREMENTS:

- A. The District will arrange for review of Sample(s), Shop Drawing(s), Product Data, and other submittal(s) by appropriate reviewer and return to Contractor as provided below within fourteen (14) days after receipt or within fourteen (14) days after receipt of all related information necessary for such review, whichever is later. Allow an additional three (3) days when subconsultant review is required.
- B. One (1) copy of product or materials data will be returned to Contractor with the review status.
- C. Samples to be incorporated into the Work will be returned to Contractor, together with a written notice designating the Sample with the appropriate review status and indicating errors discovered on review, if any. Other Samples will not be returned, but the same notice will be given with respect thereto, and that notice shall be considered a return of the Sample.
- D. Contractor shall revise and resubmit any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) as required by the reviewer. Such resubmittals will be reviewed and returned in the same manner as original Sample(s), Shop Drawing(s), Product Data, and other submittal(s), within seven (7) days after receipt thereof or within seven (7) days after receipt of all related information necessary for such review. Such resubmittal shall not delay the Work.
- E. Contractor may proceed with any of the Work covered by Sample(s), Shop Drawing(s), Product Data, and other submittal(s) upon its return if designated as no exception taken, or revise as noted, provided the Contractor proceeds in accordance with the District and/or the Architect's notes and comments.
- F. Contractor shall not begin any of the work covered by a Sample(s), Shop Drawing(s), Product Data, and other submittal(s), designated as revise and resubmit or rejected, until a revision or correction thereof has been reviewed and returned to Contractor.
- G. Sample(s), Shop Drawing(s), Product Data, and other submittal(s) designated as revise and resubmit or rejected and requiring resubmittal, shall be revised or corrected and resubmitted to the District no later than fourteen (14) days or a shorter period as required to comply with the approved Construction Schedule, after its return to Contractor.
- H. Neither the review nor the lack of review of any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) shall waive any of the requirements of the Contract Documents, or relieve Contractor of any obligation thereunder.
- I. District's and/or Architect's review of Shop Drawings does not relieve the Contractor of responsibility for any errors that may exist. Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all the Work.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

SITE STANDARDS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including without limitation, Site Access, Conditions, and Regulations;
- B. Special Conditions;
- C. Drug-Free Workplace Certification;
- D. Tobacco-Free Environment Certification;
- E. Criminal Background Investigation/Fingerprinting Certification;
- F. Temporary Facilities and Controls.

1.02 REQUIREMENTS OF THE DISTRICT:

- A. Drug-Free Schools and Safety Requirements:
 - (1) All school sites and other District Facilities have been declared "Drug-Free Zones." No drugs, alcohol and/or smoking are allowed at any time in any buildings and/or grounds on District property. No students, staff, visitors, or contractors are to use drugs on these sites.
 - (2) Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school-owned vehicles and vehicles owned by others while on District property. Contractor shall post: "Non-Smoking Area" in a highly visible location in each work area, staging area, and parking area. Contractor may designate a smoking area outside of District property within the public right-of-way, provided that this area remains quiet and unobtrusive to adjacent neighbors. This smoking area is to be kept clean at all times.
 - (3) Contractor shall ensure that no alcohol, firearms, weapons, or controlled substances enter or are used at the Site. Contractor shall immediately remove from the Site and terminate the employment of any employee(s) found in violation of this provision.
- B. Language: Profanity or other unacceptable and/or loud language will not be tolerated, "Cat calls" or other derogatory language toward students, staff, volunteers, parents or public will not be allowed.

C. Disturbing the Peace (Noise and Lighting):

- (1) Contractor shall observe the noise ordinance of the Site at all times including, without limitation, all applicable local, city, and/or state laws, ordinances, and/or regulations regarding noise and allowable noise levels.
- (2) The use of radios, etc., shall be controlled to keep all sound at a level that cannot be heard beyond the immediate area of use. District reserves the right to prohibit the use of radios at the Site, except for mobile phones or other handheld communication radios.
- (3) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

D. Traffic:

- (1) Driving on the Premises shall be limited to periods when students and public are not present. If driving or deliveries must be made during the school hours, two (2) or more ground guides shall lead the vehicle across the area of travel. In no case shall driving take place across playgrounds or other pedestrian paths during recess, lunch, and/or class period changes. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require.
- (2) All paths of travel for deliveries, including without limitation, material, equipment, and supply deliveries, shall be reviewed and approved by District in advance. Any damage will be repaired to the pre-damaged condition by the Contractor.
- (3) District shall designate a construction entry to the Site. If Contractor requests, District determines it is required, and to the extent possible, District shall designate a staging area so as not to interfere with the normal functioning of school facilities. Location of gates and fencing shall be approved in advance with District and at Contractor's expense.
- (4) Parking areas shall be reviewed and approved by District in advance. No parking is to occur under the drip line of trees or in softscape areas that could otherwise be damaged.

- E. All of the above shall be observed and complied with by the Contractor and all workers on the Site. Failure to follow these directives could result in individual(s) being suspended or removed from the work force at the discretion of the District. The same rules and regulations shall apply equally to delivery personnel, inspectors, consultants, and other visitors to the Site.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Obtaining of Permits, Licenses and Registrations and Work to Comply with All Applicable Laws and Regulations;
- B. Special Conditions; and
- C. Quality Control.

1.02 DESCRIPTION:

This section covers the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.03 REQUIREMENTS OF REGULATORY AGENCIES:

- A. All statutes, ordinances, laws, rules, codes, regulations, standards, and the lawful orders of all public authorities having jurisdiction over the Work, are hereby incorporated into these Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references in the list below. Contractor shall make available at the Site copies of all the listed documents applicable to the Work as the District and/or Architect may request, including, without limitation, applicable portions of the California Code of Regulations ("CCR").
 - (1) 2022 California Building Standards Administrative Code, Part 1, Title 24, CCR.
 - (2) 2022 California Building Code (CBC), Part 2, Title 24, CCR; (2021 International Building Code volumes 1-2 and California Amendments).
 - (3) 2022 California Electrical Code (CEC), Part 3, Title 24, CCR; (2022 National Electrical Code w/ NFPA 70 and California Amendments).
 - (4) 2022 California Mechanical Code (CMC), Part 4, Title 24, CCR; (2021 Uniform Mechanical Code and California Amendments).
 - (5) 2022 California Plumbing Code (CPC), Part 5, Title 24, CCR; (2021 Uniform Plumbing Code and California Amendments).

- (6) 2022 California Fire Code (CFC), Part 9, Title 24, CCR; (2021 International Fire Code and California Amendments).
- (7) 2022 California Green Building Standards Code (CALGreen), Part 11, Title 24, CCR.
- (8) 2022 California Referenced Standards Code, Part 12, Title 24, CCR.
- (9) State Fire Marshal Regulations, Public Safety, Title 19, CCR.
- (10) Partial List of Applicable National Fire Protection Association (NFPA) Standards:
 - (a) NFPA 13 - Automatic Sprinkler System.
 - (b) NFPA 14 - Standpipes Systems.
 - (c) NFPA 17A - Wet Chemical System
 - (d) NFPA 24 - Private Fire Mains.
 - (e) (California Amended) NFPA 72 - National Fire Alarm Codes.
 - (f) NFPA 253 - Critical Radiant Flux of Floor Covering System.
 - (g) NFPA 2001 - Clean Agent Fire Extinguishing Systems.
- (11) California Division of the State Architect interpretation of Regulations ("DSA IR"), including, without limitation:
 - (a) DSA IR A-6 — Construction Change Document Submittal and Approval Processes.
 - (b) DSA IR A-7 — Project Inspector Certification and Approval.
 - (c) DSA IR A-8 — Project Inspector and Assistant Inspector Duties and Performance.
 - (d) DSA IR A-12 — Assistant Inspector Approval.
- (12) DSA Procedures ("DSA PR")
 - (a) DSA PR 13-01 – Construction Oversight Process
 - (b) DSA PR 13-02 – Project Certification Process

B. This Project shall be governed by applicable regulations, including, without limitation, the State of California's Administrative Regulations for the Division of the State Architect-Structural Safety (DSA/SS), Chapter 4, Part 1, Title 24, CCR, and the most current version on the date the bids are opened and as it pertains to school construction including, without limitation:

- (1) Test and testing laboratory per Section 4-335. District shall pay for the testing laboratory.
- (2) Special inspections per Section 4-333(c).
- (3) Deferred Approvals per section 4-317(g).
- (4) Verified reports per Sections 4-336 & 4-343(c).
- (5) Duties of the Architect & Engineers shall be per Sections 4-333(a) and 4-341.
- (6) Duties of the Contractor shall be per Section 4-343.
- (7) Duties of Project Inspector shall be per Section 4-334.
- (8) Addenda and Construction Change Documents per Section 4-338.

Contractor shall keep and make available all applicable parts of the most current version of Title 24 referred to in the plans and specifications at the Site during construction.

C. Items of deferred approval shall be clearly marked on the first sheet of the Architect's and/or Engineer's approved Drawings. All items later submitted for approval shall be per Title 24 requirements to the DSA.

- (1) Contractor shall submit the following to Architect for review and endorsement:
 - (a) Product information on proposed material/system supplier.
 - (b) Drawings, specifications, and calculations prepared, signed, and stamped by an architect or engineer licensed in the State of California for that portion of the Work.
 - (c) All other requirements as may be required by DSA.
- (2) Cost of preparing and submitting documentation per DSA Deferred Approval requirements including required modifications to Drawings and Specifications, whether or not indicated in the Contract Documents, shall be borne by Contractor.
- (3) Contractor shall not begin fabrication and installation of deferred approval items without first obtaining DSA approval of Drawings and Specifications.
- (4) Schedule of Work Subject to DSA Deferred Approval: Window wall systems exceeding 10 feet in span.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ABBREVIATIONS AND ACRONYMS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 DOCUMENT INCLUDES:

- A. Abbreviations used throughout the Contract Documents.
- B. Reference to a technical society, organization, or body is by abbreviation, as follows:

1.	AA	The Aluminum Association
2.	AASHTO	American Association of State Highway and Transportation Officials
3.	ABPA	Acoustical and Board Products Association
4.	ACI	American Concrete Institute
5.	AGA	American Gas Association
6.	AGC	Associated General Contractors of America
7.	AHC	Architectural Hardware Consultant
8.	AHRI	Air Conditioning, Heating, Refrigeration Institute
9.	AI	Asphalt Institute
10.	AIA	American Institute of Architects
11.	AISC	American Institute of Steel Construction
12.	AISI	American Iron and Steel Institute
13.	AMCA	Air Movement and Control Association
14.	ANSI	American National Standards Institute
15.	APA	APA – The Engineered Wood Association
16.	ASCE	American Society of Civil Engineers
17.	ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
18.	ASME	American Society of Mechanical Engineers
19.	ASTM	American Society of Testing and Materials International
20.	AWPA	American Wood Protection Association
21.	AWPI	American Wood Preservers Institute
22.	AWS	American Welding Society
23.	AWSC	American Welding Society Code
24.	AWI	Architectural Woodwork Institute
25.	AWWA	American Water Works Association
26.	BIA	The Brick Industry Association

27.	CCR	California Code of Regulations
28.	CLFMI	Chain Link Fence Manufacturers Institute
29.	CRA	California Redwood Association
30.	CRSI	Concrete Reinforcing Steel Institute
31.	CS	Commercial Standards
32.	CSI	Construction Specifications Institute
33.	CTI	Cooling Technology Institute
34.	FGIA	Fenestration and Glazing Industry Alliance
35.	FGMA	Flat Glass Manufacturers' Association
36.	FIA	Factory Insurance Association
37.	FM	Factory Mutual Global
38.	FS/FED SPEC	Federal Specification
39.	FTI	Facing Title Institute
40.	GA	Gypsum Association
41.	IAPMO	International Association of Plumbing and Mechanical Officials
42.	ICC	International Code Council
43.	IEEE	Institute of Electrical and Electronics Engineers
44.	IES	Illuminating Engineering Society
45.	MCAC	Mason Contractors Association of California
46.	MIMA	Mineral Wool Insulation Manufacturers Association
47.	MLMA	Metal Lath Manufacturers Association
48.	MS/MIL SPEC	Military Specifications
49.	NAAMM	National Association of Architectural Metal Manufacturers
50.	NBHA	National Builders Hardware Association
51.	NCMA	National Concrete Masonry Association
52.	NCSEA	National Council of Structural Engineers Associations
53.	NEC	National Electrical Code
54.	NEMA	National Electrical Manufacturers Association
55.	NIST	National Institute of Standards and Technology
56.	NSI	Natural Stone Institute
57.	NTMA	National Terrazzo and Mosaic Association, Inc.
58.	ORS	Office of Regulatory Services (California)
59.	OSHA	Occupational Safety and Health Act
60.	PCI	Precast/Prestressed Concrete Institute
61.	PCA	Portland Cement Association
62.	PCA	Painting Contractors Association
63.	PDI	Plumbing Drainage Institute
64.	PEI	Porcelain Enamel Institute, Inc.
65.	PG&E	Pacific Gas & Electric Company
66.	PS	Product Standards
67.	SDI	Steel Door Institute; Steel Deck Institute
68.	SJI	Steel Joist Institute
69.	SSPC	Society for Protective Coatings
70.	TCNA	Tile Council of North America, Inc.
71.	TPI	Truss Plate Institute
72.	UBC	Uniform Building Code
73.	UL	Underwriters Laboratories Code

74.	UMC	Uniform Mechanical Code
75.	USDA	United States Department of Agriculture
76.	VI	Vermiculite Institute
77.	WCLIB	West Coast Lumber Inspection Bureau
78.	WDMA	Window and Door Manufacturers Association
79.	WEUSER	Western Electric Utilities Service Engineering Requirements
80.	WIC	Woodwork Institute of California

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

DEFINITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, Contractor shall comply with requirements of the standard, except when more rigid requirements are specified in the Contract Documents, or are required by applicable codes.
- B. Contractor shall conform to current reference standard publication date in effect on the date of bid opening.
- C. Contractor shall obtain copies of standards unless specifically required not to by the Contract Documents.
- D. Contractor shall maintain a copy of all standards at jobsite during submittals, planning, and progress of the specific Work, until final completion, unless specifically required not to by the Contract Documents.
- E. Should specified reference standards conflict with Contract Documents, Contractor shall request clarification from the District and/or the Architect before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the contractual relationship as indicated in the Contract Documents by mention or inference otherwise in any referenced document.
- G. Governing Codes shall be as shown in the Contract Documents including, without limitation, the Specifications.

END OF DOCUMENT

REFERENCES**PART 1 - GENERAL****1.01 SCHEDULE OF REFERENCES:**

The following information is intended only for the general assistance of the Contractor, and the District does not represent that all of the information is current. It is the Contractor's responsibility to verify the correct information for each of the entities listed.

AA	The Aluminum Association 1400 Crystal Drive, Suite 430 Arlington, VA 22202 www.aluminum.org	703/358-2960
AABC	Associated Air Balance Council 2401 Pennsylvania Avenue NW, Suite 330 Washington, DC 20037 www.aabc.com	202/737-0202
AASHTO	American Association of State Highway and Transportation Officials 555 12th St. NW - Suite 1000 Washington, DC 20004 www.transportation.org	202/624-5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 Research Triangle Park, NC 27709-2215 www.aatcc.org	919/549-8141
ACA	American Coatings Association 901 New York Ave., NW, Suite 300 West Washington, DC 20001 www.paint.org	202/462-6272
ACI	American Concrete Institute 38800 Country Club Dr. Farmington Hills, MI 48331-3439 www.concrete.org	248/848-3800
ACPA	American Concrete Pipe Association 5605 N. MacArthur Blvd., Suite 340 Irving, TX 75038 www.concrete-pipe.org	972/506-7216

ADC	Air Duct Council 1901 N. Roselle Road, Suite 800 Schaumburg, IL 60195 www.flexibleduct.org	847/706-6750
AF&PA	American Forest and Paper Association 1101 K Street, NW, Suite 700 Washington, DC 20005 www.afandpa.org	202/463-2700
AGA	American Gas Association 400 North Capitol Street, NW, Suite 450 Washington, DC 20001 www.aga.org	202/824-7000
AGC	Associate General Contractors of America 2300 Wilson Blvd., Suite 300 Arlington, VA 22201 www.agc.org	703/548-3118
AHA	American Hardboard Association 1210 West Northwest Highway Palatine, IL 60067 http://domensino.com/AHA/default.htm	847/934-8800
AI	Asphalt Institute 2696 Research Park Drive Lexington, KY 40511-8480 www.asphaltinstitute.org	859/288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292 www.aia.org	202/626-7300
AISC	American Institute of Steel Construction 130 East Randolph Street, Suite 2000 Chicago, IL 60601 www.aisc.org	312.670.2400
AISI	American Iron and Steel Institute 25 Massachusetts Ave., NW, Suite 800 Washington, DC 20001 www.steel.org	202/452-7100
AITC	American Institute of Timber Construction 1010 South 336th Street, #210 Federal Way, WA 98003-7394 https://www.plib.org/aitc/	253/835-3344

ALI	Associated Laboratories, Inc. P.O. Box 152837 Dallas, TX 75315 www.assoc-labs.com	214/565-0593
ALSC	American Lumber Standards Committee, Inc. 7470 New Technology Way, Suite F Frederick, MD 21703 www.alsc.org	301/972-1700
AMCA	Air Movement and Control Association International, Inc. 30 W. University Drive Arlington Heights, IL 60004 www.amca.org	847/394-0150
AMPP (formerly SSPC)	Association for Materials Protection and Performance (merger of Society for Protective Coatings and National Association of Corrosion Engineers International) (formerly Steel Structures Painting Council) 800 Trumbull Drive Pittsburgh, PA 15205 www.sspc.org	412/281-2331 877/281-7772
ANLA	AmericanHort (merger of American Nursery & Landscape Association and OFA – The Association of Horticultural Professionals) 2130 Stella Court Columbus, OH 43215 www.americanhort.org	614/487-1117
ANSI	American National Standards Institute 1899 L Street, NW, 11th Floor Washington, DC 20036 www.ansi.org	202/293-8020
APA	APA-The Engineered Wood Association 7011 S. 19th Street Tacoma, WA 98466-5333 www.apawood.org	253/565-6600

APA	Architectural Precast Association 325 John Knox Rd, Suite L-103 Tallahassee, FL 32303 www.archprecast.org	850/205-5637
APCIA	American Property Casualty Insurance Association (merger of American Insurance Association (formerly the National Board of Fire Underwriters) with the Property Casualty Insurers Association of America) 555 12th St, NW, Suite 550 Washington DC 20004 www.apci.org	202/828-7100
AHRI	Air Conditioning and Refrigeration Institute (now Air-Conditioning, Heating, & Refrigeration Institute) 2311 Wilson Blvd, Suite 400 Arlington, VA 22201 www.ahrinet.org	703/524-8800
ARMA	Asphalt Roofing Manufacturers Association 2331 Rock Spring Road Forest Hill, MD 21050 www.asphaltroofing.org	443/640-1075
ASA	The Acoustical Society of America Suite 300 1305 Walt Whitman Road Melville, NY 11747-4300 https://acousticalsociety.org/	516/576-2360
ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 www.asce.org	800/548-2723 703/295-6300
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 180 Technology Parkway Peachtree Corners, GA 30092 www.ashrae.org	800/527-4723 404/636-8400
ASLA	American Society of Landscape Architects 636 Eye Street, NW Washington, DC 20001-3736 www.asla.org	202/898-2444
ASME	American Society of Mechanical Engineers Two Park Avenue New York, NY 10016-5990 www.asme.org	800/834-2763

ASPE	American Society of Plumbing Engineers 6400 Shafer Court, Suite 350 Rosemont, IL 60018 http://aspe.org	847/296-0002
ASQ	American Society for Quality P.O. Box 3005 Milwaukee, WI 53201-3005 or 600 North Plankinton Avenue Milwaukee, WI 53203 http://asq.org	800/248-1946 414/272-8575
ASSE	American Society of Sanitary Engineering 18927 Hickory Creek Dr., Suite 220 Mokena, IL 60448 www.asse-plumbing.org	708/995-3019
ASTM	ASTM International 100 Barr Harbor Drive PO Box C700 West Conshohocken, PA, 19428-2959 www.astm.org	610/832-9500
AWCI	Association of the Wall and Ceiling Industry 513 West Broad Street, Suite 210 Falls Church, VA 22046 www.awci.org	703/538-1600
AWPA	American Wood Protection Association (formerly American Wood Preservers Institute) P.O. Box 361784 Birmingham, AL 35236-1784 www.awpa.com	205/733-4077
AWS	American Welding Society 8669 NW 36 Street, Suite 130 Miami, FL 33166 www.aws.org	800/443-9353 305/443-9353
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165-5874 www.awinet.org	571/323-3636
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 www.awwa.org	800/926-7337 303/794-7711

BHMA	Builders Hardware Manufacturers Association 355 Lexington Avenue, 15th Floor New York, NY 10017 www.buildershardware.com	212/297-2122
BIA	The Brick Industry Association 12007 Sunrise Valley Drive, Suite 430 Reston, VA 20191 www.gobrick.com	703/620-0010
CGA	Compressed Gas Association 8484 Westpark Drive, Suite 220 McLean, VA 22102 www.cganet.com	703/788-2700
CISCA	Ceilings & Interior Systems Construction Association 1010 Jorie Blvd, Suite 30 Oak Brook, IL 60523 www.cisca.org	630/584-1919
CISPI	Cast Iron Soil Pipe Institute 2401 Fieldcrest Dr. Mundelein, IL 60060 www.cispi.org	224/864-2910
CLFMI	Chain Link Fence Manufacturers Institute 10015 Old Columbia Road, Suite B-215 Columbia, MD 21046 chainlinkinfo.org	301/596-2583
CPA	Composite Panel Association 19465 Deerfield Avenue, Suite 306 Leesburg, VA 20176 www.compositepanel.org	703/724-1128
CPSC	Consumer Product Safety Commission 4330 East-West Highway Bethesda, MD 20814 www.cpsc.gov	800/638-2772
CRA	California Redwood Association 818 Grayson Road, Suite 201 Pleasant Hill, CA 94523 www.calredwood.org	925/935-1499

CRI	Carpet and Rug Institute 100 S. Hamilton Street Dalton, GA 30722-2048 www.carpet-rug.org	706/278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg, IL 60173-4758 www.crsi.org	847/517-1200
CSI	The Construction Specifications Institute 123 North Pitt St, Suite 450 Alexandria, VA 22314 www.csinet.org	800/689-2900
CTIOA	Ceramic Tile Institute of America 12061 Jefferson Blvd. Culver City, CA 90230-6219 www.ctioa.org	310/574-7800
DHA	Decorative Hardwoods Association (formerly Hardwood Plywood & Veneer Association) 42777 Trade West Dr. Sterling, VA 20166 https://www.decorativehardwoods.org/	703/435-2900
DHI	Door and Hardware Institute (formerly National Builders Hardware Association) 2001 K Street NW, 3rd Floor North Washington, DC 20006 www.dhi.org	202/367-1134
DIPRA	Ductile Iron Pipe Research Association P.O. Box 190306 Birmingham, AL 35219 www.dipra.org	205/402-8700
DOC	U.S. Department of Commerce 1401 Constitution Ave., NW Washington, DC 20230 www.commerce.gov	202/482-2000
DOT	U.S. Department of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590 www.dot.gov	855/368-4200
EJMA	Expansion Joint Manufacturers Association, Inc. 25 North Broadway Tarrytown, NY 10591 www.ejma.org	914/332-0040

EPA	Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 www.epa.gov	202/272-0167
FCICA	Floor Covering Installation Contractors Association 800 Roosevelt Rd., Bldg. C, Suite 312 Glen Ellyn, IL 60137 www.fcica.com	630/672-3702
FGIA	Fenestration and Glazing Industry Alliance 1900 E Golf Rd, Suite 1250 Schaumburg, IL 60173 https://fgiaonline.org/	847/303-5664
FM Global	Factory Mutual Insurance Company Amy Daley Global Practice Leader – Education, Public Entities, Health Care FM Global 270 Central Avenue Johnston, RI 02919-4949 www.fmglobal.com	401/275-3000 401/275-3029
FS	General Services Administration (GSA) Index of Federal Specifications, Standards and Commercial Item Descriptions 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407 www.gsa.gov	202/619-8925
GA	The Gypsum Association 962 Wayne Ave., Suite 620 Silver Spring, MD 20910 www.gypsum.org	301/277-8686
HMA	Hardwood Manufacturers Association One Williamsburg Place, Suite 108 Warrendale, PA 15086 http://hmamembers.org	412/244-0440

IAPMO	International Association of Plumbing and Mechanical Officials (formerly the Western Plumbing Officials Association) 4755 E. Philadelphia St. Ontario, CA 91761 www.iapmo.org	909/472-4100
ICC	International Code Council 500 New Jersey Avenue, NW, 6th Floor Washington, DC 20001 www.iccsafe.org	888/422-7233
IEEE	Institute of Electrical and Electronics Engineers 3 Park Avenue, 17th Floor New York, NY 10016-5997 www.ieee.org	212/419-7900
IES	Illuminating Engineering Society 120 Wall Street, Floor 17 New York, NY 10005-4001 www.ies.org	212/248-5000
ITRK	Intertek Testing Services 3933 US Route 11 Cortland, NY 13045 www.intertek.com	607/753-6711
MCAA	Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850 www.mcaa.org	301/869-5800
MMPA (formerly WMMPA)	Moulding & Millwork Producers Association (formerly Wood Moulding & Millwork Producers Association) 507 First Street Woodland, CA 95695 www.wmmpa.com	530/661-9591 800/550-7889
MSS	Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry, Inc. 127 Park Street, NE Vienna, VA 22180-4602 http://mss-hq.org	703/281-6613
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Rd. Bldg. C, Suite 312 Glen Ellyn, IL 60137 www.naamm.org	630/942-6591

NAIMA	North American Insulation Manufacturers Association P.O. Box 1906 Alexandria, VA 22313 https://insulationinstitute.org/	703/684-0084
NALP	National Association of Landscape Professionals (formerly Professional Landcare Network) 12500 Fair Lakes Circle, Suite 200 Fairfax, VA 22033 https://www.landscapeprofessionals.org/	703/736-9666
NAPA	National Asphalt Pavement Association 6406 Ivy Lane, Suite 350 Greenbelt, MD 20770-1441 www.asphaltpavement.org	888/468-6499 301/731-4748
NCSPA	National Corrugated Steel Pipe Association 14070 Proton Road, Suite 100 Dallas, TX 75244 www.ncspa.org	972/850-1907
NCMA	National Concrete Masonry Association 13750 Sunrise Valley Drive Herndon, VA 20171-4662 www.ncma.org	703/713-1900
NEBB	National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877 www.nebb.org	301/977-3698
NECA	National Electrical Contractors Association 1201 Pennsylvania Ave. NW Washington, D.C., 20004 www.necanet.org	202/991-6300
NEMA	National Electrical Manufacturers Association 1300 North 17th Street N, Suite 900 Rosslyn, VA 22209 www.nema.org	703/841-3200
NEII	National Elevator Industry, Inc. 5537 SW Urish Road Topeka, KS 66610 https://nationalelevatorindustry.org/	703/589-9985
NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471 www.nfpa.org	800/344-3555 855/274-8525

NGA (formerly GANA)	National Glass Association (merged with Glass Association of North America) 1945 Old Gallows Road Suite 750 Vienna, VA 22182 www.glass.org	866/342-5642 Ext 127
NHLA	National Hardwood Lumber Association PO Box 34518 Memphis, TN 38184 www.nhla.com	901/377-1818
NIA	National Insulation Association 516 Herndon Pkwy., Ste. D Herndon, VA 20170 www.insulation.org	703/464-6422
NRCA	National Roofing Contractors Association 10255 W. Higgins Road, Suite 600 Rosemont, IL 60018-5607 www.nrca.net	847/299-9070
NSF	NSF International 789 N. Dixboro Road Ann Arbor, MI 48113-0140 www.nsf.org	800/673-6275 734/769-8010
NSI	Natural Stone Institute (formerly Marble Institute of America) 380 E. Lorain St. Oberlin, OH 44074 https://www.naturalstoneinstitute.org/	440/250-9222
NTMA	National Terrazzo and Mosaic Association 209 N. Crockett Street, Suite 2 PO Box 2605 Fredericksburg, TX 78624 www.ntma.com	800/323-9736
OSHA	Occupational Safety and Health Act U.S. Department of Labor Occupational Safety & Health Administration 200 Constitution Ave., NW Washington, DC 20210 www.osha.gov	800/321-OSHA (6742)

PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077 or 200 Massachusetts Ave NW, Suite 200 Washington, DC 20001 www.cement.org	847/966-6200 202/408-9494
PCA	Painting Contractors Association (formerly Painting and Decorating Contractors of America) 2316 Millpark Drive Maryland Heights, MO 63043 https://www.pcapainted.org/	800/322-7322
PCI	Precast/Prestressed Concrete Institute 8770 W. Bryn Mawr Ave., Suite 1150 Chicago, IL 60631 www.pci.org	312/786-0300
PDI	Plumbing & Drainage Institute 800 Turnpike Street, Suite 300 North Andover, MA 01845 http://pdionline.org	978/557-0720 800/589-8956
PEI	Porcelain Enamel Institute, Inc. P.O. Box 920220 Norcross, GA 30010 www.porcelainenamel.com	770/676-9366
PG&E	Pacific Gas & Electric Company P.O. Box 997300 Sacramento, CA 95899-7300 www.pge.com	800/743-5000
PLIB	Pacific Lumber Inspection Bureau (formerly West Coast Lumber Inspection Bureau) 1010 South 336th Street, Suite 210 Federal Way, WA 98003-7394 https://www.plib.org/	253/835-3344
RFCI	Resilient Floor Covering Institute 115 Broad Street, Suite 201 La Grange, GA 30240 www.rfci.com	706/882-3833
SDI	Steel Deck Institute P.O. Box 426 Glenshaw, PA 15116 www.sdi.org	412/487-3325

SDI	Steel Door Institute 30200 Detroit Road Westlake, OH 44145 www.steeldoor.org	440/899-0010
SJI	Steel Joist Institute 140 West Evans Street, Suite 203 Florence, SC 29501 http://steeljoist.org	843/407-4091
SMA	Stucco Manufacturers Association 5753 E Santa Ana Cyn Rd, #G-156 Anaheim, CA 92807 www.stuccomfgassoc.com	714/473-9579
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, VA 20151-1219 www.smacna.org	703/803-2980
SPI	SPI: The Plastics Industry Trade Association, Inc. 1425 K St. NW, Suite 500 Washington, DC 20005 www.plasticsindustry.org	202/974-5200
TCA	The Tile Council of North America 100 Clemson Research Blvd. Anderson, SC 29625 www.tcnatile.com	864/646-8453
TPI	Truss Plate Institute 2670 Crain Highway, Suite 203 Waldorf, MD 20601 www.tpinst.org	240/587-5582
TPI	Turfgrass Producers International 444 E. Roosevelt Road #346 Lombard, IL 60148 www.turfgrasssod.org	800/405-8873 847/649-5555
TCIA	Tree Care Industry Association (formerly the National Arborist Association) 670 N Commercial Street, Suite 201 Manchester, NH 03101 www.tcia.org	603/314-5380 800/733-2622

TVI	The Vermiculite Institute c/o The Schundler Company 10 Central Street Nahant, MA 01908 www.vermiculiteinstitute.org	732/287-2244
UL	Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com	847/272-8800 877/854-3577
UNI	Uni-Bell PVC Pipe Association 201 E. John Carpenter Freeway, Suite 750 Irving, TX 75062 www.uni-bell.org	972/243-3902
USDA	U.S. Department of Agriculture 1400 Independence Ave., S.W. Washington, DC 20250 www.usda.gov	202/720-2791
WA	Wallcoverings Association 35 E Wacker Dr., Suite 850 Chicago, IL 60601 www.wallcoverings.org	312/224-2574
WCMA	Window Covering Manufacturers Association 355 Lexington Avenue 15th Floor New York, NY 10017 www.wcmanet.org	212/297-2122
WDMA	Window & Door Manufacturers Association 2001 K Street NW, 3rd Floor North Washington, D.C. 20006 www.wdma.com	202/367-1157
WI	Woodwork Institute 1455 Response Road, Suite 110 Sacramento, CA 95815 www.wicnet.org	916/372-9943
WRI	Wire Reinforcement Institute 942 Main Street, Suite 300 Hartford, CT 06103 www.wirereinforcementinstitute.org	860/240-9545
WWCA	Western Wall & Ceiling Contractors Association 1910 N. Lime St. Orange, CA 92865 www.wwcca.org	714/221-5520

WWPA	Western Wood Products Association (formerly Redwood Inspection Service) 1500 SW First Ave., Suite 870 Portland, OR 97201 www.wwpa.org	503/224-3930
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PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Purchase of Materials and Equipment;
- B. Special Conditions;
- C. Imported Materials Certification.

1.02 MATERIAL AND EQUIPMENT

- A. Only items approved by the District and/or Design Professional shall be used.
- B. Contractor shall submit lists of products and other product information in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.

1.03 MATERIAL AND EQUIPMENT COLORS

- A. The District and/or Architect will provide a schedule of colors.
- B. No individual color selections will be made until after approval of all pertinent materials and equipment and after receipt of appropriate samples in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.
- C. Contractor shall request priority in writing for any item requiring advance ordering to maintain the approved Construction Schedule.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall deliver manufactured materials in original packages, containers, or bundles (with seals unbroken), bearing name or identification mark of manufacturer.
- B. Contractor shall deliver fabrications in as large assemblies as practicable; where specified as shop-primed or shop-finished, package or crate as required to preserve such priming or finish intact and free from abrasion.
- C. Contractor shall store materials in such a manner as necessary to properly protect them from damage. Materials or equipment damaged by handling, weather, dirt, or from any other cause will not be accepted.

- D. Materials are not acceptable that have been warehoused for long periods of time, stored or transported in improper environment, improperly packaged, inadequately labeled, poorly protected, excessively shipped, deviated from normal distribution pattern, or reassembled.
- E. Contractor shall store material so as to cause no obstructions of sidewalks, roadways, access to the Site or buildings, and underground services. Contractor shall protect material and equipment furnished under Contract.
- F. Contractor may store materials on Site with prior written approval by the District, all material shall remain under Contractor's control and Contractor shall remain liable for any damage to the materials. Should the Project Site not have storage area available, the Contractor shall provide for off-site storage at a bonded warehouse and with appropriate insurance coverage at no cost to District.
- G. When any room in Project is used as a shop or storeroom, the Contractor shall be responsible for any repairs, patching, or cleaning necessary due to that use. Location of storage space shall be subject to prior written approval by District.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers listed in various sections of Contract Documents are names of those manufacturers that are believed to be capable of supplying one or more of items specified therein.
- B. The listing of a manufacturer does not imply that every product of that manufacturer is acceptable as meeting the requirements of the Contract Documents.

2.02 FACILITIES AND EQUIPMENT

Contractor shall provide, install, maintain, and operate a complete and adequate facility for handling, the execution, disposal, and distribution of material and equipment as required for proper and timely performance of Work connected with Contract.

2.03 MATERIAL REFERENCE STANDARDS

Where material is specified solely by reference to "standard specifications" and if requested by District, Contractor shall submit for review data on actual material proposed to be incorporated into Work of Contract listing name and address of vendor, manufacturer, or producer, and trade or brand names of those materials, and data substantiating compliance with standard specifications.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. Where not more specifically described in any other Contract Documents, workmanship shall conform to methods and operations of best standards and accepted practices of trade or trades involved and shall include items of fabrication, construction, or installation regularly furnished or required for completion (including finish and for successful operation, as intended).
- B. Work shall be executed by tradespersons skilled in their respective lines of Work. When completed, parts shall have been durably and substantially built and present a neat appearance.

3.02 COORDINATION

- A. Contractor shall coordinate installation of Work so as to not interfere with installation of others. Adjustment or rework because of Contractor's failure to coordinate will be at no additional cost to District.
- B. Contractor shall examine in-place work for readiness, completeness, fitness to be concealed or to receive other work, and in compliance with Contract Documents. Concealing or covering Work constitutes acceptance of additional cost which will result should in-place Work be found unsuitable for receiving other Work or otherwise deviating from the requirements of the Contract Documents.

3.03 COMPLETENESS

Contractor shall provide all portions of the Work, unless clearly stated otherwise, installed complete and operational with all elements, accessories, anchorages, utility connections, etc., in manner to assure well-balanced performance, in accordance with manufacturer's recommendations and by Contract Documents. For example, electric water coolers require water, electricity, and drain services; roof drains require drain system; sinks fit within countertop, etc. Terms such as "installed complete," "operable condition," "for use intended," "connected to all utilities," "terminate with proper cap," "adequately anchored," "patch and refinish," "to match similar," should be assumed to apply in all cases, except where completeness of functional or operable condition is specifically stated as not required.

3.04 APPROVED INSTALLER OR APPLICATOR

Installation by a manufacturer's approved installer or applicator is an understood part of Specifications and only approved installer or applicator is to provide on-site Work where specified manufacturer has on-going program of approving (i.e. certifying, bonding, re-warranting) installers or applicators. Newly established relationships between a manufacturer and an installer or applicator who does not have other approved applicator work in progress or completed is not approved for this Project.

3.05 MANUFACTURER'S RECOMMENDATIONS

All installations shall be in accordance with manufacturer's published recommendations and specific written directions of manufacturer's representative. Should Contract Documents differ from recommendations of manufacturer or directions of his representative, Contractor shall analyze differences, make recommendations to the District and the Architect in writing, and shall not proceed until interpretation or clarification has been issued by the District and/or the Architect.

END OF DOCUMENT

QUALITY CONTROL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include the furnishing of all labor, materials and equipment required to complete all the tests and inspections of materials indicated on the drawings and as specified herein.

1.02 WORK INCLUDED

- a. Earthwork: Inspection of subgrade improvement operations, compacted fill and field density tests.
- b. Concrete Work: Testing and certification of concrete ingredients, compression cylinders, reinforcing steel and placement inspections.
- c. Foam Roofing: Testing of foam density, inspection of foam and top-coat thickness.

1.03 OWNER'S INSPECTOR

- a. A DSA Certified project inspector employed by the Owner in accordance with the requirements of State of California Code of Regulations, Title 24 will be assigned to the work. Their duties are specifically defined in Part 1, Title 24, C.C.R., Sec. 4-342.
- b. 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 Prime 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 Prime Contractor from any obligation to fulfill this Contract.
- c. 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 Prime Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the Owner may correct same and charge the expense to the Prime Contractor. 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 the work already completed by removing or tearing out the same, the Prime Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any respect due to the fault of the Prime 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 Prime Contractor.

1.04 COOPERATION

- a. Laboratory: Shall cooperate with all trades whose work affects or is affected by the tests and inspections.
- b. Cooperation: The Prime Contractor to cooperate with and provide testing laboratory opportunity and assistance in taking samples, making field tests and making inspections.

1.05 SPECIAL PROVISIONS

- a. Governing Agency: Shall be as specified in Section 01 41 00.
- b. Laboratory: To be approved by Owner, Architect, Structural Engineer and Governing Agency. Laboratory shall be in the employ of the Owner. (Laboratory of Record may not be selected or known at time of bid or award of contract).
- c. Duties of Testing Laboratory: Inspect stock, mark identified stock, select and mark test specimens, perform required tests, inspections as specified, furnish required reports and certificates.
- d. Reports: To be executed immediately upon conclusion of each procedure and forwarded to:

Architect	Structural Engineer	Contractor
Owner	Subcontractor	Job Inspector
Governing Agency		Construction Manager

- (1) One copy of all tests reports shall be forwarded to The Division of the State Architect by the testing agency. Such 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 Title 24 and with the approved specifications. Test reports shall show the specified design strength. They shall also state definitely whether or not the material or materials tested comply with requirements.
 - (2) Verification of Test Reports: Each testing agency shall submit to the Division of the State Architect a verified report in duplicate covering all of the 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, covering all tests.
- e. Payment: The Owner shall pay for all tests. When in the opinion of the Architect or the Division of the State Architect, additional tests are required, then such tests and inspection shall be paid for by the Owner but the amount paid shall be deducted from the Contract Price. Examples of such additional tests are: Tests of material substituted for previously accepted materials, unidentified materials, retests made necessary by the failure of materials to comply with the requirements of the specifications and load tests necessary because certain portions of the structure have not fully met specification or plan requirements.
- f. Selection of Samples: All samples and specimens for testing shall be selected by the inspector or by the testing laboratory, but not by the Contractor. The Contractor shall, at his own expense, furnish, package, mark and deliver all samples to be tested, when

so directed by the inspector, testing laboratory, or as required by the specifications. Delivery of samples to the testing laboratory shall be made in ample time to allow tests to be made without delaying construction. No extra time will be allowed for the completion of the work by reason of delay in testing samples. The Prime Contractor shall allow free access at all times to the representatives of the testing laboratory to the sources from which samples are taken.

- g. Preparation of Specimens: Taken by and at expense of fabricator under direction of testing laboratory and machined or prepared to conform to appropriate ASTM specification. Cost of machining specimens is considered part of the testing.
- h. Architect and Structural Engineer reserve the right to demand for test and special examination any materials or part thereof to insure compliance with specifications, and may reject for satisfactory replacement, any material or part judged defective as a result thereof. Applies also to materials or sources of same substituted for those previously approved. Such tests or examinations, even though not specified shall be performed as and when required. Costs paid for by Owner, but the amount paid shall be deducted from the Contract.

1.06 RELATED & APPLICABLE CODES

TITLE 24, PART 2 (2019 CBC) VOLUME 2 **TESTS AND INSPECTION REQUIREMENTS**

FOUNDATIONS AND RETAINING WALLS **CHAPTER 18A**

INSPECTION:

- 1. Piles 1705 A.7
- 2. Pier Foundations 1705 A.8

CONCRETE **CHAPTER 19A**

MATERIALS:

- 1. Portland Cement 1705 A.3.2; 1910 A.1
- 2. Concrete Aggregates 1705 A.3.2; 1903 A.5
- 3. Shotcrete Aggregates 1908 A.3
- 4. Reinforcing Bars 1705 A.3.2; 1910 A.2
- 5. Prestressing Steel and Anchorage 1705 A.3.2; 1910 A.3

QUALITY:

- 1. Proportions of Concrete 1910 A.1; Table 1705 A.3, Item 5
- 2. Strength Tests of Concrete 1905 A.1.15; Table 1705 A.3, Item 5, ACI 318 Sec. 26.4, 26.12
- 3. Splitting Tensile Tests
- 4. Shotcrete Proportions 1908 A.2
- 5. Shotcrete Cores 1908 A.5
- 6. Composite Construction Cores 1910 A.4

INSPECTION:

- 1. Batch Plant 1705 A.3.3
- 2. Waiver of Batch Plant 1705 A.3.3.1
- 3. Preplacement and Placing 1705A.3.5; 1705A.3.6
- 4. Prestressed Concrete 1705 A.3.4

5. Shotcrete
6. Reinforcing Bar Welding
7. Post-Installed Anchors in Concrete
8. Reinforcing Bar Welding

1705 A.19; 1908 A
 1903 A.8; Table 1705 A.2.1
 1910 A.5; Table 1705 A.3, Items 4a&4b
 1903A.8; 1705A.3.1; Table 1705 A.3
 Item 2; Table 1705 A.2.1, Item 5b

ALUMINUM

CHAPTER 20A

MATERIALS:

1. Alloys
2. Identification

2002.1
 2002.1

INSPECTION:

1. Welding

2003.1

MASONRY

Chapter 21A

MATERIALS:

1. Masonry Units
2. Portland Cement, Lime
3. Mortar & Grout Aggregates
4. Reinforcing Bars

2103 A.1
 2103 A
 2103 A.2; 2103 A.3
 2103 A.14

QUALITY:

1. Portland Cement Tests
2. Mortar and Grout Tests
3. Masonry Prism Tests
4. Masonry Core Tests
5. Masonry Unit Tests
6. Reinforcing Bar Tests

1910 A.1
 2105 A.3
 2105 A.2
 2105 A.4
 2105 A.2, 2105 A.3; 1705 A.4
 1910 A.2

INSPECTION:

1. Reinforced Masonry
2. Reinforced Bar Welding
3. Post-Installed Anchors in Masonry

1705 A.4
 1903 A.8, 1705A.3.1, Table 1705 A.3,
 Item 2, Table 1705 A.2.1, Item 5b
 1705 A.4; 1910 A.5; 1616 A.1.19,
 Table 1705 A.3, Items 4a & 4b

STEEL

CHAPTER 22A

MATERIALS:

1. Structural Steel
2. Cold Formed Steel
3. Identification

2205 A.1
 2210 A.1
 2202 A.1

QUALITY:

1. Tests of Structural and Cold Formed Steel
2. Tests of High Strength Bolts, Nuts, Washers
3. Tests of End Welded Studs
4. Steel Joists

2211 A.1
 2213 A.1
 2213 A.2
 2207 A; 1705 A.2.3.1

5. Non Destructive Weld Tests

1705 A.2.1

INSPECTION:

- | | |
|------------------------------------|-----------------------------|
| 1. Shop Fabrication | 1704 A.2.5; 1705 A.2 |
| 2. Welding | 1705 A.2.1 |
| 3. Nelson Stud Welding | 1705 A.2.1 |
| 4. High Strength Bolt Installation | 1705 A.2.1; Table 1705A.2.1 |

WOOD**CHAPTER 23A****MATERIALS:**

- | | |
|--------------------------|----------|
| 1. Lumber and Plywood | 2303.1 |
| 2. Glu-Laminated Members | 2303.1.3 |

INSPECTION:

- | | |
|--------------------------|--------------------------------|
| 1. Glu-Laminated Members | 1705 A.5.4; 2303.1.3 |
| 2. Timber Connectors | 1705 A.5.6 |
| 3. Manufactured Trusses | 1705 A.5.2; 1705.5.3; 2303.4.7 |

PART 2 EXECUTION

2.01 EARTHWORK (Refer to Section 31 20 00)

- a. Testing Agency: Any required foundation consultation, examination or testing shall be done by an approved Geotechnical Engineer, per T24, Section 3304.1.
- b. Consultation or Procedures for this part of the work shall be only as requested by the Architect and Structural Engineer at the timework on the site is commenced and may consist of the following:
 - (1) Examination of exposed subgrades resulting from the cutting operation, including field density tests if considered necessary.
 - (2) Verify completed foundation excavations.
 - (3) Continuous inspection of any required filling and backfilling, including field density tests if considered necessary.
 - (4) Imported or Native Fill Material: Approved material, perform suitability tests for compaction, qualities and optimum moisture if required.
 - (5) Provide Continuous Inspection Supervision during removal and recompaction of existing soil and placement of fill.
 - (6) Inspect and approve completed footing excavations.
 - (7) Field Density Tests: Shall be made on samples from material in place as required to verify proper compaction densities of fills and backfills.
- c. Densities and Method: Densities specified relate to ASTM Designation D-1557 Method A.

2.02 CONCRETE WORK (Refer to Section 03 10 00)

- a. Inspections:
 - (1) Notification: The Prime Contractor shall notify the following people, giving advance notice prior to commencing the designated work:

Person Notified	Advance Notice	Prior to Commencing	For Inspection
Architect	24 hours	Form Work	Excav.

Architect & Inspector	24 hours	Pouring Conc.	Form & Steel
Governing Agency	48 hours	Pouring Conc.	Form & Steel

- (2) No concrete shall be poured except in the presence of the Owner's Inspector and only after the forms and reinforcing steel have been approved by the Structural Engineer or his representative.
- (3) Batch Plant Inspections: When transit mixed concrete is used, continuous inspection shall be maintained at the plant by a qualified concrete technician who shall issue tickets certifying that quantities and quality of all materials used in the concrete are in accordance with these specifications and the approved design mix. The Owner will pay the costs of this inspection. This inspection will not be required for non-structural concrete (as defined in Paragraph (4) following).
- (4) Bonded Weightmaster Certificates: Non-structural concrete such as floor slabs on grade, walks, curb & gutter, etc., shall not require continuous batch plant inspection, but instead, a bonded weightmaster shall furnish notarized affidavits certifying that quantities and quality of all materials used in the concrete are in accordance with these specifications and the approved mix design. Waiver of batch plant inspection shall comply with Title 24, 2013 C.B.C., 2012 IBC, Vol 2, Sec. 1705A3.3.2.

b. Tests: All concrete materials to be tested and reported prior to any use of same.

- (1) Portland Cement: Shall be tested in accordance with T24, Section 1916A.1 and ASTM C-150. One sample shall be taken for each 100 tons of cement except that when used in bulk loading ready mix plants where separate bins for pretested cement are not available, grab samples shall be taken for each shipment of cement placed in the bin with not less than one sample being taken for each day's pour and such samples shall be subsequently tested if required by the Architect, structural engineer or the Division of the State Architect.
- (2) Aggregate: Shall be in conformance with T24, Sec. 1903A.3
- (3) Reinforcing Steel: To be tested prior to use for compliance with T24, Sections 1916A.2 and 1903A.8 and ASTM A-615 requirements, and comply with quality standards of T-24, Section 2102A.2.10. Welded rebar shall be inspected and certified per T24, Section 1704 A.3.1.1 and 1705.2.2.1.2.
 - (a) Samples: To be selected by representative of testing laboratory from material at the building site or place of distribution, to consist of two (2) pieces, each 18 inches (18") long of each size, furnished, cut and prepared for testing by Contractor, marked and delivered by representative of testing laboratory.
 - (b) Tests: One (1) tension and one (1) bend tests shall be made of each size of reinforcing steel including wire fabric. One (1) series of tests shall be made for each ten (10) tons or fraction thereof of each size of reinforcing steel if the bundles as delivered can be identified as to heat number and the mill analysis accompany the report. If they cannot be identified as to heat number, then one (1) series of tests shall be made from each two and one-half (2-1/2) tons or fraction thereof.
- (4) Cylinder Tests: Shall comply with T24, 1905A.6.2.
 - (a) Three (3) cylinders of concrete shall be made for each fifty- (50) cubic yards of each grade of concrete or fraction thereof being placed each day. Each cylinder shall be dated, given a number, the point in the structure from which the sample was taken noted thereon and the slump noted thereon.
 - (b) Test cylinders shall be made at the job and stored in the testing laboratory in accordance with ASTM C-31. At the end of twenty-four

(24) hours after making, the cylinders shall be stored under moist curing conditions at approximately 70 degrees F. and maintained therein until tested. The cylinders shall be tested in accordance with ASTM C-31. The cylinders shall develop the following minimum ultimate compressive strengths:

Design <u>Strength</u>	7 Day <u>Test</u>	28 Day <u>Test</u>	Location <u>Used</u>
2500 p.s.i.	1500 p.s.i.	2500 p.s.i.	Flatwork
3000 p.s.i.	1800 p.s.i.	3000 p.s.i.	Foundations, Ret. Wall, and Light Pole Footings
4000 p.s.i.	2400 p.s.i.	4000 p.s.i.	Bleacher Footings

- (c) If the strengths of the first two cylinder tests are satisfactory, the third cylinder shall not be tested, but destroyed. The third cylinder shall be tested if the strengths of the first two cylinders are not satisfactory.
 - (d) If the strength of the cylinders does not meet the minimum as mentioned above, core tests of the hardened concrete shall be made in accordance with T24, Section 1905A.6.5, and ASTM C-31. If the core tests show the concrete strength to be deficient, the concrete shall be deemed defective and removed. The Prime Contractor shall pay all costs of these core tests.
- c. Laboratory Designed Mixes: See Paragraph 3.01, Proportioning of Concrete Mixes, Section 03 10 00, Concrete Work.
 - d. Mix Design;
 - (1) Mix design to be stamped and signed by a California registered Civil Engineer.
 - (2) Maximum w/c shall be 0.50.

2.03 FOAM ROOFING (Refer to Section 07 57 00)

- a. Testing Agency: Any required roofing consultation; an approved laboratory shall do examination or testing. Costs paid by Owner.
- b. Consultation: This portion of the work shall be as requested by the Architect or Inspector and these specifications and shall consist of at least the following prior to "Top-Coat" application:
- c. Inspections:
 - (1) Notification: The Prime Contractor shall notify the following people, giving advance notice prior to commencing the designated work:

Personal <u>Notified</u>	Advance <u>Notice</u>	Prior to <u>Commencing</u>	For <u>Inspection</u>
Architect & Inspector	24 hours	Priming	Roof Deck
Architect & Inspector	24 hours	"Top-Coat"	Density & Analysis
 - (2) No foam shall be sprayed except in the presence of the Owner's Inspector and only after the roof deck has been approved.
 - (3) No "Top-Coat" shall be applied except in the presence of the Owner's Inspector and only after foam has been tested and approved.
- d. Tests: Foam shall be tested prior to "Top-Coating".

- (1) Polyurethane foam shall be tested in accordance with ASTM D-1621, D-1622, and D-1623. One 1-1/2" diameter core sample shall be taken for each (10) squares (1,000 s.f.) of roof area.
- (2) Polyurethane foam shall be measured for specified thickness by use of a measured "needle-probe" at spacings to satisfy the Inspector as to minimum specified thickness and new slopes (1 per 500 sq. ft. min.).
- (3) "Top-Coat" shall be measured with a micro comparator to establish minimum dry-film thickness as compared to specified minimums. One 1-1/2 diameter

END OF SECTION
12/14/2022

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Site Standards; and
- D. Construction Waste Management and Disposal.

1.02 TEMPORARY UTILITIES:

- A. Electric Power and Lighting:
 - (1) District will pay for power during the course of the Work, unless otherwise stipulated in Prime Contractor's Work Scope Summary. To the extent power is available in the building(s) or on the Site, Contractor may use the District's existing utilities. Contractor shall be responsible for providing temporary facilities required to deliver that power service from its existing location in the building(s) or on the Site to point of intended use.
 - (2) Contractor shall verify characteristics of power available in building(s) or on the Site. Contractor shall take all actions required to make modifications where power of higher voltage or different phases of current are required. Contractor shall be fully responsible for providing that service and shall pay all costs required therefor.
 - (3) Contractor shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work, as indicated in Prime Contractor Work Scope Summary: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.
 - (4) Contractor shall be responsible for maintaining existing lighting levels in the project vicinity should temporary outages or service interruptions occur.
- B. Heat and Ventilation:
 - (1) Contractor shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to

protect materials and finishes from damage due to improper temperature and humidity conditions. Portable heaters shall be standard units complete with controls.

- (2) Contractor shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.
- (3) Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.

C. Water:

- (1) District shall pay for water used during the course of the Work, unless otherwise stipulated in Prime Contractor's Work Scope Summary. Contractor shall coordinate use of water meter in compliance with local water agency requirements. To the extent water is then available in the building(s) or on the Site, Contractor may use the District's existing utilities for reasonable use by Contractor and all Subcontractors. Contractor shall be responsible for providing temporary facilities required to deliver such utility service from its existing location in the building(s), on the Site, or other location approved by the local water agency, to point of intended use.
- (2) Contractor shall use backflow preventers on water lines at point of connection to District's water supply. Backflow preventers shall comply with requirements of Uniform Plumbing Code.
- (3) Contractor shall make potable water available for human consumption.

D. Sanitary Facilities:

- (1) District shall provide sanitary temporary facilities.
- (2) Use of toilet facilities in the Work under construction shall not be permitted except by consent of the Inspector and the District.

E. Fire Protection:

- (1) Prime Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire, State Fire Marshall and/or its designee.
- (2) Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.

F. Trash Removal:

- (1) Contractor shall provide trash removal on a timely basis. Under no circumstance shall Contractor use District trash service.

G. Field Office:

- (1) If Contractor chooses to provide a field office, it shall be an acceptable construction trailer that is well-lit and ventilated. The construction trailer shall be equipped with shelves, desks, filing cabinet, chairs, and such other items of equipment needed. Trailer and equipment are the property of the Contractor and must be removed from the Site upon completion of the Work. Contractor may use the corridor adjacent to the construction area for an office area, if approved in writing by District.
- (2) Contractor shall provide any additional electric lighting and power required for the trailer. Contractor shall make adequate provisions for heating and cooling as required.

1.03 CONSTRUCTION AIDS:

A. Plant and Equipment:

- (1) Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment; and for conveyances for transporting workers. Include elevators, hoists, debris chutes, and other equipment, tools, and appliances necessary for performance of the Work.
- (2) Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the District.

B. None of the District's tools and equipment shall be used by Contractor for the performance of the Work.

1.04 BARRIERS AND ENCLOSURES:

- A. Prime Contractor shall obtain the District's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation. District will provide project perimeter fencing.
- B. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises, the public, and workers. Contractor shall also protect the Work and existing facilities from the elements, and adjacent construction and improvements, persons, and trees and plants from damage and injury from demolition and construction operations.
- C. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.

D. Tree and Plant Protection:

- (1) Contractor shall preserve and protect existing trees and plants on the Premises that are not designated or required to be removed, and those adjacent to the Premises.
- (2) Contractor shall provide barriers to a minimum height of 4'-0" around drip line of each tree and plant, around each group of trees and plants, as applicable, in the proximity of demolition and construction operations, or as denoted on the Plans.
- (3) Contractor shall not park trucks, store materials, perform Work or cross over landscaped areas. Contractor shall not dispose of paint thinners, water from cleaning, plastering or concrete operations, or other deleterious materials in landscaped areas, storm drain systems, or sewers. Plant materials damaged as a result of the performance of the Work shall, at the option of the District and at Contractor's expense, either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged materials as determined by the District.
- (4) Contractor shall remove soil that has been contaminated during the performance of the Work by oil, solvents, and other materials which could be harmful to trees and plants, and replace with good soil, at Contractor's expense.
- (5) Excavation around Trees:
 - (a) Excavation within drip lines of trees shall be done only where absolutely necessary and with written permission from the District.
 - (b) Where trenching for utilities is required within drip lines, tunneling under and around roots shall be by hand digging and shall be approved by the District. Main lateral roots and taproots shall not be cut. All roots 2 inches in diameter and larger shall be tunneled under and heavily wrapped with wet burlap so as to prevent scarring or excessive drying. Smaller roots that interfere with installation of new work may be cut with prior approval by the District. Roots must first be cut with a Vermeer, or equivalent, root cutter prior to any trenching.
 - (c) Where excavation for new construction is required within drip line of trees, hand excavation shall be employed to minimize damage to root system. Roots shall be relocated in backfill areas wherever possible. If encountered immediately adjacent to location of new construction, roots shall be cut approximately 6 inches back from new construction.
 - (d) Approved excavations shall be carefully backfilled with the excavated materials approved for backfilling. Backfill shall conform to adjacent grades without dips, sunken areas, humps, or other surface irregularities. Do not use mechanical

equipment to compact backfill. Tamp carefully using hand tools, refilling and tamping until Final Acceptance as necessary to offset settlement.

- (e) Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be wrapped with four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill.
- (f) Accidentally broken roots should be sawed cleanly 3 inches behind ragged end.

1.05 SECURITY:

The Contractor shall be responsible for project security for materials, tools, equipment, supplies, and completed and partially completed Work.

1.06 TEMPORARY CONTROLS:

A. Noise Control:

- (1) Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work period, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.
- (2) Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to the District a minimum of forty-eight (48) hours in advance of their performance.

B. Noise and Vibration:

- (1) Equipment and impact tools shall have intake and exhaust mufflers.
- (2) Contractor shall cooperate with District to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

C. Dust and Dirt:

- (1) Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
- (2) Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
- (3) Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or

covered with tarpaulins, and as otherwise required by local and state ordinance.

- (4) Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

D. Water:

- (1) Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

E. Pollution:

- (1) No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.
- (2) Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.

F. Lighting:

- (1) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.07 JOB SIGN(S):

A. General:

- (1) District shall provide and maintain a Project identification sign with the design, text, and colors designated by the District and/or the Design Professional;
- (2) Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by the District.

B. Materials:

- (1) Structure and Framing: Structurally sound, new or used wood or metal; wood shall be nominal 3/4-inch exterior grade plywood.
- (2) Sign Surface: Minimum 3/4-inch exterior grade plywood.
- (3) Rough Hardware: Galvanized.
- (4) Paint: Exterior quality, of type and colors selected by the District and/or the Design Professional.

C. Fabrication:

- (1) Contractor shall fabricate to provide smooth, even surface for painting.
- (2) Size: 4'-0" x 8'-0", unless otherwise indicated.
- (3) Contractor shall paint exposed surfaces of supports, framing, and surface material with exterior grade paint: one coat of primer and one coat of finish paint.
- (4) Text and Graphics: As indicated.

1.08 PUBLICITY RELEASES:

- A. Contractor shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s) without the written permission of the District.

PART 2 – PRODUCTS Not used.

PART 3 – EXECUTION Not used.

END OF DOCUMENT

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions; and
- C. Temporary Facilities and Controls.

1.02 SECTION INCLUDES:

- A. Administrative and procedural requirements for the following:
 - (1) Salvaging non-hazardous construction waste.
 - (2) Recycling non-hazardous construction waste.
 - (3) Disposing of non-hazardous construction waste.

1.03 DEFINITIONS:

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS:

- A. General: Develop waste management plan that results in end-of Project rates for salvage/recycling of sixty-five percent (65%) by weight (or by volume, but not a combination) of total waste generated by the Work.

1.05 SUBMITTALS:

- A. Waste Management Plan: Submit waste management plan within 30 days of date established for commencement of the Work.
- B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit copies of report. Include the following information:
 - (1) Material category.
 - (2) Generation point of waste.
 - (3) Total quantity of waste in tons or cubic yards.
 - (4) Quantity of waste salvaged, both estimated and actual in tons or cubic yards.
 - (5) Quantity of waste recycled, both estimated and actual in tons or cubic yards.
 - (6) Total quantity of waste recovered (salvaged plus recycled) in tons or cubic yards.
 - (7) Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- C. Waste Reduction Calculations: Before request for final payment, submit copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

- H. CHPS Submittal: CHPS letter template for Credit ME2.0 and ME2.1, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.
- I. Qualification Data: For Waste Management Coordinator.
- J. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- K. Submittal procedures and quantities are specified in Document 01 33 00.

1.06 QUALITY ASSURANCE:

- A. Waste Management Coordinator Qualifications: LEED Accredited Professional by U.S. Green Building Council.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements. Review methods and procedures related to waste management including, but not limited to, the following:
 - (1) Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
 - (2) Review requirements for documenting quantities of each type of waste and its disposition.
 - (3) Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - (4) Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - (5) Review waste management requirements for each trade.

1.07 WASTE MANAGEMENT PLAN:

- A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measurement throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
- (1) Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - (2) Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (3) Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (4) Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - (5) Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - (6) Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION:

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- (1) Comply with Document 01 50 00 for operation, termination, and removal requirements.
- B. [Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.]
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

- (1) Distribute waste management plan to everyone concerned within 3 days of submittal return.
 - (2) Distribute waste management plan to entities when they first begin work on site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - (1) Designate and label specific areas of Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - (2) Comply with Document 01 50 00 for controlling dust and dirt, environmental protection, and noise control.

3.02 RECYCLING CONSTRUCTION WASTE:

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.
- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - (1) Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project Site. Include list of acceptable and unacceptable materials at each container and bin.
 - (a) Inspect containers and bins for contamination and remove contaminated materials if found.
 - (2) Stockpile processed materials on site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - (3) Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - (4) Store components off the ground and protect from the weather.
 - (5) Remove recyclable waste off District property and transport to recycling receiver or processor.

- D. Packaging:
 - (1) Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - (2) Polystyrene Packaging: Separate and bag material.
 - (3) Pallets: As much as possible, require deliveries using pallets to remove pallets from Project Site. For pallets that remain on Site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - (4) Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- E. Site-Clearing Wastes: Chip brush, branches, and trees on site.
- F. Wood Materials:
 - (1) Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - (2) Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- G. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
 - (1) Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.03 DISPOSAL OF WASTE:

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project Site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - (1) Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on site.
 - (2) Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off District property and legally dispose of them.

END OF DOCUMENT

PRODUCT DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access, Conditions and Requirements;
- B. Special Conditions.

1.02 PRODUCTS

- A. Products are as defined in the General Conditions.
- B. Contractor shall not use and/or reuse materials and/or equipment removed from existing Premises, except as specifically permitted by the Contract Documents.
- C. Contractor shall provide interchangeable components of the same manufacturer, for similar components.

1.03 TRANSPORTATION AND HANDLING

- A. Contractor shall transport and handle Products in accordance with manufacturer's instructions.
- B. Contractor shall promptly inspect shipments to confirm that Products comply with requirements, quantities are correct, and products are undamaged.
- C. Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.04 STORAGE AND PROTECTION

- A. Contractor shall store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated Products, Contractor shall place on sloped supports, above ground.
- C. Contractor shall provide off-site storage and protection when Site does not permit on-site storage or protection.

- D. Contractor shall cover products subject to deterioration with impervious sheet covering and provide ventilation to avoid condensation.
- E. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.
- F. Contractor shall provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Contractor shall arrange storage of Products to permit access for inspection and periodically inspect to assure Products are undamaged and are maintained under specified conditions.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

FIELD ENGINEERING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Investigation, and Soils Investigation Report;
- B. Special Conditions;
- C. Site-Visit Certification.

1.02 REQUIREMENTS INCLUDED:

- A. Contractor shall provide and pay for field engineering services by a California-registered engineer, required for the project, including, without limitations:
 - (1) Survey work required in execution of the Project.
 - (2) Civil or other professional engineering services specified, or required to execute Contractor's construction methods.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEERS:

Contractor shall only use a qualified licensed engineer or registered land surveyor, to whom District makes no objection.

1.04 SURVEY REFERENCE POINTS:

- A. Existing basic horizontal and vertical control points for the Project are those designated on the Drawings.
- B. Contractor shall locate and protect control points prior to starting Site Work and preserve all permanent reference points during construction. In addition Contractor shall:
 - (1) Make no changes or relocation without prior written notice to District and Architect.
 - (2) Report to District and Architect when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - (3) Require surveyor to replace Project control points based on original survey control that may be lost or destroyed.

1.05 RECORDS:

Contractor shall maintain a complete, accurate log of all control and survey work as it progresses.

1.06 SUBMITTALS:

- A. Contractor shall submit name and address of Surveyor and Professional Engineer to District and Architect prior to its/their work on the Project.
- B. On request of District and Architect, Contractor shall submit documentation to verify accuracy of field engineering work, at no additional cost to the District.
- C. Contractor shall submit a certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance or nonconformance with Contract Documents.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 COMPLIANCE WITH LAWS:

Contractor is responsible for meeting all applicable codes, OSHA, safety and shoring requirements.

3.02 NONCONFORMING WORK:

Contractor is responsible for any re-surveying required by correction of nonconforming work.

END OF DOCUMENT

CUTTING AND PATCHING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspector, Inspections, and Tests, Integration of Work, Nonconforming Work, and Correction of Work, and Uncovering Work;
- B. Special Conditions;
- C. Hazardous Materials Procedures and Requirements;
- D. Hazardous Materials Certification;
- E. Lead-Based Paint Certification;
- F. Imported Materials Certification.

1.02 CUTTING AND PATCHING:

- A. Contractor shall be responsible for all cutting, fitting, and patching, including associated excavation and backfill, required to complete the Work or to:
 - (1) Make several parts fit together properly.
 - (2) Uncover portions of Work to provide for installation of ill-timed Work.
 - (3) Remove and replace defective Work.
 - (4) Remove and replace Work not conforming to requirements of Contract Documents.
 - (5) Remove Samples of installed Work as specified for testing.
 - (6) Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
 - (7) Attaching new materials to existing remodeling areas – including painting (or other finishes) to match existing conditions.
- B. In addition to Contract requirements, upon written instructions from the District, Contractor shall uncover Work to provide for observations of covered Work in accordance with the Contract Documents; remove samples of installed materials for testing as directed by District; and remove Work to provide for alteration of existing Work.

- C. Contractor shall not cut or alter Work, or any part of it, in such a way that endangers or compromises the integrity of the Work, the Project, or work of others.

1.03 SUBMITTALS:

- A. Prior to any cutting or alterations that may affect the structural safety of Project, or work of others, and well in advance of executing such cutting or alterations, Contractor shall submit written notice to District pursuant to the applicable notice provisions of the Contract Documents, requesting consent to proceed with the cutting or alteration, including the following:
 - (1) The work of the District or other trades.
 - (2) Structural value or integrity of any element of Project.
 - (3) Integrity or effectiveness of weather-exposed or weather-resistant elements or systems.
 - (4) Efficiency, operational life, maintenance or safety of operational elements.
 - (5) Visual qualities of sight-exposed elements.
- B. Contractor's Request shall also include:
 - (1) Identification of Project.
 - (2) Description of affected Work.
 - (3) Necessity for cutting, alteration, or excavations.
 - (4) Effects of Work on District, other trades, or structural or weatherproof integrity of Project.
 - (5) Description of proposed Work:
 - (a) Scope of cutting, patching, alteration, or excavation.
 - (b) Trades that will execute Work.
 - (c) Products proposed to be used.
 - (d) Extent of refinishing to be done.
 - (6) Alternates to cutting and patching.
 - (7) Cost proposal, when applicable.
 - (8) The scheduled date the Contractor intends to perform the Work and the duration of time to complete the Work.

- (9) Written permission of District or other District contractor(s) whose work will be affected.

1.04 QUALITY ASSURANCE:

- A. Contractor shall ensure that cutting, fitting, and patching shall achieve security, strength, weather protection, appearance for aesthetic match, efficiency, operational life, maintenance, safety of operational elements, and the continuity of existing fire ratings.
- B. Contractor shall ensure that cutting, fitting, and patching shall successfully duplicate undisturbed adjacent profiles, materials, textures, finishes, colors, and that materials shall match existing construction. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the District's decision shall be final.

1.05 PAYMENT FOR COSTS:

- A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of the District, its consultants, including but not limited to the Construction Manager, the Architect, the Project Inspector(s), Engineers, and Agents, will be paid by Contractor and/or deducted from the Contract by the District.
- B. District shall only pay for cost of Work if it is part of the original Contract Price or if a change has been made to the contract in compliance with the provisions of the General Conditions. Cost of Work performed upon instructions from the District, other than defective or nonconforming Work, will be paid by District on approval of written Change Order. Contractor shall provide written cost proposals prior to proceeding with cutting and patching.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Contractor shall provide for replacement and restoration of Work removed. Contractor shall comply with the Contract Documents and with the Industry Standard(s), for the type of Work, and the Specification requirements for each specific product involved. If not specified, Contractor shall first recommend a product of a manufacturer or appropriate trade association for approval by the District.
- B. Materials to be cut and patched include those damaged by the performance of the Work.

PART 3 – EXECUTION

3.01 INSPECTION:

- A. Contractor shall inspect existing conditions of the Site and the Work, including elements subject to movement or damage during cutting and patching, excavating and backfilling. After uncovering Work, Contractor shall inspect conditions affecting installation of new products.

- B. Contractor shall report unsatisfactory or questionable conditions in writing to District as indicated in the General Conditions and shall proceed with Work as indicated in the General Conditions by District.

3.02 PREPARATION:

- A. Contractor shall provide shoring, bracing and supports as required to maintain structural integrity for all portions of the Project, including all requirements of the Project.
- B. Contractor shall provide devices and methods to protect other portions of Project from damage.
- C. Contractor shall, provide all necessary protection from weather and extremes of temperature and humidity for the Project, including without limitation, any work that may be exposed by cutting and patching Work. Contractor shall keep excavations free from water.

3.03 ERECTION, INSTALLATION AND APPLICATION:

- A. With respect to performance, Contractor shall:
 - (1) Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
 - (2) Execute cutting and demolition by methods that will prevent damage to other Work, and provide proper surfaces to receive installation of repairs and new Work.
 - (3) Execute cutting, demolition excavating, and backfilling by methods that will prevent damage to other Work and damage from settlement.
- B. Contractor shall employ original installer or fabricator to perform cutting and patching for:
 - (1) Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants, waterproofing, and other trades.
 - (2) Sight-exposed finished surfaces.
- C. Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes as shown or specified in the Contract Documents including, without limitation, the Drawings and Specifications.
- D. Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Contractor shall conform to all Code requirements for penetrations or the Drawings and Specifications, whichever calls for a higher quality or more thorough requirement. Contractor shall maintain integrity of both rated and non-rated fire walls, ceilings, floors, etc.
- E. Contractor shall restore Work which has been cut or removed. Contractor shall install new products to provide completed Work in accordance with

requirements of the Contract Documents and as required to match surrounding areas and surfaces.

- F. Contractor shall refinish all continuous surfaces to nearest intersection as necessary to match the existing finish to any new finish.

END OF DOCUMENT

SECTION 01 74 19A
CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

(Submit After Award of Contract and Prior to Start of Work)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ()	Fax: ()	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	TO:

Reuse, Recycling or Disposal Processes To Be Used

Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:

- 01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
- 02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
- 03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
- 04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
- 05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
- 06 - Recycling material as Alternative Daily Cover at landfills
- 07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
- 08 - Disposal at a landfill or transfer station.
- 09 - Other (please describe) _____

Types of Material To Be Generated

Use these codes to indicate the types of material that will be generated on the project

A = Asphalt C = Concrete M = Metals I = Mixed Inert G = Green Matls
D = Drywall P/C=Paper/Cardboard W/C = Wire/Cable S= Soils (Non Hazardous)
M/C = Miscellaneous Construction Debris R = Reuse/Salvage W = Wood O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.

Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
(ex.) M	04	ABC Metals, Los Angeles	24	Tons	Cubic YD	Other Wt.
a. Total Diversion			0	0	0	0

SECTION 01 74 19A
CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

Continued

SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.</i>						
Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				0	0	0

SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				0	0	0
b. Total Disposed				0	0	0
c. Total Generated				0	0	0

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
	Tons	Cubic Yards	Other Wt.			
a. Materials Re-Used and Recycled	0					
b. Materials Disposed	0					
c. Total Materials Generated (a. + b. = c.)	0	0	0			
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!					

* Use tons only to calculate recycling percentages: $\text{Tons Reused/Recycled/Tons Generated} = \% \text{ Recycled}$

Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):

Notes:

- Section 01151A is a Division 01 General Requirement under CSI MasterFormat 1998 Edition.
 For CSI MasterFormat 2004 Edition, this Section may be renumbered as follows:
 Under Division 00, Procurement and Contracting Requirements, Project Forms 00 60 00
 Use: Section 00 62 22 Construction Waste Diversion Plan
- Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)
 Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
 Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
 Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)
 Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)

Drywall Scrap: .20
Wood Scrap: .16

SECTION 01 74 19B
CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT
(Submit With Each Progress Payment)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ()	Fax: ()	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Period Covered:	From:	To:

Reuse, Recycling or Disposal Processes Used

Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that were recycled or disposed in the sections below:

- 01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
- 02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
- 03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
- 04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
- 05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
- 06 - Recycling material as Alternative Daily Cover at landfills
- 07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
- 08 - Disposal at a landfill or transfer station.
- 09 - Other (please describe) _____

Types of Material Generated

Use these codes to indicate the types of material that were generated on the project

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Matls
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris	R = Reuse/Salvage	W = Wood	O = Other (describe)	

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling occurred.

Type of Material	Type of Activity	Facilities Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion			0	0	0	0

[PROJECT TITLE]
[DATE]

Contractor's Reuse, Recycling, and Disposal Report
Section 01151B-1

SECTION 01 74 19B
CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT
Continued

SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling occurred.</i>						
Type of Material	Type of Activity	Facilities Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				0	0	0

SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				0	0	0
b. Total Disposed				0	0	0
c. Total Generated				0	0	0

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
	Tons	Cubic Yards	Other Wt.			
a. Materials Re-Used and Recycled	0					
b. Materials Disposed	0					
c. Total Materials Generated (a. + b. = c.)	0	0	0			
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!					

* Use tons only to calculate recycling percentages: $\text{Tons Reused/Recycled/Tons Generated} = \% \text{ Recycled}$

Contractor's Comments (<i>Provide any additional information pertinent to planned reuse, recycling, or disposal activities</i>):						

Notes:						
1. Section 01151A is a Division 01 General Requirement under CSI MasterFormat 1998 Edition. For CSI MasterFormat 2004 Edition, this Section may be renumbered as follows: Under Division 00, Procurement and Contracting Requirements, Project Forms 00 60 00 Use: Section 00 62 22 Construction Waste Diversion Plan						
2. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available) Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt) Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete) Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons) Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)						
				Drywall Scrap: .20 Wood Scrap: .16		

ALTERATION PROJECT PROCEDURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Integration of Work, Purchase of Materials and Equipment, Uncovering of Work and Non-conforming Work and Correction of Work and Trenches;
- B. Special Conditions.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK:

- A. New Materials: As specified in the Contract Documents including, without limitation, in the Specifications, Contractor shall match existing products, conditions, and work for patching and extending work.
- B. Type and Quality of Existing Products: Contractor shall determine by inspection, by testing products where necessary, by referring to existing conditions and to the Work as a standard.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Contractor shall verify that demolition is complete and that areas are ready for installation of new Work.
- B. By beginning restoration Work, Contractor acknowledges and accepts the existing conditions.

3.02 PREPARATION:

- A. Contractor shall cut, move, or remove items as necessary for access to alterations and renovation Work. Contractor shall replace and restore these at completion.
- B. Contractor shall remove unsuitable material not as salvage unless otherwise indicated in the Contract Documents. Unsuitable material may include, without limitation, rotted wood, corroded metals, and deteriorated masonry and concrete. Contractor shall replace materials as specified for finished Work.

- C. Contractor shall remove debris and abandoned items from all areas of the Site and from concealed spaces.
- D. Contractor shall prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.
- E. Contractor shall close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity. Contractor shall insulate ductwork and piping to prevent condensation in exposed areas. Contractor shall insulate building cavities for thermal and/or acoustical protection, as detailed.

3.03 INSTALLATION:

- A. Contractor shall coordinate Work of all alternations and renovations to expedite completion and to accommodate District occupancy.
- B. Designated Areas and Finishes: Contractor shall complete all installations in all respects, including operational, mechanical work and electrical work.
- C. Contractor shall remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition.
- D. Contractor shall refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat and square or straight transition to adjacent finishes.
- E. Contractor shall install products as specified in the Contract Documents, including without limitation, the Specifications.

3.04 TRANSITIONS:

- A. Where new Work abuts or aligns with existing, Contractor shall perform a smooth and even transition. Patched Work must match existing adjacent work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, Contractor shall terminate existing surface along a straight line at a natural line of division and make a recommendation for resolution to the District and the Architect for review and approval.

3.05 ADJUSTMENTS:

- A. Where removal of partitions or walls results in adjacent spaces becoming one, Contractor shall rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/4 inch or more occurs, Contractor shall submit a recommendation for providing a smooth transition to the District and the Architect for review and approval.

- C. Contractor shall trim and seal existing wood doors and shall trim and paint metal doors as necessary to clear new floor finish and refinish trim as required.
- D. Contractor shall fit Work at penetrations of surfaces.

3.06 REPAIR OF DAMAGED SURFACES:

- A. Contractor shall patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections, in the area where the Work is performed.
- B. Contractor shall repair substrate prior to patching finish.

3.07 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS:

- A. Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored by Contractor to their original condition or better, where indicated.
- B. Contractor shall protect and replace, if damaged, all existing guard posts, barricades, and fences.
- C. Contractor shall give special attention to avoid damaging or killing trees, bushes and/or shrubs on the Premises and/or identified in the Contract Documents, including without limitation, the Drawings.

3.08 FINISHES:

- A. Contractor shall finish surfaces as specified in the Contract Documents, including without limitations, the provisions of all Divisions of the Specifications.
- B. Contractor shall finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, Contractor shall refinish entire surface to nearest intersections.

3.09 CLEANING:

- A. Contractor shall continually clean the Site and the Premises as indicated in the Contract Documents, including without limitation, the provisions in the General Conditions and the Specifications regarding cleaning.

END OF DOCUMENT

CONTRACT CLOSEOUT AND FINAL CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of Work;
- B. Special Conditions;
- C. Temporary Facilities and Controls.

1.02 CLOSEOUT PROCEDURES

Contractor shall comply with all closeout provisions as indicated in the General Conditions.

1.03 FINAL CLEANING

- A. Prime Contractor, as indicated in the Prime Contractor Work Scope Summary, shall execute final cleaning prior to final inspection.
- B. Contractor shall clean interior and exterior glass and all surfaces exposed to view; remove temporary labels, tape, stains, and foreign substances, polish transparent and glossy surfaces, wax and polish new vinyl floor surfaces, vacuum carpeted and soft surfaces.
- C. Contractor shall clean equipment and fixtures to a sanitary condition.
- D. Contractor shall replace filters of operating equipment.
- E. Contractor shall clean debris from roofs, gutters, down spouts, and drainage systems.
- F. Contractor shall clean Site, sweep paved areas, and rake clean landscaped surfaces.
- G. Contractor shall remove waste and surplus materials, rubbish, and construction facilities from the Site and surrounding areas.

1.04 ADJUSTING

Contractor shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 RECORD DOCUMENTS AND SHOP DRAWINGS

- A. Contractor shall legibly mark each item to record actual construction, including:
 - (1) Measured depths of foundation in relation to finish floor datum.
 - (2) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permit surface improvements.
 - (3) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - (4) Field changes of dimension and detail.
 - (5) Details not on original Contract Drawings
 - (6) Changes made by modification(s).
 - (7) References to related Shop Drawings and modifications.
- B. Contractor will provide one (1) complete full size, full color PDF via Bluebeam on a USB Flash Drive and one (1) full size, full color hard copy print set of Record Drawings to District.
- C. Contractor shall submit all required documents to District Representative and/or Architect prior to or with its final Application for Payment.

1.06 INSTRUCTION OF DISTRICT PERSONNEL

- A. Before final inspection, at agreed upon times, Contractor shall instruct District's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. For equipment requiring seasonal operation, Contractor shall perform instructions for other seasons within six months or by the change of season.
- C. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Contractor shall prepare and insert additional data in Operation and Maintenance Manual when the need for such data becomes apparent during instruction.
- E. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Contractor shall provide products, spare parts, maintenance, and extra materials in quantities specified in the Specifications and in Manufacturer's recommendations.

- B. Contractor shall provide District with all required Operation and Maintenance Data at one time. Partial or piecemeal submissions of Operation and Maintenance Data will not be accepted.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of the Work;
- B. Special Conditions.

1.02 QUALITY ASSURANCE:

Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT:

- A. Contractor shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
- B. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, Contractor shall correlate data into related consistent groupings. Small format documents shall be organized and provided electronically in PDF format to the District Representative.
- C. Cover: Contractor shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
- D. Contractor shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
- E. Contractor shall provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Contractor shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME:

- A. Table of Contents: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants,

Subcontractor(s), and Contractor with name of responsible parties; and schedule of products and systems, indexed to content of the volume.

- B. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Contractor shall mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Contractor shall supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.
- E. Text: Contractor shall include any and all information as required to supplement product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties and Bonds: Contractor shall bind in one copy of each.

1.05 MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Contractor shall include product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Contractor shall include product data listing applicable reference standards, chemical composition, and details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.
- E. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data. PDF shall have sections bookmarked.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS:

- A. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. Contractor shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.

- B. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.
- C. Contractor shall include color coded wiring diagrams as installed.
- D. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.
- G. Contractor shall include manufacturer's printed operation and maintenance instructions.
- H. Contractor shall include sequence of operation by controls manufacturer.
- I. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Contractor shall provide control diagrams by controls manufacturer as installed.
- K. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).
- O. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.07 SUBMITTAL:

- A. Contractor shall submit to the District for review two (2) copies of preliminary draft or proposed formats and outlines of the contents of the Manual within thirty (30) days of Contractor's start of Work.
- B. For equipment, or component parts of equipment put into service during construction and to be operated by District, Contractor shall submit draft

content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.

- C. Contractor shall submit two (2) copies of a complete Manual in final form prior to final Application for Payment. Copy will be returned with Architect/Engineer comments. Contractor must revise the content of the Manual as required by District prior to District's approval of Contractor's final Application for Payment.
- D. Contractor must submit two (2) copies of revised Manual in final form within ten (10) days after final inspection.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

WARRANTIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Warranty/Guarantee Information;
- B. Special Conditions.

1.02 FORMAT

- A. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. Provide electronically in PDF format to the District Representative.
- B. Cover: Contractor shall identify each binder with typed or printed title "WARRANTIES" and shall list title of Project.
- C. Table of Contents: Contractor shall provide title of Project; name, address, and telephone number of Contractor and equipment supplier; and name of responsible principal. Contractor shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the product or work item is specified.
- D. Contractor shall separate each warranty with index tab sheets keyed to the Table of Contents listing, providing full information and using separate typed sheets as necessary. PDF shall provide bookmarks per section. Contractor shall list each applicable and/or responsible Subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).

1.03 PREPARATION:

- A. Contractor shall obtain warranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or work. Except for items put into use with District's permission, Contractor shall leave date of beginning of time of warranty blank until the date of completion is determined.
- B. Contractor shall verify that documents are in proper form, contain full information, and are notarized, when required.
- C. Contractor shall co-execute submittals when required.

- D. Contractor shall 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 District's permission, Contractor shall submit a draft warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.
- B. Contractor shall submit for District approval all warranties and related documents within ten (10) days after date of completion. Contractor must revise the warranties as required by the District prior to District's approval of Contractor's final Application for Payment.
- C. For items of work delayed beyond date of completion, Contractor shall provide an updated submittal within ten (10) days after acceptance, listing the date of acceptance as start of warranty period.

PART 2 - PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Documents on Work;
- B. Special Conditions.

PART 2 - RECORD DRAWINGS

2.01 GENERAL:

- A. As indicated in the Contract Documents, the District Representative will create a Bluebeam Revu session and invite each Prime Contractor for the purposes of updated record drawings. Contractor shall provide one (1) complete full size, full color PDF via Bluebeam on a USB Flash Drive and one (1) full size, full color hard copy print set of Record Drawings to District.
- B. Contractor shall maintain at each Project Site one set of marked-up plans and shall transfer all changes and information to those marked-up plans, as often as required in the Contract Documents, but in no case less than once each month. Contractor shall submit to the Project Inspector one set of reproducible vellums of the Project Record Drawings ("As-Builts") showing all changes incorporated into the Work since the preceding monthly submittal. The As-Builts shall be available at the Project Site. The Contractor shall submit reproducible vellums at the conclusion of the Project following review of the blueline prints.
- C. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.
- D. All deviations in construction, including but not limited to pipe and conduit locations and deviations caused by without limitation Change Orders, Construction Claim Directives, RFI's, and Addenda, shall be accurately and legibly recorded by Contractor.
- E. Locations and changes shall be done by Contractor in a neat and legible manner and, where applicable, indicated by drawing a "cloud" around the changed or additional information.

2.02 RECORD DRAWING INFORMATION:

- A. Contractor shall record the following information:

- (1) Locations of Work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines, and conduits.
- (2) Actual numbering of each electrical circuit to match panel schedule.
- (3) Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract Drawings.
- (4) Locations of all items, not necessarily concealed, which vary from the Contract Documents.
- (5) Installed location of all cathodic protection anodes.
- (6) Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.
- (7) Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
- (8) Sufficient information to locate Work concealed in each building with reasonable ease and accuracy.

In some instances, this information may be recorded by dimension. In other instances, it may be recorded in relation to the spaces in the building near which it was installed.

- B. Contractor shall provide additional drawings as necessary for clarification.
- C. Contractor shall provide reproducible record drawings, made from final Shop Drawings marked "No Exceptions Taken" or "Approved as Noted."
- D. After review and approval of the marked-up specifications by the Project Inspector, Contractor shall provide electronic copies of the drawings (in PDF format) with one file with all of the sheets and one set of individual sheet files at the conclusion of the Project.

PART 3 - RECORD SPECIFICATIONS

3.01 GENERAL:

- A. Contractor shall mark each section legibly to record manufacturer, trade name, catalog number, and supplier of each Product and item of equipment actually installed.
- B. After review and approval of the marked-up specifications by the Project Inspector, Contractor shall provide one electronic copy of the specifications (in PDF format) at the conclusion of the Project.

PART 4 - MAINTENANCE OF RECORD DOCUMENTS

4.01 GENERAL

- A. Contractor shall store Record Documents apart from documents used for construction as follows:
 - (1) Provide files and racks for storage of Record Documents.
 - (2) Maintain Record Documents in a clean, dry, legible condition and in good order.
- B. Contractor shall not use Record Documents for construction purposes.

PART 5 – PRODUCTS Not Used.

END OF DOCUMENT

INDEX

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

Per BCSD

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See separate Table of Contents Document 00 01 10

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DIVISION 03 - CONCRETE

03 10 00 Concrete Work

03 21 00 Reinforcing Steel

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NOT USED

DIVISION 05 - METALS

05 52 13 Pipe Handrails

DIVISION 06 - WOOD, PLASTICS AND COMPOSITES

06 10 00 Rough Carpentry

06 20 00 Finish Carpentry

06 22 00.02 Millwork and Cabinets

DIVISION 07 - THERMAL & MOISTURE PROTECTION

07 21 10 Insulation

07 57 00.03 Sprayed Polyurethane Roofing System

07 91 00 Caulkings and Sealants

DIVISION 08 - OPENINGS

08 11 10 Metal Doors and Frames

08 14 20 Wood Doors

08 41 13 Aluminum Entrances and Storefront

08 71 00 Finish Hardware

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DIVISION 09 - FINISHES

09 21 00 Lathing and Plastering

09 25 13 Exterior Plaster Finishing System

09 26 00 Veneer Plaster

09 30 00 Tile Work

09 53 23 Acoustic Tile

09 65 16 Resilient Flooring and Rubber Topset Base

09 91 00 Painting

DIVISION 10 – SPECIALTIES

10 14 19 Signs

10 21 13.16 Solid Plastic Toilet and Shower Stalls

10 28 13 Toilet and bath Accessories

DIVISION 11 – EQUIPMENT

NOT USED

DIVISION 12 – FURNISHINGS

NOT USED

DIVISION 13 - SPECIAL CONSTRUCTION

NOT USED

DIVISION 14 - CONVEYING SYSTEMS

NOT USED

DIVISION 21 - FIRE SUPPRESSION

NOT USED

DIVISION 22 – PLUMBING

22 00 00 Plumbing

DIVISION 23 - HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

23 00 00 Heating, Ventilating and Air Conditioning (HVAC)

DIVISION 26 – ELECTRICAL

26 01 00 Electrical Scope and General Requirements

26 22 00 Low Voltage General Purpose Transformers

DIVISION 28 – FIRE ALARM SYSTEM

28 31 11 Fire Alarm System

DIVISION 31 – EARTHWORK

31 20 00 Earthwork

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 05 13.01 Termite Control

32 05 13.02 Vegetation Control

32 13 13 Concrete Paving

32 31 13.03 Chain Link Privacy Slats

DIVISION 33 – UTILITIES

NOT USED

MINOR DEMOLITION FOR REMODELING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 CODES AND ORDINANCES

All work is to be conducted in complete accordance with all applicable provisions of local and State safety and health ordinances.

1.02 DESCRIPTION AND CONDITION OF PREMISES

- a. The building affected by this Contract is set forth in "Scope of Work" below and has been used for the designated occupancy since original construction.
- b. Plans are available for the structure(s) at the office of the Architect for review by the Contractor. It is the intent and purpose of this Contract that the Contractor demolish all of the work as specified herein or on the plans, regardless of material of which it is constructed.
- c. Contractor shall accept the premises in the condition as found on the first day of work under the Contract. He shall assume all risk regarding damage or loss, whether by reason of fire, theft or other casualty or happening to specified building. No such damage or loss shall relieve the Contractor from Contract obligation to complete this work.

1.03 SCOPE OF WORK

- a. Scope of work shall include all labor, materials, equipment, transportation and appliances to complete the work of demolition and site restoration as hereinbelow specified and as per drawings and as reasonably required to complete the contract.
- b. Removal of existing framing, furring, bracing, concrete slabs, walls and footings, fasteners, equipment, finishes, support systems, plumbing, electrical and HVAC systems and all other items required to complete the work in this contract.
- c. Disposal legally and off the site of all debris, rubbish and salvage.
- d. Construction and provision of proper barricades, signs and protective structures and devices.
- e. Responsibility of cleanliness and safety of work area and all other affected premises during the period of the Contract.
- f. Filling, backfilling and grading of site as specified.

1.04 SURVEY OF EXISTING CONDITIONS

The bidders are required to examine the building and determine for themselves the extent of the work included in this Contract.

1.05 WORKING AREA

A portion of the building site shall be allotted to the Contractor for the prosecution of his work. He shall confine his operations to this area and shall provide barricades or guards as required by the City and/or County Code requirements.

1.06 RESPONSIBILITY AND COORDINATION

- a. Responsibility accrues to the Contractor for the condition, good order, health and safety of all premises and individuals his work may affect.
- b. It shall be the responsibility of the Contractor to notify any utility companies and the owner concerning the cutting off or restoring of service or of relocating or modifying any such service that the work of this contract may require. He shall protect and maintain in operation any utility or sewer line that is required to remain operative during the period of the contract that his work may affect.
- c. The Contractor shall coordinate and require such cooperation of the various trades as will be necessary to complete each and every part of the work, even though not specifically indicated, noted or detailed on the drawings or specified.

1.07 PERMITS AND LICENSES

The Contractor shall secure, take out and/or maintain all required permits, approvals and licenses necessary to legally complete this work and shall be responsible for insuring that each and every one of his subcontractors is properly and duly licensed and have required permits to perform any of their work requiring same.

1.08 SALVAGE MATERIALS

- a. The Owner reserves the right to retain ownership of any equipment or fixtures removed from the building. All removed equipment or fixtures shall be stored neatly in an area designated by the Owner for a period of 48 hours after the Owner's representative has been notified. All items that are not claimed by the Owner within the specified time period shall be removed from the site and properly disposed of.
- b. All salvage materials removed from the building shall be placed in neat piles and stacks in the working area and removed from the site at the earliest practicable date.

- c. The Contractor shall not dispose of the improvements or materials removed from the building at the site by sale, gift, or in any manner whatsoever to the general public; provided however, that these provisions shall not be construed as limiting or prohibiting the sale or disposal of such salvage to duly licensed contractors or material men. The Contractor shall assume all responsibility arising out of such operation.

PART 2 EXECUTION

2.01 DEBRIS

All debris resulting from the demolition shall be removed and hauled away from the site immediately. Debris and rubbish shall not be allowed to accumulate on the site. Such material shall be sprinkled while being handled or loaded to relieve annoyance to the balance of the premises and to the neighborhood. No burning of rubbish shall be permitted at the site.

2.02 PROTECTION

- a. The Contractor shall enclose the area with fence barricades as per City and/or County code requirements. Barricades shall be substantially and neatly erected and braced and in areas near existing buildings where hazards may exist from falling materials, shall be constructed in a manner to intercept any materials that may fall as a result of demolition work.
- b. Barricades and fences shall have substantial gates, equipped with good locks and the working area shall be kept securely locked at all times work is in progress.
- c. The Contractor shall provide signs and post warnings in all necessary places to exclude all persons except those directly connected with the work from entering the working area or where vehicles are operating or materials are being stored. The Contractor shall be responsible for preventing unauthorized persons from entering the working area.
- d. The Contractor shall execute demolition work to insure protection of adjacent buildings, shrubs, trees and lawns from damage, which might occur from any cause and shall not interfere with use of adjacent buildings or safe passage to and from same.

2.03 USE OF EXPLOSIVES will not be permitted.

2.04 TREES AND PLANTINGS

Trees and shrubs as indicated on the plan and their roots, stumps, etc., within the working area are to be removed.

2.05 UTILITIES

- a. It shall be the responsibility of the contractor to notify any utility companies and the owner concerning the cutoff and restoration of service or of relocating or modifying any such service that the work in this contract may require. He shall protect and maintain in operation any utility or sewer line that is required to remain operative during the period of the contract that his work may affect.
- b. The Contractor shall keep a record as to location and size of all capped pipe and/or conduit during demolition on a blue line print furnished by the Architect.

2.06 SCAFFOLDING, LADDERS, ETC.

All temporary construction, scaffolding, ladders, runways, hoistways, etc., shall be furnished and maintained by the Contractor as required and shall comply with all laws, ordinances, rules and regulations governing the construction and use of same.

2.07 CLEANING

- a. Upon completion of the work, the Contractor shall remove all protections, tools, materials, plant apparatus and rubbish or debris of any sort and leave the premises neat and orderly.
- b. The Contractor shall also inspect any other areas or premises of public or private property that may have been damaged, made dirty or otherwise disorderly as a result of his work and restore to good order any such area or premises.

END OF SECTION
03/05/2008

CONCRETE WORK

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this section shall include the furnishing of all labor; materials and equipment required to complete the concrete work as indicated on the drawings and as specified herein.

1.02 WORK INCLUDED (But not limited to the following items)

- a. Provide and install concrete, plain and reinforced, in place.
- b. Provide and install formwork and shoring.
- c. Placing only of bolts, anchors, frames, inserts, stair nosings
- d. Provide and install control and expansion joints.
- e. Curing, protection and patching of concrete.
- f. Finishing concrete surfaces.
- g. Concrete pits and slabs for plumbing, electrical, heating and ventilation.
- h. Cost of concrete mix designs.
- i. Vapor barrier and sand fill under concrete floor slabs.
- j. Clean up work related to this Section.

1.03 RELATED WORK

- a. Reinforcing steel is specified in Section 03 21 00.
- b. Filling, backfilling and compaction are specified under Section 31 20 00.
- c. Furnishing of bolts, anchors, frames, inserts, etc. is specified in Section 06 10 00.
- d. Concrete valve boxes for plumbing work are specified in Section 22 00 00.
- e. The cost of testing all materials, *including cement and aggregate* shall be paid by the Owner. The Contractor shall cooperate in furnishing test materials so that tests may be completed prior to their installation.
- f. Vegetation control is specified in Section 32 05 13.02.
- g. Termite control is specified in Section 32 05 13.01.

1.04 TESTS AND INSPECTIONS

- a. Refer to Section 01 45 00, Quality Control, for these requirements.
- b. No work of this Section shall be covered until inspected by the Engineer or his authorized representative.
- c. Tests and evaluation shall conform to T24, Sec. 1903A.
- d. Vapor and Waterproofing Admixture representative shall verify all concrete batches prior to concrete mix leaving plant. Installing contractor shall be an approved SPG installer.

1.05 SPECIAL REQUIREMENTS

All concrete shall be mixed, formed, placed and cured, finished and protected in conformance with the recommendations of the Portland Cement Association and the American Concrete Institute unless otherwise shown or noted in these specifications.

1.06 DEFECTIVE CONCRETE

Concrete not meeting the minimum strength requirement, not formed as indicated, not true to intended alignment, which has large voids or rock pockets, which has wood or debris embedded in it, which has a surface deviation of greater than one-eighth inch (1/8") in ten feet (10'-0") or does not fully conform to the specifications shall be deemed defective and if so directed by the Architect, shall be removed and replaced with concrete complying with the drawings and specifications. Precast panels or other concrete damaged due to erection operations shall be deemed defective concrete.

PART 2 PRODUCTS

2.01 MATERIALS

- a. Portland Cement: Shall conform to ACI 318-19, Type V, and T24, Sec. 1903A.2 with the following modifications:
 - (1) The cement shall not contain more than 0.60% total alkali when calculated as Sodium Oxide.
 - (2) The percentage of Tricalcium Silicate shall not be limited.
 - (3) Cement shall be stored in such a manner as to protect it from inclusion of foreign material and damage by moisture. Only one (1) brand of cement shall be used for this work.
- b. Aggregates: Shall conform to ASTM C-33-86 except as modified below.
 - (1) Fine aggregate: Shall consist of a washed natural sand of hard, strong and durable particles, which do not contain more than two percent (2%) by weight of deleterious substances such as clay lumps, shale, schist, alkali, mica, coated grains, or soft and flaky particles. Fine aggregate shall be graded uniformly from fine to coarse and when combined with coarse aggregate shall meet the requirements of Table 1.
 - a.) Crushed fine aggregate otherwise known as Crusher fines, or "rock dust" shall be 100% passing #4 sieve screen and shall be spread and compacted while damp to moist. At the time of concrete placement, the blotter layer should be dry to damp, compacted, and smooth. Concrete should not be placed if the blotter layer is wet as it will act as a water reservoir beneath the concrete and all apparent advantages of its use will be nullified. The blotter layer should not be sprayed with water prior to concrete placement.
 - (2) Coarse Aggregate: Shall consist of a clean, hard, fine grained, sound crushed rock, or washed gravel. It shall contain not more than five percent (5%) by weight of flat, thin, elongated, or laminated material nor more than two percent (2%) by weight shale or cherty material. Coarse aggregate shall be graded uniformly from one fourth inch (1/4") in size to maximum size and when combined with fine aggregate shall meet the requirements of Table 1.

TABLE I
GRADING OF COMBINED AGGREGATES

Sieve Number or Size in Inches (Woven Wire Cloth)	Percent by Weight 1-1/2" Max.	1" Maximum	3/4" Maximum
Passing a 1-1/2"	95-100	---	---
Passing a 1"	70-90	90-100	---
Passing a 3/4"	50-80	70-95	90-100
Passing a 3/8"	40-60	45-70	55-75
Passing a #4	35-55	35-55	40-60
Passing a #8	25-40	27-45	30-46
Passing a #16	16-34	20-38	23-40
Passing a #30	12-25	12-27	13-28
Passing a #50	2-12	5-15	5-15
Passing a #100	0-3	0-5	0-5

- c. Water: Shall be clean and free from deleterious acids, alkali, oil and organic matter and shall be potable.
- d. Concrete Slab Control Joints: Shall be one of the following types as indicated and located on the drawings:
 - (1) Construction Joints: Shall be Burke #NC-203 "Keyed Kold Joint", or approved equal, 26 gauge galvanized steel continuous joint form with #54-505 removable kap at exterior slabs and #54-510 kap at interior slabs. Seal exterior joints with Sikaflex 2c, color as selected.
 - (2) Expansion Joints: Shall be formed with Burke 1/2" x 4" fiber expansion joint with Burke 1/2" x 1/2" removable plastic cap. Sealant shall be two-part polyurethane, Sikaflex 2c, color as selected.
 - (3) Control Joints: Shall be 1/8" w x 1-1/4" d tooled or saw-cut joints. Control joints may be plastic "Zip-Strips" by Burke or W.R. Meadows (1-1/2" dp. min.).
- e. Crushed Fine Aggregate Fill Under Slabs: Shall conform to the crushed fine aggregate specification in 2.01b. above.
- f. Vapor Barrier:
 - (1.) Vapor barrier must have all of the following qualities:
 - a. Maintain permeance of less than 0.010 Perms [grains/(ft² · hr · in Hg)] as tested in accordance with ASTM E 1745 Section 7.1 (7.1.1-7.1.5)
 - (2.) Other performance criteria:
 - a. Strength: ASTM E 1745 Class A.
 - b. Thickness: 15 mils minimum
 - (3.) Vapor barrier products:
 - a. Basis of Design: Stego Wrap Vapor Barrier (15-mil) by Stego Industries LLC, (877) 464-7834
www.stegoindustries.com.
 - b. Other acceptable products:
Or equal products that meet all of the specified performance criteria in paragraphs (1), (2).
- g. Vapor Barrier Sealing Accessories:
 - (1) Sealing Seams
 - (a) Stego Tape by Stego Industries LLC, (877) 464-7834
www.stegoindustries.com.

- (b) Or approved equal
- (2) Sealing Penetrations
 - (a) Stego Tape by Stego Industries LLC, (877) 464-7834
www.stegoindustries.com.
 - (b) Vapor-proofing mastic: Mastic by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.
 - (c) Or approved equal.
- (3) Sealing Perimeter/Terminating Edge of Vapor Barrier
 - (a) Stego Crete Claw by Stego Industries LLC, (877) 464-7834
www.stegoindustries.com.
 - (b) StegoTack Tape (double-sided sealant tape) by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.
 - (c) Use of one-sided seaming tape to seal the perimeter must be submitted to the architect for pre-approval.
 - (d) Or approved equal
- (4) Screed/Formwork Penetration Prevention:
 - (a) Beast Foot by Stego Industries LLC, (877) 464-7834
www.stegoindustries.com.
 - (b) Or approved equal.
- (5) Vapor Barrier-Safe Screed System
 - (a) Beast Screed by Stego Industries LLC, (877) 464-7834
www.stegoindustries.com.
 - (b) Or approved equal
- h. Sealer/Hardener/Curing Compound for exterior concrete: Shall conform to ASTM C-309, Type I, Class A. Provide and apply per manufacturers recommendations, W.R. Meadows "Med-Cure"; Nox-crete Inc. "Bro-Cure"; Curecrete Chemical Co. "Ashford Formula", or approved equal. The compound shall *not* be of wax base and shall not impair in any way the application of floor coverings,
- i. Abrasive Aggregate: Shall be aluminum oxide grits or crushed emery, factory graded, packaged, rustproof and non-glazing. "GRIP IT", manufactured by L&M Construction Chemicals, Inc.
- j. Rock Salt: Shall be standard brand in chips, similar to that packaged for use by the general public in ice cream freezers.
- k. Admixture: Water-reducing admixture shall be Pozzolith 322N, T-24, Section 1903A6.6 Zeecon "H", Grace WRDA-79 or approved equal, conforming to ASTM 494. Vapor and Water proofing Admixture shall be as manufactured by SPG, Vapor Lock 20/20.
- l. Manufactured Grout: Shall be non-shrink, non-metallic, non-corrosive and high strength, conforming to Corps. of Engineers CRD-621. SilkagROUT 212, W.R. Meadows #588 grout or approved equal.
- m. Form Release: Provide form-coating material, which conforms to the regulations of the local air quality management district in force at the time of application. Use a non-staining, non-residual, chemically active release agent. DEBOND FORM COATING, manufactured by L&M Construction Chemicals, Inc. or "Crete Lease 880 VOC", by Cresset Chemical Company.
- n. Fly Ash: Shall comply with ASTM C618, class NORF (Class C is not permitted) Not more than 15% by weight of fly ash shall be substituted for ASTM C150 Portland Cement.
- o. Stair nosing shall be style No. 950 as manufactured by American Safety Tread Company, Helena, Alabama 35080. Telephone 1-800-245-4881. Nosings shall be cast in Feracast, with #24 virgin grain Silicon Carbide granules embedded into the walking surface while the matrix is in a molten state. Nosings shall terminate not more than 3" from ends of steps for poured concrete stairs. Nosings shall be

furnished with concealed cast anchors. All metals shall be furnished in natural metal finish. Feracast shall have one coat of shop applied black paint.

PART 3 EXECUTION

3.01 PROPORTIONING OF CONCRETE MIXES

- a. **Strength:** The minimum ultimate (28 day) compressive strength of structural concrete shall be 3000 p.s.i. (4000 p.s.i. at foundations). Its strength shall be at least 1800 p.s.i. at the age of 7 days and at least 3000 p.s.i. at 28 days. Structural concrete shall contain at least 5 sacks (470 pounds) of cement per cubic yard of concrete. (Per Soils Report). Where non-structural 'concrete paving' is required, its compressive strength shall be 2500 p.s.i. Its strength shall be at least 1500 p.s.i. at 7 days and at least 2500 p.s.i. at 28 days.
- b. **Proportions:** The Contractor shall propose to the Architect an Engineered *Laboratory Designed Mix/es with Engineers Stamp/seal* based on the following limitations. The mix design shall be approved prior to use. The mix designer shall determine the relative amounts of cement, admixtures, fine and coarse aggregate and mixing water in accordance with T24 Method B or Method C, Section 1905A.2.3. The Contractor shall pay the costs of concrete mix designs, including the cost of aggregate, gradation analysis where required.

TABLE II
CONCRETE MIXES
Complies with table 19A-A3 of C.B.C. Title 24

Sacks of Cement Concrete Type	Maximum Size of Aggregate	Minimum 94 lbs. per Cubic yard. of Concrete	Maximum Gallons Water per 94 lbs. Sack of Cement
3000 psi	3/4"	5.75	7.3
	1"	5.50	7.3
	1-1/2"	5.25	7.3
2500 psi	3/4"	5.50	7.6
	1"	5.25	7.6
	1-1/2"	5.50	7.6
3000 psi	3/8"	6.75	5.8
4000 psi	1"	6.00	5.66

- c. **Minimum Cement Content:** The minimum cement contents indicated above may be reduced by a maximum of 0.25 sacks per cubic yard, subject to the approval of the Engineer, if the resulting mix design can be substantiated by:
 - (1) The recent experience of the laboratory with the materials and facilities of the manufacturer, and
 - (2) Documented test results of trial batching or of the use of the specific mix on prior work.
- d. **Admixture:** The admixture shall not be used to replace cement. Vapor and Water proofing admixture shall be added in quantities as approved by admixture manufacturer and shall be inspected by manufacturer's representative at the batch plant. Contact SPG at 310-650-4263 for Vapor and Moisture admixture inspection.

- e. Slump: The amount of mixing water used (including free moisture carried by the aggregate) shall not exceed the maximum allowed in Table III. In addition, the amount used shall be the minimum necessary to produce the following maximum allowable slumps but, in no case shall the water/cement ratio exceed .5:
- | | |
|---|------------|
| Concrete cast on metal deck | 3" maximum |
| Concrete foundations..... | 4" maximum |
| Precast wall panels/slabs (Flatwork)..... | 4" maximum |
| All other concrete | 5" maximum |

The slump test shall conform to ASTM C-143.

- f. Aggregate Size:
- | Type of Work | Max. | Aggregate Size |
|----------------------|--------------------------|----------------|
| Joists or walls | Less than 5" wide | 3/4" |
| Beams or walls | 5" to less than 8" wide, | |
| slabs above grade | Less than 6" thick, | |
| floor slabs on grade | | 1" |
| All other concrete | | 1-1/2" |
- g. Fly Ash may be added but not more than 15% by weight of Fly Ash shall be substituted for ASTM C150 Portland Cement.

3.02 PROPORTIONING OF GROUT AND DRYPACK (Handmixed)

- a. Grout: Shall be composed of one (1) volume of portland cement and three (3) volumes of fine aggregate and only enough water to make the mixture flow under its own weight.
- b. Drypack: Shall be composed as for grout except that only enough water shall be added to set the mixture (no free water and no slump). Drypack will be tamped into place.
- c. Do not use grout or drypack that has been mixed longer than thirty (30) minutes.

3.03 GROUT (Manufactured)

Manufactured grout shall be used at all 'blocked-out' and embedded steel or aluminum items and as shown on structural drawings.

3.04 FORMS

- a. General Construction Requirements: Forms shall be constructed of wood built true to line and grade, mortar tight, and sufficiently rigid to prevent excessive deflection between supports. The arrangement and construction shall be subject to the approval of the Engineer, but responsibility for adequacy of the forms shall rest with The Contractor. Forms shall be arranged so as to properly receive and engage other construction and all anchorage sleeves, inserts, bolts, conduit, or other devices shall be installed prior to the placing of concrete.
- b. Forms for Exposed Concrete: All exposed concrete shall be formed with 5/8" (minimum) Douglas Fir "Plyform" placed with the grain of the outer plies in the direction of their span. Form construction shall insure that the concrete surfaces will conform to the tolerances of "Recommended practices for Concrete Form Work" (A.C.I. 347). The supporting studs or joists shall be spaced not more than twelve inches (12") center to center. The surfaces of the forms shall be smooth and free

from irregularities. Wall form panels shall be placed with their long dimension horizontal and so as to form continuous horizontal joints. All exposed sharp corners shall be formed with 3/4" chamfers or fillets.

- c. Form Ties or Bolts: Shall be used to fasten the forms. They shall be of sufficient strength and number to prevent spreading of the forms. They shall be of such type that they can be entirely removed or cut back one inch (1") or more from the finished concrete surface. Wire ties will not be permitted.
- d. Form Coating: Forms shall be coated with form release applied shortly before the concrete is placed but prior to placing the reinforcement.
- e. Cleaning: All dirt, chips, sawdust, nails and other foreign matter shall be completely removed from the forms before concrete is placed. Forms previously used shall be thoroughly cleaned of all dirt, mortar and other foreign matter before being reused.
- f. Removal: The forms shall not be removed until the concrete has sufficiently hardened to permit their removal with safety, but in no case in less time than as follows:

Columns, Walls, Vertical Forms	24 hours
Slabs.....	7 days
Joists, Beams and Girders.....	14 days

All removal shall be accomplished in such a manner as to prevent injury to the concrete. Comply with T24, Sec. 1906A.2.

- g. Foundation Concrete: Shall be placed directly into neat excavations provided the trench walls are stable as determined by the Architect or Structural Engineer subject to approval of the Division of the State Architect. In such cases, the minimum formwork shown on the structural drawings is mandatory to insure clean excavations immediately prior to and during the placing of concrete.

3.05 VAPOR BARRIER

Install per ASTM E1643. Place a 15 mil vapor barrier over the compacted crusher fines with all side seams lapped a minimum of 6 inches and sealed with the specified accessory. At perimeters, vapor barrier shall be turned up against footings or walls and sealed to walls, footings or slab with specified accessory. Penetrations through membrane required by piping, conduit, drains, reinforcing and anchors shall be formed by cutting slits in membrane material and then sealing membrane surface and sealing against the riser. For interior forming applications, avoid the use of non-permanent stakes driven through the vapor barrier. Use blunt-end and/or threaded nail stakes (screed pad posts) and insert them into Beast Foot or approved equal. Ensure Beast Foot's peel-and-stick adhesive base is fully adhered to the vapor barrier. For a vapor barrier-safe, fixed-elevation concrete screeding application, install Beast Screed (vapor barrier-safe screed system) per manufacturer's instructions prior to placing concrete. Concrete shall be placed directly on top of the vapor barrier.

3.06 CRUSHER FINE FILL

Fill Under Interior Floor Slabs: Place vapor barrier over crusher fines. Apply two inches (2") of crusher fines fill subgrade, grade smooth and level and roll to smooth, even surface. Crusher fines shall spread and compacted while damp. At the time of concrete placement, the crusher fines layer should be dry to damp, compacted and smooth. Do not spray crusher fines prior to placement of concrete.

Exterior concrete slabs will not require this fill except where indicated on the drawings.

3.07 EMBEDDED ITEMS

- a. The Contractor shall cooperate with all tradesmen to insure that all conduit, anchor bolts, sleeves, inserts, hangers, etc. are properly installed and secured in correct position. All embedded items shall be thoroughly clean and free from rust, scale, oil or other foreign matter. All embedded items, including bolts, shall be securely held in their final positions by means of wood templates *before* any concrete is poured.
- b. Pipes, other than electrical conduit, shall not be embedded in structural concrete. Conduit shall be located within the middle half of the slab and its outside diameter shall not be greater than one third ($1/3$) of the slab thickness.
- c. The Contractor shall properly form all reglets and rebates required in the concrete to receive flashings, frames and other equipment. Dimensions and details shall be obtained from the equipment to be provided for.

3.08 MIXING

Transit Mixed Concrete: Shall be mixed and delivered in accordance with the requirements of T24, Section 1905A. Transit mixed concrete shall not be delivered to the work with the total specified amount of water incorporated therein. Two and one-half ($2-1/2$) gallons of water per cubic yard shall be withheld but may be incorporated in the mix under the supervision of the project Inspector. Transit mixed concrete shall be mixed for a period of not less than ten (10) minutes at a peripheral drum speed of approximately two hundred (200) feet per minute and mixing shall be continued until discharge is complete. Concrete will be rejected if not discharged within one and one-half ($1-1/2$) hours during normal weather or forty-five (45) minutes during hot weather after the addition of cement to the aggregates. The manufacturer of the transit mixed concrete shall furnish with each mixer truck a certificate stating the quantity of cement water, fine aggregate, coarse aggregate and admixture (if used) in each batch delivered to the job.

3.09 PLACING

- a. General: Concrete shall be used while fresh and before it has taken an initial set. Retempering partially hardened concrete with additional water will not be permitted. Concrete shall be placed in horizontal layers of such thickness that can be satisfactorily consolidated with vibrators. The concrete shall be placed as nearly as possible in its final position and the use of vibrators for extensive shifting of fresh concrete shall not be permitted. Fresh concrete shall not be permitted to fall more than six feet (6'-0") without the use of adjustable length pipes of "elephant trunks". The use of chutes in conveying concrete will not be permitted except with the Structural Engineer's approval and only if segregation does not occur and concrete of proper consistency flows freely. Once concreting is started, it shall be carried on as a continuous operation at such a rate that the concreting surface is at all times plastic and flows readily until the section is completed between predetermined construction joints.
- b. Compacting: All concrete, including slabs, shall be thoroughly compacted by means of high frequency internal vibrators. The vibrators shall not be attached to or held against the forms or reinforcing.
- c. Concrete Slab Construction Joints: Per T24, Sec. 1906A.4.

- (1) All vertical members, such as walls and columns, shall be poured at least two (2) hours before horizontal members are poured therein to permit the concrete in the vertical members to take its initial settlement.
 - (2) After the pour has been completed to the construction joint and the concrete has hardened, the entire surface of the joint shall be thoroughly cleaned of surface laitance.
 - (3) A modified mix of concrete as hereinbefore specified with fifty percent (50%) of the coarse aggregate omitted may be deposited on horizontal construction joints before proceeding with the regular specified mix. This same modified mix may be used where conditions make puddling difficult or where reinforcing is congested.
 - (4) The location of construction joints shall be as shown on the plans or as approved by the Structural Engineer and the Architect. All construction joints shall be keyed.
 - (5) Maximum spacing shall be 20 feet on center for sidewalks, 20 feet on center for curbs and gutters, 10 feet on center for mow strips, 20 feet on center for retaining walls.
- d. Concrete Slab Expansion Joints:
- (1) Expansion joints shall be placed around all steel columns, buttresses, etc. to relieve restriction of movement.
 - (2) Expansion joints shall be placed at sidewalks/concrete paving spaced at 20' o.c. max.
 - (3) Expansion joints shall be placed at sidewalks used to separate buildings. Place parallel with walk on one side min.
 - (4) Expansion joints shall be placed at curbs/gutters and V-gutters spaced at 20' o.c. max.
 - (5) Expansion joints shall be placed at mow-strips, spaced at 10' o.c. max.
 - (6) Expansion joints shall be placed at all change of directions in concrete slabs, walls, sidewalks, curbs, etc., typical unless noted otherwise.
- e. Concrete Slab Control Joints:
- (1) Joints in concrete slabs on grade shall be spaced a maximum of 15'-0" o.c. for interior reinforced slabs and 4'-0" o.c. for exterior non-reinforced & reinforced concrete slabs. Joints shall be located where shown on plans.
 - (2) Saw-cut control joints shall be cut within three (3) hours of finishing slab as indicated on plans. All control joints shall be tooled to a round edge. No hard edges shall be permitted.
 - (3) Control joints 20' or shorter in length may be done with zip strips, only if strip can be installed in straight line.
- f. Cold Weather Requirements: Concrete shall not be placed on frozen ground, nor shall it be mixed or placed when atmospheric temperature is below 35 degrees F., unless means are employed to heat the aggregates and water so the concrete shall have a minimum temperature of 50 degrees F. The concrete shall then be protected from freezing or frost for a period of five (5) days after placing by a

means acceptable to the Structural Engineer and the Division of the State Architect. Calcium Chloride shall not be added to the mix.

- g. Hot Weather Requirements: The maximum placing temperature of concrete, when deposited, shall be 90 degrees F. Concrete (excepting foundations) shall not be placed when the maximum air temperature is expected to exceed 100 degrees F. on the day of placement unless specifically approved by the Structural Engineer. Such approval may require any or all of the following precautions:
 - (1) Provide shade for slabs to be finished after 11:00 a.m.
 - (2) Store all materials and equipment in the shade.
 - (3) Take special care to obtain the coolest mixing water available. Note that the use of ice may be required in order that the maximum temperature of the mix at the time of depositing does not exceed 90 degrees F.
 - (4) Forms to receive concrete shall be kept cool by sprinkling until the pour has started.
 - (5) A fog spray of water shall be used to keep concrete surfaces moist during the finishing operation and until curing is commenced.
 - (6) The use of an approved water reducing retarder (admixture).

3.10 CONCRETE FINISH AND LOCATION

- a. Abrasive Aggregate Finish: Shall be located on exposed finish concrete ramps, and landings.
- b. Steel troweled Finish: Shall be located on areas to receive resilient flooring.
- c. Hard, Trowel-Burnished Finish: Shall be located in exposed concrete maintenance rooms only.
- d. Rock Salt Finish: Shall be located on exposed finish concrete steps and where indicated on drawings.
- e. White Pigmented Curing Compound*: Shall be applied to all exterior concrete slabs/walks/curbs/gutters, etc., verify applications of clear or white with Architect.
- f. Clear Curing Compound*: Shall be applied to all exterior concrete slabs/walks/curbs/gutters, etc., verify application of clear or white with Architect.
- g. Broomed Concrete Finish: shall medium on all surfaces less than 6% slope and heavy broom finish on all surfaces greater than 6% slope.

3.11 FORMED SURFACES

- a. After form removal, all fins and ridges shall be removed from the concrete surfaces. All exterior form bolts shall be removed to a depth of at least one-inch (1") below the surface of the concrete. Voids and holes left by removal of form

*Clear or white curing compounds shall not be applied to curbs or slabs, which are to receive paint or striping.

ties shall be cleaned and filled with mortar. Mortar shall consist of one (1) part by volume of cement to two (2) parts of sand. Rock pockets shall be chipped out down to sound material and filled with mortar.

- b. Architectural concrete or concrete surfaces to be left permanently exposed shall be patched as mentioned above and then honed smooth, rubbed and sacked. Coat areas completely with grout, wood float, let set and then rub with burlap.

3.12 TOOLING AND MARKINGS (EXTERIOR)

- a. General: All exposed flat work shall be tooled as indicated on drawings, or as otherwise specified, with additional markings as required where structures and/or items penetrate through slab. Tooling to be uniform, straight, and minimum 1/8" wide x 1-1/4" deep.
- b. Planter walls, curbs, etc. shall have chamfer joints, tool markings, etc., as directed, to control cracking. Markings, etc., shall be continuous across tops and down backs.

3.13 CONCRETE FINISHING GENERAL REQUIREMENTS

- a. Workmanship: Employ only skilled workmen, experienced in their respective trades and work. All work performed in a first class workmanlike manner, subject to approval of Architect, or project Inspector
- b. Markings: Notify Architect in sufficient time prior to completion of setting forms for exterior flat work to permit on-site review of proposed control, construction and expansion joint locations.
- c. Finishing Samples: Prepare three- (3) foot square flatwork samples of the following finishes (where indicated for use on this job) for Owner's approval:
 - Rock salt finish Broom finish (medium)
 - Abrasive aggregate finish

Samples of finished surfaces shall be made and submitted to the Architect for approval not less than (10) days prior to installing concrete work. Samples to remain intact for comparison until flat work completed.
- d. Finishing: Concrete shall be allowed to stand long enough to evaporate excess surface water, but not until initial set takes place. Surfaces to receive ceramic tile to be broomed. Other surfaces wood floated to a true, level surface and then hand troweled to a smooth surface, free from imperfections. Finish surfaces shall not deviate more than one-eighth inch (1/8") from a ten-foot straight edge laid in any direction. Exposed concrete wearing surfaces troweled, additionally, to a hard polished finish. Unless otherwise directed, brooming, if selected, to be performed at right angles to slope. Follow slopes and lines as indicated.
- e. Curing:
 - (1) All newly placed concrete shall be kept moist until application of permanent curing.
 - (2) Slabs poured in hot or dry weather shall have a fog spray applied to them commencing during the troweling and they shall be kept wet until the placement of permanent curing, which shall be done immediately after final troweling.
 - (3) All concrete shall be permanently cured by one of the following methods:
 - (a) Sealer/Hardener/Curing compound spray-applied per manufacturer's recommendations.

- (b) Pigmented curing compound spray-applied per manufacturer's recommendations.
 - (c) Clear curing compound spray-applied per manufacturer's recommendations.
- f. Abrasive Aggregate Finish: Shall be provided on ramps, sloped walks, and landings and other areas indicated on the drawings. Wet abrasive aggregate and distribute evenly over surface at the rate of 1/2 lb. per square foot of surface. Tamp flush with surface, taking care not to bury the particles. Float and trowel as specified in paragraph d. Before final acceptance of work, treat all non-slip surfaces with a mild solution of hydrochloric acid to expose the abrasive particles.
- g. Rock Salt:
 - (1) When concrete has sufficiently set up, hand distribute the rock salt evenly over the entire surface at the rate of 5 lbs. per 100 square feet. Tamp salt into surface with a floating tool or other suitable implement.
 - (2) Apply specified curing compound and at such time as concrete has sufficiently hardened, dissolve remaining rock salt crystals with clear water.

3.14 CLEAN UP

- a. Upon completion of all other work in the building, all interior and exterior finished concrete surfaces shall be swept clean and all mortar, plaster, paint, oil and stains removed therefrom.
- b. The Contractor shall remove from the premises all surplus material, equipment and debris which are the result of his operations.

END OF SECTION
12/08/2022

REINFORCING STEEL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this section shall include the furnishing of all labor, materials and equipment required to complete the reinforcing steelwork as indicated on the drawings and as specified herein.

1.02 WORK INCLUDED (But not limited to the following items)

- a. Furnish, bend and install reinforcing steel for all concrete work.
- b. Accessories for all reinforcing work.
- c. Clean up work related to this Section.

1.03 RELATED WORK

- a. Placing concrete is specified in Section 03 10 00.

1.04 TESTS AND INSPECTIONS

- a. Refer to Section 01 45 00, "Quality Control", requirements.
- b. The Owner shall engage a testing laboratory to perform material evaluation tests.
- c. No materials of this section shall be placed into the work until sampling, testing and certifications have been approved by the Architect or Structural Engineer.
- d. No work of this section shall be covered or concealed until inspected by the Engineer, his authorized representative or the Owner's Inspector.
- e. Where samples are taken from bundles as delivered from the mill, with the bundles identified as to heat number, and provided mill analyses accompany the report, then one tensile test and one bend test will be made from a specimen of each 10 tons or fraction thereof of each size of reinforcement steel.
- f. Where positive identification of the heat number cannot be made, or where random samples are taken, then one series of tests will be made from each 2-1/2 tons or fraction thereof of each size of reinforcement steel.

PART 2 PRODUCTS**2.01 MATERIALS**

- a. Reinforcing Bars:
 - (1) #3 and smaller - ASTM A615, Grade 40.
 - (2) Larger than #3 - ASTM A615, Grade 60, unless noted otherwise.
 - (3) Welded Rebar: ASTM A706, Grade 60.
 - (4) Spiral Rebar: ASTM A-82, cold drawn bars. Reinforcement shall comply with C.B.C. Section 1910 A.2.
- b. Welded Wire Fabric: (WWF) shall be electric welded steel wire fabric conforming to ASTM A-185.
- c. Welded Steel Deformed Wire Fabric: Shall conform to ASTM A-497.
- d. Smooth Dowels: Shall conform to ASTM A-615, Grade 60. 1/2" diameter and smaller bars shall be Grade 40.
- e. Reinforcing Wire: Shall be cold drawn steel wire conforming to ASTM A-82.
- f. All reinforcing shall be new, clean, free from oil, dirt, loose mill scale, excessive rust, mortar, or other coatings that would destroy or reduce the bond.

PART 3 EXECUTION**3.01 CLEANING**

Before use, reinforcement shall be cleaned so as to be free of mortar, oil, dirt, loose mill scale and loose rust or other coatings that would destroy or reduce the bond.

3.02 BENDING

- a. Minimum bend diameters shall conform to ACI 318-19.
- b. Bars shall be bent cold.
- c. Measure bend diameters on the inside of the bar.

MINIMUM DIAMETER OF BENDS

<u>Bar size</u>	<u>Min. Diameter</u>
Nos. 3 through 8	6 bar diameter
Nos. 9 through 11	8 bar diameter
Nos. 14 & 18	24 bar diameter
Stirrups or ties	
Nos. 5 or smaller	4 bar diameter

3.03 PLACING

Reinforcing shall be accurately placed in accordance with the drawings and meeting CRSI and shall be securely tied in position with at least No. 16 gage annealed wire at all bar intersections. Metal chairs and bolsters (at 32" o.c. each way max.) shall be used to hold all steel above the form bottoms at the proper distance. Metal spacers shall be used to secure the proper spacing of the steel. Precast concrete dobies (at 48" o.c. max.) shall be used to support reinforcing steel off the ground in footings and off the soffit of concrete exposed to weather. The clear distance between parallel bars shall not be less than 1-1/2 times the bar diameter, but in no case less than 1-1/2" nor less than 1-1/3 times the maximum size of coarse aggregate.

3.04 SPLICING

Splicing shall not be permitted without the approval of the Structural Engineer unless detailed on Structural Drawings. Splices shall be made with a lap of at least Class "C" unless noted otherwise. The bars shall be placed in contact and wired together in such a manner as to maintain a clearance of not less than the minimum clear distance to the other bars and to the surface of the concrete. In general, stagger splices at least 4'-0". Splice wire mesh with a lap of at least the dimension of one mesh + 2". Welded splices shall be in accordance with CBC Title 24, 1903 A.8.

3.05 TOLERANCES

Reinforcement shall be placed in specified positions meeting CRSI requirements, but not less than the following tolerances:

- a. Depth: + 1/4" for members 24" or less in depth.
- b. Depth: $\pm 1/2$ " for members greater than 24" in depth.
- c. Length: ± 1 ".

3.06 MASONRY DOWELS

The masonry contractor shall supervise and be responsible for the proper installation of reinforcing dowels into the concrete work by the reinforcing steel contractor.

3.07 WELDED REINFORCING

- a. All welding of rebar shall conform with American Welding Society specifications AWS D1.4/D1.4M:2018, latest edition as modified by CBC Standard No.19-1.
- b. If mill test reports are not available, chemical analysis shall be made of bars, representative of the bars to be welded. Bars conforming to ASTM A-706-89 may be assumed to have a C.E. = 0.55. Bars with a C.E. above 0.75 shall not be welded. Welding shall not be done on or within 2 bar diameters of any bent

portion of a bar, which has been bent cold. Welding of crossing bars shall not be permitted for assembly of reinforcement, unless authorized by the Structural Engineer and approved by the Division of the State Architect.

3.08 CLEAN UP

The contractor shall remove from the site all surplus material, equipment and debris which are the results of his operations.

END OF SECTION
12/08/2022

PIPE HANDRAILS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

- 1.01 The work of this section shall include the furnishing of all labor, materials and equipment required to complete the work indicated on the drawings and as specified herein.

1.02 WORK INCLUDED

Pipe handrails

1.03 RELATED WORK

Installation of bolts, anchors, frames, inserts and miscellaneous items in the work of other trades is specified in Section 06 10 00.

1.04 SHOP DRAWINGS

- a. Submittals: Submit blue-line prints and reproducible transparencies to Architect for approval per Section 01 33 00. Roll prints and transparencies in reverse, so they will lie flat when unrolled.
- b. Responsibility: Approval of details and materials or methods will not relieve Contractor from responsibility of successfully completing work in accordance with specified requirements and within Contract Time Period.

1.05 FIELD MEASUREMENTS

- a. The Contractor shall verify all dimensions, including grade and details of existing field conditions.
- b. Deviations between existing construction and drawings affecting this work shall be called to the attention of the Architect and work of this section postponed until the required corrections have been made.

PART 2 PRODUCTS

2.01 MATERIALS

- a. Pipe handrails shall be 1-1/4" nominal diameter (1-1/2" actual OD) Schedule 40, Class I steel pipe, galvanized after fabrication. The entire fabrication shall be of welded construction. All steel pipe shall conform to ASTM A53 Grade B.

PART 3 EXECUTION

3.01 FABRICATION

- a. General: The Contractor shall fabricate the material and erect same with workmen skilled in this branch of the steel industry.

- b. Tolerances: Material, fabrication and erection tolerances shall be as set forth in the latest edition of the AISC "Specification for the Design, Fabrication and Erection of Structural Steel Buildings".
- c. Cleaning and Straightening: All material, before being fabricated, shall be cleaned of all scale and rust and shall be thoroughly straightened by methods that will not injure the material; deformations resulting from fabrication processes shall be corrected by similar methods. Heat shrinkage of low alloy structural steels will not be permitted.
- d. Gas Cutting shall be done by machine where possible. All re-entrant corners shall be shaped notch-free to a radius of at least one-half inch (1/2").

3.02 BOLTED CONNECTIONS

- a. Holes for bolts shall be one-sixteenth inch (1/16") larger than the nominal diameter of the bolt. Holes may be punched if the thickness of the material is less than the nominal diameter plus one-eighth inch (1/8"). If the thickness of the material is greater than the nominal diameter plus one-eighth inch (1/8"), the holes shall be drilled or subpunched and reamed.
- b. Machine bolts shall be used in all bolted connections unless noted otherwise.
- c. High Strength (H.S.) bolts shall conform to and be installed in conformance with the "Specifications for Structural Joints Using ASTM A-32 Bolts", approved by the Research Council on Riveted and Bolted Structural Joints (of the Engineering Foundation). The bolts shall be tightened by means of a calibrated wrench or turn-of-nut method to provide the minimum bolt tension specified in Table 3 of the above mentioned specification. Hardened washers shall be used under the heads or nuts, whichever is turned during tightening, for both the calibrated wrench method or the turn-of-nut method. Where the surface of a high strength bolted part has a slope of more than 1:20, a beveled washer shall be used to compensate for the lack of parallelism.
- d. Drifting to enlarge unfair holes is prohibited. Holes that must be enlarged to admit bolts shall be reamed and a larger bolt used.

3.03 WELDED CONNECTIONS

- a. Welding shall be done by the electric shielded arc process in conformance with the requirements of the latest edition of the AISC "Specification for the Design, Fabrication and Erection of Structural Steel Buildings" and Sections 3 and 4 of the A.W.S. "Structural Welding Code D1.1".
- b. Operators shall be qualified by tests prescribed in the "Standard Qualification Procedure" of the A.W.S.

3.04 PAINTING

- a. Shop Coating:
 - (1) Cleaning: After inspection and approval, all steel work shall be thoroughly cleaned by "Power Tool Cleaning" or "Blast Cleaning" of loose mill scale, loose rust, weld slag or flux deposit, dirt. Oil, grease or salts shall be removed by "Solvent Cleaning". Cleaning shall conform to the Steel Structures Painting Council Surface Preparation Specifications as follows:
 Solvent cleaningSSPC - SP1 - 63
 Power tool cleaningSSPC - SP3 - 63
 Commercial blast cleaning . SSPC - SP6 - 63

- (2) Galvanizing: Where specified, galvanizing shall be performed by the hot-dip process after fabrication into the largest practical sections. Galvanizing shall conform to ASTM A-123.
 - (a) Where specified for small structural steel or cast steel articles (i.e., bolts, nuts, washers, etc.), galvanizing shall be performed after fabrication in accordance with ASTM A-153.
 - (b) When it is necessary to straighten any sections after galvanizing, such work shall be performed without damage to the spelter coating.
- b. Field Painting: After erection, all parts where paint has been rubbed or burned off and all bolts, rivets, connecting devices and welded areas shall be prime painted as specified for shop painting.

3.05 GENERAL REQUIREMENTS

- a. All handrails and railing shall be of all welded construction, ground smooth.
- b. All handrails and railing shall be mandrel bent with returns to walls at handrails.
- c. All tubing ends shall be capped (welded/ground smooth).
- d. Set top-rail at +34" at stairs and ramps. Provide additional rail at +24" at stairs. Provide additional "curb" rail at +4" to center line at ramps. Set top-rail at +42" at guardrails.
- e. Maximum spacing of support verticals in railing and handrails shall be 48".
- f. Maximum spacing of wall brackets for handrails shall be 32".
- g. All imbedded verticals shall be set in 2½" diameter schedule 40 galv. pipe inserts x 10" deep secured with Sikagrout #212 non-shrink grout.

3.06 CLEAN UP

All rubbish and debris resulting from the operations of this trade shall be cleaned up and removed from the site as the work progresses.

END OF SECTION

12/08/2022

ROUGH CARPENTRY

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- a. Scope of work the work of this section should include all labor, material equipment and appliance required the drawings and/or specified herein.

1.2 SECTION INCLUDES

- a. Structural framing.
- b. Floor, wall, and roof sheathing.
- c. Preservative treatment of wood.
- d. Miscellaneous framing and sheathing.
- e. Telephone and electrical panel boards.
- f. Wood nailers and curbs for roofing and items installed on roof.
- g. Roofing cant strips.
- h. Concealed wood blocking for support of toilet and bath accessories, wall cabinets, and wood trim.
- i. Miscellaneous wood nailers and furring strips.

1.3 RELATED SECTIONS

- a. Section 05 12 00 - Structural Steel

1.4 REFERENCES

- a. ANSI A208.1 - American National Standard for Particleboard.
- b. AFPA T10 - Wood Frame Construction Manual; American Forest and Paper Association.
- c. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- d. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- e. ASTM D 2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
- f. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- g. AWWA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association.
- h. AWWA C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association.
- i. AWWA C20 - Structural Lumber -- Fire Retardant Treatment by Pressure Processes; American Wood-Preservers' Association.
- j. AWWA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Preservers' Association.

- k. AWWPA U1 - Use Category System: User Specification for Treated Wood; American Wood-Preservers' Association.
- l. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce).
- m. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; Redwood Inspection Service.
- n. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.
- o. WCLB (GR) - Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau.
- p. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association.

1.5 SUBMITTALS

- a. See Division 1 - Administrative Requirements, for submittal procedures.
- b. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.
- c. Shop Drawings and Calculations: For site fabricated truss frames, indicate dimensions, wood species and grades, component profiles, drilled holes, fasteners, connectors, details, and sequence of erection. Drawings and calculations must be signed and stamped by the Professional Engineer responsible for the design.
- d. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

- a. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
 - 1. Acceptable Lumber Inspection Agencies: Any agency with rules approved by American Lumber Standards Committee.
- b. Exposed-to-View Rough Carpentry: Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
- c. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWPA standards.

1.7 QUALIFICATIONS

- a. Design structural site fabricated trusses under direct supervision of a Professional Engineer experienced in design of such trusses and licensed in the state in which the project is located.

1.8 DELIVERY, STORAGE, AND HANDLING

- a. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- b. Trusses: Protect site fabricated trusses from warping or other distortion by stacking in vertical position, braced to resist movement.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

- a. Sizes: Nominal sizes as indicated on drawings.
- b. Moisture Content: Provide seasoned lumber with 19% maximum moisture content.
- c. Structural Framing:
 - 1. Species and grade as indicated on drawings.
- d. Miscellaneous Blocking, Furring, and Nailers:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.2 ACCESSORIES

- a. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere. Type as indicated on drawings.
 - 2. Furnish bolts and attachments to other trades for installation in masonry and concrete work.
 - 3. Nails: Common wire, galvanized for exterior use.
 - 4. Lag Screws and Wood Screws: Steel. Conforming to ANSI/ASME Standard B18.2.1, galvanized for exterior use.
 - 5. Machine Bolts: ASTM A307, galvanized for exterior use.
 - 6. Plain Washers: ANSI B18.22, galvanized for exterior use.
 - 7. Hangers, Straps, Ties and other Framing Connectors: Steel, Galvanized. "Simpson Strong-Tie" unless noted otherwise.
- b. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.
- c. Sill Flashing: As specified in Section 076200.
- d. Subfloor Glue: Waterproof, water base, air cure type, cartridge dispensed.
- e. Building Paper: No. 15 asphalt felt.

2.3 FACTORY WOOD TREATMENT

- a. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
- b. Preservative Treatment:
 - 1. Manufacturers:
 - a. Arch Wood Protection, Inc; www.wolmanizedwood.com.
 - b. Chemical Specialties, Inc; www.treatedwood.com.
 - c. Osmose, Inc; www.osmose.com.
 - d. Substitutions: See Section 016000- Product Requirements.
- c. Preservative Pressure Treatment of Lumber Above Grade: AWPA Use Category UC3B, Commodity Specification A (Treatment C2) using waterborne preservative to 0.25 lb/cu ft retention.
 - 1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - 2. Treat lumber in contact with roofing, flashing, or waterproofing.
 - 3. Treat lumber in contact with masonry or concrete.
 - 4. Treat lumber less than 18 inches above grade.

- a. Treat lumber in other locations as indicated.
- 5. Preservative Pressure Treatment of Plywood Above Grade: AWWPA Use Category UC2 and UC3B, Commodity Specification F (Treatment C9) using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 - b. Treat plywood in contact with roofing, flashing, or waterproofing.
 - c. Treat plywood in contact with masonry or concrete.
 - d. Treat plywood less than 18 inches above grade.
 - e. Treat plywood in other locations as indicated.
- d. Preservative Pressure Treatment of Lumber in Contact with Soil: AWWPA Use Category UC4A, Commodity Specification A (Treatment C2) using waterborne preservative to 0.4 lb/cu ft retention.
 - 1. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
 - 2. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.

PART 3 - EXECUTION

3.1 FRAMING INSTALLATION

- a. Verify that surfaces to receive rough carpentry materials are prepared to require grades and dimensions.
- b. Conduct work under direction of capable experienced foreman.
- c. Accurately located members to line and dimension. Ensure full contact of timbers framed together. Ensure let-in members in full contact on two surfaces. Where there is a significant variation in moisture content between individual members, shrinkage shall be allowed for and final connection shall not be made until moisture content of adjacent members has been stabilized. Allow no construction over framing members until final connections and/or adjustments have been made to achieve maximum strength at connections and maximum future movement from shrinkage or expansion.
- d. Cutting: Do all cutting and framing required to accommodate structural members, piping conduit, ducts and installation of mechanical, electrical, and other equipment and apparatus.
 - 1. Obtain Architect's approval for cutting of structural members not detailed on structural drawings.
 - 2. Reinforce cut sill and top plates with metal straps in accordance with the requirements of the drawings.
- e. Bracing and Shoring: Provide all supports, guys and braces, required to stabilize structure during construction.
- f. Accurately saw-cut and fit lumber into position and securely nail, spike, lag bolt, or bolt as required.
- g. Fasteners: Installation of fasteners shall be performed in accordance with ANSI/ASME Standard B18.6.1. Drill holes for fasteners and size as noted:
 - 1. Nails and spikes: Smaller than diameter of fastener. Predrill as required to prevent splitting.
 - 2. Lag Bolts: Drill holes same length as shank. Bit size, no larger than base of threaded portion of screw.

3. Bolts: Holes $1/32"$ - $1/16"$ larger than bolt.
4. Framing Connectors: Smaller than diameter of fastener. Predrill as required to prevent splitting.
5. No lubricant of any kind shall be used on any fastener depending on friction for holding.
- h. Nailing: Refer to details and tables on drawings for specific nailing requirements. In absence of specific instruction, comply with the following:
 1. Edge Distance: $1/4$ length of fastener.
 2. Toe Nailing: Drive toe nails at an angle or approximately thirty degrees with the piece and started approximately one-third the length of the nail from end of piece.
 3. Replace split or otherwise damaged structural members.
- i. Bolts: Use standard cut washer under bolt heads and nuts against wood. Use heavy plate washer or malleable iron washer where noted on drawings. Drive into place. Ensure full engagement of nut, but projection of bolt beyond nut not to exceed one bolt diameter. Tighten nuts at installation and again immediately prior to enclosure.
- j. Lag Screws: Lubricate with soap or similar material. Turn into place without driving. Ensure penetration into lagged member of 60 percent of screw length. Lead hole shall have diameter of about 70 percent of the root diameter of the screw. Provide washers of same sizes as specified for bolts.
- k. Framing Connectors: Drive nails into all holes of each connector. Install all bolts in each framing connector unless detailed otherwise.
- l. Screws: Screws shall not be driven by hammering.
- m. Frame openings with two or more studs at each jamb and support headers on cripple studs unless noted otherwise in the drawings.
- n. Provide miscellaneous members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.2 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

- a. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joints 4 inches and seal.
- b. Place sill gasket directly on sill flashing. Puncture gasket cleanly and fit tightly to protruding foundation anchor bolts.
- c. Coordinate installation of wood decking, wood chord metal joists, glue laminated structural units, prefabricated wood trusses, and plywood web joists.
- d. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.
- e. Coordinate curb installation with installation of decking and support of deck openings.

3.3 SILLS AND PLATES

- a. Install Pressure Preservative-treated lumber for plates and sill in contact with concrete or masonry construction..
- b. Bolt to foundations and slabs. Level sill with shims, washers placed, and nuts tightened to level bearing.
- c. Pack space between sill and concrete with non-shrink grout.

3.4 STUD WALLS, PARTITIONS AND FURRING

- a. Provide studs in continuous lengths without splices.
- b. Plates: Provide single bottom plate and double top plate. Stagger joints 4' minimum in top plates.
- c. Nail or anchor plates to supporting construction.
- d. Corners and Intersections: Frame with 3 studs or as detailed in the drawings.
- e. Openings: Frame with double studs each side and double headers placed on edge, resting on cripple studs.
- f. Provide continuous horizontal blocking row at mid-height of single-story partitions over 8' high and at midpoint of multi-story partitions, using 2" thick members of same width as wall or partitions.
- g. Cut-in blocks wherever necessary for bracing or backing for applied finish or fixtures. Cut-in 2" solid blocking between studs at all horizontal joints in non-structural plywood wall sheathing.

3.5 FLOOR FRAMING

- a. Girders, Posts, Ledgers, and Anchors: Set accurately and secure with level bearings. Coordinate work with Cast-in-Place Concrete Contractor to set bolts and anchors properly.
- b. Floor Joists: Lay with crowning edge up, with 1-1/2" minimum bearing at supports except, at ledgers, full width of ledger.
- c. Blocking: Provide 2" solid blocking of same depth as joist at all walls and partitions.
- d. Bridging: Provide bridging for floor joists of more than 4" depth which are spaced 32" on center or less. Bridge floor joists every 8' by solid blocking 2" thick and full depth of joist or by wood cross bridging of not less than 1"x3" or nailed metal cross bridging of equal strength. Where cross bridging is used, drive lower ends of such cross bridging up and nail after floor or subfloor has been nailed.
- e. Piping: Where partitions containing plumbing, heating, or other piping occur above joists, space joists to give clearance for piping. Where partition containing piping runs parallel to floor joists, double joists below partition spaced to permit passage of pipes, and solid bridged.
- f. Joist: Double header joists and hang on steel joist hangers. Hang joists on steel joist hangers, Double trimmer joists receiving header joists over 6' long.

3.6 JOISTS AND RAFTERS

- a. Joists and Rafters: Lay with crowning edge up with full end bearing.
- b. Openings: Frame for hatches, vents, and other openings as required.
- c. Bridging: Provide bridging for roof joists or rafters of more than 8" which are spaced 32" on center or less. Bridge roof joist or rafters every 10' by solid blocking 2" thick and full depth of joist or rafter, or by wood cross bridging of not less than 1"x3" or nailed metal cross bridging of equal strength. Where cross bridging is used, drive lower ends of such cross bridging up and nail after roof sheathing has been nailed.
- d. Solid Blocking: Install between roof rafters and ceiling joists over partitions and at end supports as indicated.
- e. Plywood Roof Sheathing: Install plywood over rafters or decking as indicated on drawings. Thickness and nailing shall be as indicated on structural drawings.

- f. Plywood Joints: Install 1/2" H clips at butt joints of roof sheathing, between rafters spaced 24" on center where solid blocking is not required.

3.7 SITE APPLIED WOOD TREATMENT

- a. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- b. Allow preservative to dry prior to erecting members.

3.8 TOLERANCES

- a. Framing Members: 1/4 inch from true position, maximum.
- b. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- c. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION

10/20/2014

FINISH CARPENTRY

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, material, equipment and appliances required to complete all the work shown on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

- a. Provide barricades as required.
- b. All scaffolding required for the work of this trade.
- c. Laying out of the work.
- d. All rough and finish carpentry with necessary grounds, blocking, backing, nails, rough hardware and preservative treated lumber.
- e. All sheathing, furring, stripping, (except for direct application of acoustic tile) and plaster grounds.
- f. All dry packing.
- g. Cutting and patching as required by the work of other trades.
- h. All rough hardware, including bolts, millwork assembly bolts, nails, etc., for attachment of wood to wood and wood to masonry or concrete.
- i. Installation of all miscellaneous iron, bolts, washers, nuts, screws, lag screws, etc.
- j. Installation of all millwork and finish trim (furnished under Millwork Section).
- k. Installation of toilet accessories.
- l. Cleaning of glass, finish hardware, plumbing, electric fixtures and plates upon completion of the work.
- m. Clean the building and building site upon completion of all work.
- o. Hanging of all doors
- p. Installation of finish hardware.
- q. All Douglas Fir plywood.
- r. All gypsum board under surface mounted electrical fixtures.
- s. All insulation building board.
- t. All caulking, specified in Section 07 91 00 unless specified under other sections of these specifications.
- u. Fill all exterior thresholds with mastic and seal all metal door jambs at floor with rubber caulk as specified elsewhere.
- v. Installation of all connections of wood to metal not otherwise installed under other section.
- w. Installation of hollow metal frames in plastered, concrete and concrete block walls.
- x. Provide and install all required framing for installation of plaster expansion screeds.

1.03 RELATED WORK

- a. Concrete formwork and shoring is specified under "Concrete Work", Section 03 10 00.
- b. Millwork is specified under Section 06 22 00.02.
- c. Finish hardware is supplied under Section 08 71 00.
- d. Expansion screeds and miscellaneous trim as specified under Section 09 21 00.

PART 2 PRODUCTS

2.01 LUMBER

- a. Grading, Size and Pattern: Lumber shall bear the official grade mark of the appropriate inspection agency on the wide face of each piece. Lumber shall be surfaced, milled or worked to patterns as indicated on the drawings. The Architect shall have the right to reject any lumber which in his opinion is unsuitable for the intended use, subject to the re-inspection procedure prescribed in Paragraph 700 of the "Standard Grading and Dressing Rules No. 16". Latest edition, published by the West Coast Lumber Inspection Bureau.
- b. Grades and Species: All framing lumber, unless otherwise specified, shall be well seasoned Douglas fir and shall comply with the requirements of "Standard Grading and Dressing Rules No. 17, latest edition, of the West Coast Lumber Inspection Bureau. Delivery to job site and installation of lumber with a moisture content of greater than 19% is not permitted. All lumber shall be "Grade Marked" KD or SD by a recognized lumber grading agency and 2x members shall be dried so that moisture content does not exceed 19 percent. All framing lumber shall be of the D.F. grades for use as specified below, unless otherwise indicated on the drawings.

Use	Grade
(1) Posts (5"x5" and larger width not more than 2" greater than thickness) 1200F-c, Para. 131-b.	"No. 1 Structural" - Posts & Trimmers,
(2) Beams, girders and truss members (5" and thicker, 6" and wider, width more than 2" greater than thickness	"Select Structural" Beams & Stringers 1600F-b Para. 130-a.
(3) Joists and planks	"No. 1 S-Dry"

- c. Preservation of Wood Members in Contact with Concrete Floor Slabs or Foundations: "Pressure treated Douglas Fir or Hem Fir". Preservatives used shall meet the requirements of AWWA Standard P5. All treated lumber shall bear the factory applied AWWA Standard U1 grade mark for above ground use.

2.02 PLYWOOD

Plywood shall be Douglas Fir conforming to U.S. Product Standard P.S. 1-83. Each sheet shall be grade marked by the American Plywood Association as follows:

Roofing Sheathing	" Structural 1", C-D
Wall Sheathing:	
Exposed to View or Weather	"A-C Exterior"
Concealed	"Structural 1", C-D
Floor Sheathing	"Group 1", touch sanded

All glue to be exterior type.

- (1) Sturdifloor Interior APA, combined subfloor underlayment. See Structural Drawings for thickness.

Plywood Thicker than 3/8" shall have a minimum of five (5) plies.

2.03 BUILDER'S ROUGH HARDWARE

- a. Nailing: Nails shall be common wire nails of the sizes indicated on the plans. Nails for hangers and other special fastenings shall be those furnished by the manufacturer of the fastenings. See the drawings for Nailing Schedule. Stripping and subfloor nails - "Stronghold annular or ring shank nails" or equal.
- b. Bolting: Holes for bolts shall be bored true to line and one-sixteenth of an inch ($1/16$ ") larger in diameter than the bolt. Bolts shall be unfinished unless otherwise noted. Standard cut washers shall be installed under bolt heads and nuts that would otherwise bear on wood surfaces. Bolts and washers shall be furnished by the Miscellaneous Iron Contractor and installed by this Contractor. Where plate washers or malleable iron washers are specified on the plans, the following sizes shall be provided. Retighten nuts/bolts prior to close-in.

Bolt Size	M.I.	Washer	Steel Plate Washers
1/2"	2-1/2" diam. x 1/4"	2"	square x 1/4"
5/8"	2-3/4" diam. x 5/16"	2-1/2"	square x 1/4"
3/4"	3" diam. x 3/8"	2-3/4"	square x 5/16"
7/8"	3-1/2" diam. x 7/16"	3-1/4"	square x 3/8"
1"	4" diam. x 1/2"	3-3/4"	square x 3/8"

- c. Lag Screws shall be screwed and not driven into predrilled holes. The pre-drilled holes shall be 0.75 times the diameter of the screws.
- d. Miscellaneous Fasteners: Light-gauge fasteners, including joist hangers, clips, etc., shall be manufactured by the Simpson Company or equal.
- d. Power Driven Fasteners shall be "Ramset", "Hilti" or equal and shall be used only where indicated on the plans.

2.04 EXPANSION BOLTS
ITW/RAMSET Red Head.

2.05 DRYPACK

Drypack shall be composed of one (1) volume of portland cement and three volumes of fine aggregate and only enough water to set the mixture (no free water and no slump). Drypack shall be tamped into place.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- a. Nailing: Nails shall not be driven closer together than their required penetration; nor closer to the edge of timber than one-half ($1/2$) their required penetration. Where necessary, wood shall be pre-drilled to prevent splitting. All framing shall be strongly nailed, bridged, blocked and trussed to make a rigid structure. Where structural wood members have been split and/or otherwise changed to the extent as to materially impair their strength, they shall be removed and properly replaced.
- b. Work and Relations with Other Contractors: The Carpentry Contractor's responsibilities include:
 - (1) Notice to other Contractors, in ample time as not to delay the work progress, to place portions of their work as is embedded, built-in, attached to or supported by work being executed. Any cutting or patching

- necessitated by any subcontractor's failure or delay to comply with notice is subcontractor's responsibility.
- (2) Major cutting or boring of rough carpentry and work affecting finish carpentry, for other contractors and trades. Other contractors will do their own minor cutting or boring for installation of pipe, conduits and ducts.
 - (3) Responsibility for proper placing of all work embedded in or related to concrete in proper time and manner. Assist and direct or place same.
 - (4) Responsibility for proper placing of all required backing for wall and ceiling plaster expansion screeds and miscellaneous trim.
- c. Framing: All framing shall be of sizes and lengths as indicated on the drawings with anchoring and bolting where shown.
- (1) Exposed Lumber and wood finish shall be surfaced, cleaned, sandpapered and left free from hammer marks and ready for paint. All interior plywood shall be fully protected from the sun.
 - (2) Unexposed Lumber may be left rough except where sizing is necessary.
- d. Joists and Rafters:
- (1) All joists and rafters shall be of sizes noted on plans, laid with crowning edge up and shall be supported firmly from below.
 - (2) All bearing surfaces on which wood structural members are to rest shall be finished so as to give a true and even support.
- e. Studding
- (1) All studs throughout building shall be of sizes as called for on the drawings and spaced at sixteen inches (16") on center, except where called for otherwise.
 - (2) All bearing walls and partitions shall have plates at bottom and top as detailed. All plates shall be spiked together. Mud sills shall have solid bearing to bed of dry pack. All double plates, corners and/or intersections shall be lapped.
 - (3) Stud partitions or walls containing plumbing, heating or other pipes shall be so framed and the joists underneath so spaced as to give proper clearance for the piping. Pipes exceeding one-third ($1/3$) of the plate width shall not be placed in partitions used as bearing or shear walls unless completely furred clear of the studs. Pipes shall be placed in the center of the plates using a neat hole; no notching shall be allowed. *(In any case, pipes shall not pass through plates less than five and one-half inches (5'-1/2") in width.)*
 - (4) Wood stud walls resting on masonry or concrete shall have wood base plates or sills. Sills under exterior, bearing or shear walls shall be bolted to the masonry or concrete with not smaller than $5/8"$ x 12" bolts spaced at not more than four foot (4'-0") centers. There shall be a bolt within nine inches (9") of each end of each piece of sill. Where sills are bored or notched exceeding one-third ($1/3$) of the sill width, extra bolts shall be required as given for ends of sill pieces. Sills under non-bearing interior partitions shall be anchored at not more than four feet (4'-0") on center with $5/8"$ x 12" bolts or two feet eight inches (2'-8") on center with Ramset #3348 or Hilti NK72. No powder bolts allowed on curbs or edges of slabs.
 - (5) The width of sills shall be not less than the width of the studs and their nominal thickness less than two inches (2"). (Sills shall be completely bedded in one inch (1") of dry pack so as to obtain a continuous bearing.)
- f. Furring, Stripping, Ground and Backing:
- (1) All wood furring, stripping, blocking, bucks and grounds shall be furnished and installed by the Contractor where shown or noted on the drawings and/or these specifications except stripping for acoustic tile. All pipes and ducts shall be furred in wherever shown.

- (2) Furring as noted sixteen inches (16") on center shall be provided for pipes, conduits and where necessary to form off-setting around structural features.
- (3) Horizontal and vertical backing for nailing all joints of wall finish materials shall be provided wherever needed through the building. Horizontal and vertical backing shall also occur at center of all wall board and ceiling board materials, at counter heights, wainscot heights and for securing all fixtures, cabinet work, shelving and all other items of work that require support from the wall. Install solid backing for plumbing fixtures as directed by the Architect, except where plumbing fixture hangers are specified under Plumbing Section.
- (4) Furnish and set all grounds for sheet metal and other trades. Grounds shall be of proper size and spacing for the installation of work as noted under the various headings.
- (5) All blocks, grounds, etc., which are embedded in concrete shall be dipped in creosote after being cut to size and after nails are driven which are to hold them in concrete.
- (6) Stripping for Ceilings Applied to Bottom of Wood Joists shall be laid flat and at right angles to joists, with 16d Stronghold nails at each end and each bearing. Holes for nails at ends shall be pre-drilled.
- (7) Three-eighths inch (3/8") thick x two inch (2") (nom.) stripping shall be furnished and installed on all interior structural plywood, which is to receive plaster. See Drawings if plywood is let-in or surface applied to studs.
- g. Cutting of Framing: No cutting of wood framing other than furring shall be done without the express approval of the Architect or his representative and the Division of the State Architect.
- h. Finish: Exterior and interior trim shall be straight and true with uniform reveals around frames and openings. Miter at corners and re-entrant-entrant angles. Nail with staggered nailing where possible to prevent splitting and with sufficient nailing to hold trim snug and true to line.
- i. Cleaning Site: All wood, including stumps, form lumber, casual lumber, shavings, sawdust, rubbish and debris shall be cleaned from the building and building site. Upon completion of the building, the building and grounds shall be left broom clean and in an orderly and acceptable condition.
- j. Cleaning: Clean glass, hardware, plumbing fixtures, light fixtures, switch plates, service outlets and grilles upon completion of the work and leave in a clean, acceptable condition.

3.02 SPECIAL REQUIREMENTS

- a. Laying Out Buildings The foundation plan shall be followed in laying out the building; however, it shall be checked against the floor plan and all dimensions shall be verified.
- b. Wood Sheathing: Lay tight with full bearings over supports.
- c. Drypacking:
 - (1) Wash with clean water all areas over which drypacking is to be applied.
 - (2) Sills shall be properly leveled with the bottom face to one inch (1") above the foundation.
 - (3) Space under sill shall be filled with drypacking solidly tamped.
 - (4) Trowel edges smooth and keep drypacking continuously moist for three (3) days or seal with watersealer.
- d. Millwork and Hardware: All doors, windows and casework hardware shall be installed so that they may operate freely but not loosely, without sticking or binding, without hinge-bound conditions and with all hardware properly adjusted and functioning. All millwork shall be neatly installed with any necessary bolting and scribing. No hammer tracks shall be allowed. All trim shall be put on in full

lengths without piecing except where the use of single lengths would be impracticable or impossible. In general, butt end (where pieced) shall be beveled. All exterior angles shall be mitered and the interior angles of the molded parts coped. All nails shall be set for putty. Anchor securely to wall and floor.

- e. Damage: The Contractor shall protect this work from damage of any kind until completion and acceptance of the building.
- f. Scaffolds: This Contractor shall provide, install, maintain and remove any and all fixed scaffolding, either exterior or interior, required for the proper and satisfactory execution of this work in such a manner as will comply with the Rules and Regulations of the Industrial Accident Commission of the State of California. Movable scaffolds and the planking of scaffolds will be provided by the subcontractors of their respective trades.
- g. Protection of Exposed Interior Lumber: All exposed interior lumber shall be fully protected from sun and weather.
- h. Pitch Pockets: Pitch pockets shall be cut out of exposed mullions and beams.
- i. Machine Applied Nailing: Satisfactory installation shall be demonstrated on the job and the acceptance of the field representative of the Division of the State Architect and the Architect and/or Structural Engineer shall be obtained before the use of machine-applied nails can be approved. Approval is subject to continued satisfactory performance.

3.03 USE OF POWDER DRIVEN CONCRETE FASTENERS IN SCHOOL CONSTRUCTION

- a. Shot pins may be used for shear loads and they may be used in tension to support loads less than 100 pounds for minor loads like acoustical ceilings, duct work, conduit, etc. Any shot anchors must have ICBO approval for the type of concrete used on the job. Shot pins may not be used in concrete curbs.
- b. The allowable loads shall be 100 pounds or 80% of ICBO approved values, whichever is less. Qualification for use of all power-actuated tools must meet ANSI A10.3 standard as required by the manufacturer and all OSHA requirements.
- c. TESTING - The operator, tool, and fastener shall be prequalified by the project inspector. He shall observe the testing of the design load shall be applied to the pin in such a manner as not to resist the spalling tendency of the concrete surrounding the pin. Thereafter, random tests under the project inspector's supervision shall be made of approximately 1 in 10 pins. If any pin fails testing, test all pins of the same category not previously tested until twenty-(20) consecutive pass, then resume the initial testing frequency.

END OF SECTION
12/14/2022

MILLWORK AND CABINETS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor and material for the fabrication and installation of all the work shown on the drawings and/or specified hereunder. Delivery to the building is considered as part of this contract.

1.02 WORK INCLUDED

- a. All finish woodwork, moulds, trim, casings, facings, base and base shoe, including all interior and exterior trim and exterior fascias (redwood).
- b. All casework, counters, cabinets, drawers and shelving, including all trim, poles and doors for same.
- c. All plastic tops, splashes, shelves, counter fronts and ends.
- d. All sliding drawer hardware and adjustable shelf hardware.

1.03 TYPICAL INCLUSIONS

Sink cabinets; wall cabinets; storage cabinets; wardrobes; pullman cabinets; counters; booths; display cases; built-up shelving; shelves installed on adjustable wall mounted standards; plywood or solid stock sub-tops for metal covered tops; special purpose tops for cabinets other than metal, such as chemical resistant plastic, epoxy resin countertops, sinks, splashes etc.; high-pressure laminated plastic or hardboard facings, coverings and surfaces; glass and mirrors which are a part of the cabinet; chalkboards and tackboards which are a part of the cabinet, with necessary trim and trays; rough and finish hardware which is a part of the cabinet; metal brackets and fittings necessary to properly secure the cabinet to the building structure; finish trim and moldings necessary for a finished cabinet installation; cut-outs for sinks, cup sinks, electrical boxes, and columns or similar units; linoleum, leather, vinyl, or resilient covering which is a part of the cabinet; tote trays and easel trays of plastic or metal; high-pressure laminate caps and panels for rails; gates; filler panels and scribe strips; cleaning of cabinets at completion of installation.

1.04 TYPICAL EXCLUSIONS

Plumbing and electrical fixtures, and fitting and installation of same; metal tops; tile tops; any work not directly associated with the casework; metal brackets and fittings that are a part of the building structure; furring, stripping, blocking, grounds and stub wall of structural materials; furnishing and installation of sink rims or similar items; special equipment to be housed in the cabinets, such as drafting boards, etc.; furnishing or installation of plastic laminate wall covering; vinyl topset base at fixed cabinets.

1.05 RELATED WORK

- a. Installation of Millwork is specified under Section 06 10 00.
- b. Furnishing and installation of finish hardware is specified under Finish Hardware, Section 08 71 00.
- c. Painting and priming is specified under Painting, Section 09 91 00.
- d. Metal doors & frames are specified under Section 08 11 00.

1.06 GENERAL REQUIREMENTS

- a. Workmanship: Only skilled workmen experienced in their respective trades and work shall be employed. All work shall be performed in a first class workmanlike manner and shall be subject to the approval of the Architect or his representative.
- b. Approvals: An approval for all brands of materials not mentioned herein shall be obtained in writing from the Architect.
- c. Protection: The Contractor shall protect his work from damage of any kind and deliver same to the building undamaged.

1.07 PLAN AND SPECIFICATION REQUIREMENTS

- a. All items that are required to be Architectural Woodwork Standards (A.W.S) Laminated Plastic Covered Casework::
 - (1) The A.W.S. grade or grades desired. Grades shall be Custom (C) unless otherwise indicated on the plans and/or designated in Supplementary Section as follows:
 - (a) Economy (E)
 - (b) Custom (C)
 - (c) Premium (P)
 - (d) Laboratory (L)
 - (2) The type of countertop desired shall be Laminated Plastic (LPT) unless otherwise indicated on the plans as follows:
 - (a) Laminated Plastic (LPT)
 - (b) Hardwood Lumber (HLT)
 - (c) Hardboard (HBT)
 - (3) The type of laboratory tops desired. Type shall be as follows:
 - (a) Epoxy Resin (EPR)
 - (4) The type and size of sinks desired shall be indicated on the plans or specified.
 - (5) A.W.S. Certified Compliance Grade labels and Certificates are required.
 - (6) In rooms designated as utility, storage, or closet, Economy Grade casework will be furnished unless specifically specified otherwise.
 - (7) If a A.W.S. grade is not specified, Custom Grade will be furnished, except as provided in (6) above.
 - (8) If type of counter top is not specified, a Laminated Plastic counter top will be furnished.
 - (9) The brand of laminated plastic shall be optional with the manufacturer and in accordance with Paragraph 3.04 below, unless a special brand is specified.
 - (10) If the provisions for the A.W.S. grade specified are in conflict with or modified by the plans and specifications, the modification shall govern.

1.08 GRADES

- a. Economy: This grade establishes a standard to meet the requirements of lower cost residential and commercial construction where economy is the principal factor, and for use in storage and utility areas.
- b. Custom: This grade includes all the requisites of high quality casework and is suitable for all normal uses in high grade construction, such as higher quality construction for residential, school, medical facilities and commercial buildings.
- c. Premium: This grade of casework is intended primarily to be used for library shelving, display cases, and casework with visible interiors that require a more decorative appearance.
- d. Laboratory: This grade shall meet all the requirements of Premium Grade and is intended for usage in chemistry or "hard acid" areas where exposed or semi-exposed portions of the cabinet require additional protection.

1.09 DEFINITIONS

- a. Exposed portions of casework shall include all surfaces visible when doors and drawers are closed; visible edges only of shelves and divisions in open cases; tops of cabinets less than 6'-0"* from the floor; bottoms of wall-hung cabinets over 4'-0" above floor and exterior faces and backs of movable cabinets.
- b. Semi-exposed portions of casework shall include shelves; divisions; interior faces of ends, backs, bottoms and doors; drawer sides, backs, sub-fronts, and bottoms; bottom of wall-hung cases between 2'-6" to 4'-0" above floor; tops of cases over 6'-0" above the floor; and similar members.
- c. Concealed portions include sleepers, webs, bust panels, toe space and other surfaces not normally visible.

1.10 SHOP DRAWINGS AND SUBMITTALS

- a. Shop drawings, per Section 01 33 00, shall be submitted to the Architect prior to fabrication. Drawings shall show each cabinet, with sufficient special details to clearly indicate all unusual features of construction.
- b. Samples of the proposed laminate, together with currently available colors, shall be submitted to the Architect for selection.
- c. Shop drawings shall bear the Woodwork Institute Certification (W.I.).

1.11 PROTECTION

The Contractor shall protect his work from damage of any kind and deliver same to the building undamaged.

PART 2 PRODUCTS

2.01 MATERIALS (All finish materials shall be kiln dried)

- a. All millwork shall be manufactured in accordance with the standards established in the latest edition of the Architectural Woodwork Standards in the grade or grades herein specified or as shown on the drawings.

1 Cabinet tops above 6'-0" and visible from upper floor levels shall be considered exposed portions.

- b. Before delivery to the jobsite, millwork supplier shall issue a W.I. Certificate of compliance indicating the millwork products for this job fully meet the requirements of the grade or grades specified.
- c. Exterior Finish shall be Clear All Heart Redwood, A.W.S. Custom Grade for opaque finish for moulds, trims, casings, facings, S4S.
- d. Interior Finish shall be A.W.S. Custom Grade for opaque finish.
 - 1. Clear Douglas fir shall be used for frames and stops for doors, clothes poles, all work bench tops and locker room benches.
 - 2. A.W.S. Custom Grade shall be used for moulds, trim, facings and casings.
 - 3. Casework - Softwood (All casework except where noted on Drawings) shall be W.I. Custom Grade for opaque finish.
 - (a) Drawer fronts, backs and sides.
 - (b) Backs - 1/4" plywood, Douglas Fir plypanel A-D.
 - (c) Ends and Divisions - 5/8" plywood Douglas Fir Interior A-B.
 - (d) Bottoms - 3/4" plywood, Douglas Fir plypanel A-D.
 - (e) Shelves - 3/4" plywood, Douglas Fir Interior A-D with Ponderosa Pine edge banding for shelves not to exceed 3'-0" in length. Shelves longer than 3'-0" shall not be less than one inch (1") net in thickness - Douglas Fir plywood edge banded.
 - (f) Counter tops for formica - 3/4" 1M3 I.G.P. core
 - (g) Doors - Type 10 -3/4" thick per Architectural Woodwork Standards.
- e. Casework - Hardwood (where indicated on Drawings):
 - 1. All Exposed Exterior Surfaces: A-1 or A-2 birch veneer plywood, opaque finish. See Paragraph 2.01 d.. (3) for thickness.
 - 2. Doors: 3/4" with hardwood veneer and hardwood edge banded 1M3 I.G.P. core as per Type 1 of Architectural Woodwork Standards.

NOTE: *These casework standards shall be followed unless otherwise noted on detail. Apply finish hardware to I.G.P. with Type "A" self-tapping sheet metal screws.*

- f. Material Standards:
 - 1. High-pressure decorative laminates (H.P.D.L.) shall conform to requirements established in NEMA LD-3 Grade II, 1985, or latest revision thereof.
 - 2. Low pressure decorative laminates (L.P.D.L.) shall conform to requirements established in ALA Grade III, 1988 or latest revision thereof.
 - 3. Softwood plywood shall be rotary cut Douglas Fir, and shall conform to the requirements of P.S.1-83 and UBC Standards 23-2. Hardwood plywood I shall be the species specified and conform to the standards established by ANSI-HPMA-83 (Section 6).
 - 4. MDF shall be of 1/4" minimum thickness, with minimum density 50 lbs. per cubic foot. The board shall conform to ANSI A208.2.
 - 5. Industrial grade particleboard (I.G.P.) shall meet the requirements of UBC Standards 23-4 and ANSI A208.1-87, type I, Grade I-M-3 which meet the following requirements. The following is a partial summary of these requirements:

Minimum density	45 lbs. per cubic foot;
Thickness Tolerance	+ 0.010 max.
Modulus of Rupture	2,400 psi, min.
Modulus of Elasticity	400,000, min.
Internal Bond	80 psi, min.
Hardness	500 lbs., min.
Linear Expansion	0.35% Max.
Screw Holding: Face	250 pounds, min.
Edge	225 pounds, min.

6. Cores for (H.P.D.L.) shall be (I.G.P.) or close grained hardwood plywood, a minimum of 11/16", with finished thickness of .735" (47/64"), including laminates.
 7. Cores for (L.P.D.L.) shall be (I.G.P.) with finished thickness of 3/4".
 8. Edge Bands shall be the following, and applied after face laminate:
 - (a) .028" (H.P.D.L.) self-edge, the same as front exposed face.
 9. Adhesive: Laminate and core materials shall be securely glued with Type II adhesive applied as recommended by the adhesive manufacturer and shall conform to the standards established by HPMMA.
- g. Finish Hardware:
1. Hardware shall be furnished and installed as required to provide a complete casework installation.
 2. Hardware shall be USS 26D finish unless specified otherwise.
 3. Locks shall be installed as shown on the plans and will be master keyed
 4. The following hardware is listed to establish a quality of product.
 - (a) Hinges -Stanley HT-1592 or Rockford Process Control- B-851.
 - (b) Door and drawer pulls – Stanley 4483-1/2 34-8225 26D.
 - (c) Magnetic Catches - Amerock V-9765, Epco No. 591 or equal.
 - (d) Elbow catches - Ives SP2A92-AL, Amerock 3675, or equal.
 - (e) Cabinet Door Locks – Schlage CL777R with strike and 626 Finish or approved equal.
 - (f) Drawer locks – Schlage CL888R with strike and 626 Finish, or approved equal.
 - (g) Drawer guides –
 - File Drawers – Accuride 4034, full extension, 150 lb load capacity or approved equal.
 - All other drawers – Accuride 3832, full extension, 100 lb load capacity or approved equal
 - (h) File Followers - Hardware Specialty No. 11485-FWZ, National 61-080, or equal. For card files, Capital 521 with 523 plate or equal.
 - (i) Adjustable shelf standards - K.V. 255, Garcy U373, Grant 125, gangdrilled or equal.
 - (j) Adjustable shelf clips – Hettich, Shelf Support Universal 1, #1 005 767 or equal.
- h. Equipment and Accessories:
1. Standard color samples as required, shall be submitted for selection.
- i. Countertops:
1. The fabricator shall furnish and install the type of tops indicated on the plans and in conformance with the provisions set forth below. If other requirements are desired, they may be specified.
 2. Laminated Plastic Countertops: Cabinet tops shall have self-edge, rolled, or bull-nose edges and coved splashes where splashes are indicated. All tops shall conform to the requirements of Custom Grade set forth in Section 11 of the Architectural Woodwork Standards, and ANSI A161.2 and shall be furnished in accordance with those provisions. Finish material shall be NEMA Type GP50, .050" min. thickness (H.P.D.L.) or NEMA Type PF42, .042" min. thickness (H.P.D.L.) at post-formed tops, i.e., coved splashes, etc.

PART 3 EXECUTION

3.01 SPECIAL REQUIREMENTS

- a. Lengths: Moulds, trim, casings and facings of shapes detailed on drawings shall be furnished in lengths of not less than 16'-0".

- b. Frames shall be built to detail with applied stops. All rabbeted joints shall be set in white lead paste with all members securely nailed.
- c. Milling:
 - 1. Run all finish lumber to patters as shown with clear cut profiles and free from machine imperfections
 - 2. Interior trim shall be flat face drum sanded.
- d. Casework: All casework shall be mill built by skilled cabinet makers and shall conform to the latest edition of the Manual of Woodwork and/or the latest amendments, Woodwork Institute of California - Custom Grade. It shall be complete units or in sections as large as possible for access to intended locations.
- e. Plastic: All plastic shall be self-edged and/or as detailed. All plastic shall be pressure bonded with a resin type adhesive Urac 185 or equal. Balancing sheets shall be used where necessary to prevent warpage or high water absorption.
- f. All wood doors, jambs and trim shall have all corners eased by sanding.

3.02 ASSEMBLY

- a. All casework and counter tops shall be fabricated and installed in conformance with the W.I. Standards and Details of the grade specified or shall conform to the specifications and details shown on the plans.
- b. Each cabinet shall be completely fabricated as a modular unit in the mill.
- c. Cabinet style, unless noted otherwise, shall be Style A frameless "Flush Overlay".

3.03 DETAILS OF CASEWORK

Cabinet sectional details as illustrated in W.I. Manual of Woodwork Standards are the minimum requirements for casework construction. Alternate methods shown are optional with the manufacturer, unless plans indicate specific construction requirements. All construction shall conform to the A.W.S. standards established for custom casework, unless specified or indicated otherwise.

3.04 INSTALLATION

- a. All installation shall be done by experienced craftsmen. All fixed cabinets shall be plumb, level, and securely attached to the wall or floor using established methods, which will meet all legal requirements.
- b. Filler panels and scribe strips or moldings, as required, shall be properly scribed to adjacent work and securely attached to the cabinets.
- c. The entire installation shall present a workmanlike appearance, without open joints, tool marks or other blemishes.
- d. Cabinets shall be thoroughly cleaned and checked for mechanical operation.

3.05 CONSTRUCTION REQUIREMENTS - GRADE RULES

- a. Material requirements as defined in the following paragraphs apply to all grades except as modified hereinafter.
- b. Custom Grade:
 - (1) Exposed Portion's Finish (See Paragraph 1.06a for definition). Finish for exposed portions shall be NEMA Type GP28, .028" minimum thickness (H.P.D.L.). If woodgrain pattern is used, the grain shall run and match vertically.
 - (2) Semi-exposed Portion's Finish See Paragraph 1.0-6b for definition):
 - (a) Finish for semi-exposed portions, except as listed otherwise, shall be polyester or melamine (L.P.D.L.) and conforming to ALA 1988 standards.

- (b) Finish for interior faces of hinge doors and exposed ends shall be NEMA Type CL20, .020" (H.P.D.L.) "cabinet liner".
 - (c) Finish for (M.D.F.) drawer bottoms and cabinet backs shall be "baked-in" acrylic, color to match cabinet interior, conforming to ANSI 135-5-1988 finish standards, or latest revision thereof.
- (3) Concealed Portions: Material for concealed portions of casework may be of any sound, dry solid stock, plywood, particleboard, or any combination thereof.
- (4) Visible Edges:
 - (a) All exposed or semi-exposed edges of ends, tops, bottoms, shelves, partitions, divisions, etc., shall be banded per 2.01i.
 - (b) Only the front edge of adjustable shelves is required to be banded.
- (5) Ends and Divisions:
 - (a) Material for cabinet ends and divisions shall be (I.G.P.) a minimum of 11/16" with .735" finished thickness with laminates.
 - (b) The visible top edges of the ends of cabinets 6'-0" or more from the floor do not require an edge band*, but shall have all voids filled and sanded.
- (6) Shelves shall be (I.G.P.) with (L.P.D.L.) finish each side, a minimum of 3/4" finished thickness. Adjustable shelves with unsupported spans over 30" in length shall be a minimum of 1" in thickness. Fixed shelves in excess of 30" in length between vertical members of the cabinet body shall be a minimum of 1" in thickness.
- (7) Tops and Bottoms:
 - (a) Tops and bottoms shall be a minimum of 3/4" in thickness.
 - (b) Bottoms of upper cabinets in excess of 3'-6" between vertical members of the cabinet body shall be a minimum of 1" in thickness. I.P.G. or 3/4 plywood.
- (8) Web Frames shall be a minimum of 3/4" in thickness and 2" in width and shall be either solid stock, or (hardwood 5-ply) plywood. A solid (full cabinet length and depth or height) piece of plywood or (I.G.P. a minimum of 3/4" in thickness may be used in lieu of a web frame.
- (9) Backs shall be plywood or (M.D.F.), a minimum of 1/4" in thickness, with color to match cabinet interior. Exposed backs shall be 1/2" min. thickness.
- (10) Cabinet Doors:
 - (a) Doors shall be 11/16" minimum thickness (I.G.P.) core. Finished doors shall be a minimum of .735" in thickness with laminates. All four edges shall be banded per 2.01i, with joints for "T-type" at hinge points only.
- (b) Sliding Doors shall be 3/4" (I.G.P.) and faced on the inside with NEMA Type CL20; .020" minimum thickness (H.P.D.L.) "cabinet liner" and faced on the outside with NEMA Type GP28, .028" (H.P.D.L.) with vertical edges banded per 2.01i.
- (11) Drawers:
 - (a) Finished drawer fronts shall be a minimum of .735", with laminates, in thickness and shall be faced on the inside with NEMA Type CL20, .020" minimum thickness (H.P.D.L.) "cabinet liner". Drawer fronts shall be banded four edges per 2.01f9 with the joint in the center of the bottom edge for "T"-type banding.
 - (b) Drawer bottoms shall be M.D.F.
 - (c) Drawer sides, backs and sub-fronts shall be a minimum of 1/2" in thickness of either custom grade hardwood solid stock or (I.G.P.) with (L.P.D.L.) finish.

1*Unless visible from upper floor levels.

- c. Economy Grade: Material requirements shall be the same as Custom Grade, except all exposed portions shall be melamine overlay.
- d. Premium Grade: Material requirements shall be the same as Custom Grade, except all semi-exposed portions behind glass or in open cases and the inside face of hinged cabinet doors shall be faced with .030 minimum thickness decorative high-pressure thermoplastic laminate of the same material as adjacent exposed face.
- e. Laboratory Grade: Material requirements shall be the same as Premium Grade, except all semi-exposed portions (except drawer sides, backs and bottoms) shall be Laboratory Grade plywood or faced with .030" minimum thickness decorative high-pressure laminate (cabinet liner). All edge banding shall be self-edged with the same material as the adjacent exposed face.

3.06 CONSTRUCTION REQUIREMENTS - - ALL ARCHITECTURAL WOODWORK STANDARD GRADES (A.W.S.)

- a. Construction requirements shall be the same for all A.W.S. grades. The differences in the grades are based on the use of different materials for exposed and semi-exposed surfaces.
- b. Joinery:
 - (1) All cabinet members shall be securely fastened together.
 - (2) All exposed and semi-exposed joints shall be tight and true.
 - (3) All exposed joints shall be securely glued.
- c. Web Frames shall be provided at 2'-6" maximum spaced intervals when banks of drawers operate on metal side slides and shall be dadoed into ends and divisions. When pairs of drawers occur above a door or open compartment, there shall be a web frame provided beneath the drawers.
- d. Cabinet ends shall be lockjointed or dadoed, securely glued, and blind nailed or screwed to the tops, web frames, and bottoms at not-to-exceed 6" on center; or tops, sub-tops, webs, and bottoms may be tenoned full width into ends, securely glued, and blind nailed or attached with a reinforcing screw cleat.
- e. Fixed Shelves, web frames, bottoms and vertical or horizontal divisions shall be dadoed or tenoned into adjoining members.
- f. Screw-type leveling devices, when specified, shall be placed at each corner of floor mounted cabinets over 16" in depth and shall be a maximum of 72" on centers, and shall permit adjustment from within the cabinet. The floor contact area of the leveling device shall be not less than 12 square inches, and shall provide a minimum of 4 square inches of floor contact area for each square foot of cabinet base area.
- g. Cabinet Bases may be constructed with either separate or integral bases. Bases shall be fabricated of 1-1/2" solid stock, laminated plywood, or particle board, k1-1/2" thick, min., reinforced at the corners with a 1-1/2" thick supporting block or a two-piece steel bracket assembly. Sleepers shall be provided at maximum of 36" o.c..
- h. Backs shall 1/4" minimum and be securely nailed or stapled to the case body and intermediate members, and braced at 36" maximum centers each way and at tops and bottoms of cabinets with 1/2" x 2-1/2" anchor strips (plywood, I.G.P., or solid stock) securely attached to the case*.
- i. Adjustable shelves shall be adjustable on 1" or 32 mm maximum centers. Surface or recess mounted metal shelf standards or drilled holes with metal shelf supports shall be used.
- j. Drawers:
 - (1) Drawer sides shall be blind dovetail dadoed and securely glued into the front, unless a sub-front is used.

*A Anchor strips not required at 1/2" thick cabinet backs.

- (2) Drawers may have a finished front securely attached to a sub-front with No. 12 x 1" sheet metal screws a maximum of 1-1/2" from the perimeter of the finished drawer front at not less than 8" on centers.
 - (3) Drawer sides shall be multiple dovetailed, or lockjointed and nailed to the backs and sub-fronts.. Drawer sides, fronts or sub-fronts, and backs shall be plowed to receive bottoms and shall be securely glued or glue blocked to form a rigid unit.
 - (4) All the above types of joints shall be securely glued.
 - (5) Drawers shall be supported on metal side slides with nylon ball bearing rollers, and provision made to stop the drawer in both in and out position without impact on the drawer front. Drawer slides shall have a capacity of 75 pounds.
 - (6) File drawers shall have a slotted or split bottom and shall be provided with a follower mechanism or hanging file hardware (verify with Owner which type is desired), and shall be supported on full extension drawer slides with a capacity of 75 pounds.
 - (7) Drawers shall show a maximum of 1/8" maximum clearance between adjacent drawers or doors and 1/4" maximum between adjacent cabinet doors or drawers.
- k. Doors:
- (1) Hinged doors up to 40" in height shall be equipped with two (2) hinges. Doors 40" to 60" in height shall be equipped with three (3) hinges. Doors 60" to 80" in height shall be equipped with four (4) hinges. Doors over 80" shall have five (5) hinges. Doors over 60"H or 30"W shall be 1" minimum thick.
 - (2) Sliding doors shall be installed on overhead metal track with nylon roller hangers or on metal bottom track with sheaves and top guide and be provided with an inserted finger pull.
 - (3) Frameless sliding glass doors shall be installed on ball-bearing carriers with metal track and top guide.
 - (4) Doors shall show a maximum of 1/8" clearance between adjacent doors or drawers.

3.07 FINISH FOR PLASTIC LAMINATE CASEWORK

- a. All unfinished materials used for backs, self-edge backing, stripping and other concealed portions shall be finished with water repellent sealer.
- b. All wood surfaces of drawers, trays and similar semi-exposed portions shall be finished with two coats of sanded sealer and one coat of clear gloss lacquer.
- c. Exposed wood surfaces shall be tone colored to harmonize with the adjacent laminate, and finished with one coat of sanded sealer and two coats of clear gloss lacquer.

END OF SECTION
12/08/2022

INSULATION

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, material, equipment, transportation and services necessary to completely furnish and install all insulation shown on the drawings and/or described herein, including all nails, clips, fasteners, tape and scaffolding necessary to complete the work specified and/or shown.

1.02 WORK INCLUDED

- a. Insulation of all ceilings over all rooms including room walls adjacent to attic spaces.
- b. Wire staples and accessories for installation of insulation.
- c. Insulation of all walls.
- d. Insulation batts.
- e. Rigid insulation.

1.03 RELATED WORK

- a. Any and all insulation specified or shown on the drawings for the Heating, Ventilating and Air-conditioning or Plumbing Sections of the work.

1.04 WORK NOT INCLUDED

- a. No ceiling insulation in eaves and open corridors.

1.05 REFERENCES

- a. ASTM C-665, Type III, Class A . Category I
- b. Factory Mutual (FMRC Standard 4880) for rigid insulation

PART 2 PRODUCTS**2.01 MATERIALS**

- a. Thermal and acoustical insulation located on or within floor-ceiling and roof-ceiling assemblies, crawl spaces, walls, partitions and insulation on pipes and tubing shall comply with this Section. Duct insulation and insulation in plenums shall conform to the requirements of the California Mechanical Code.

Exception: Roof insulation shall comply with C.B.C. Section 1504 for required testing materials only.

- b. All insulation materials including facings, such as vapor barriers or breather papers installed within floor-ceiling assemblies, roof-ceiling assemblies, walls, crawl spaces or attics, shall have a flame-spread rating of 25 or less and a smoke density not to exceed 450 when tested in accordance with U.B.C. Standard No. 8-1. All thermal insulation specified herein shall be as manufactured by Johns Manville Thermal FSK-25 Flame Resistant Fiber Glass Commercial insulation or approved equal in quality, utility and thermal properties. Batts shall be fiberglass with vapor seal backing on one side with projecting flanges for stapling. R-values shall be minimum resistance of R-30 for ceilings/roof decks and R-19 for walls unless noted otherwise.
- c. Rigid insulation shall be "TUFF – R COMMERCIAL" polyisocyanurate insulation boards or equal, with a thermal resistance of R-8 unless noted otherwise and a minimum compressive strength of 25 p.s.i. with factory applied foil face on each side. All materials, including foil facings to have smoke development rating of 450 or less and a flame spread of 25 or less when tested in accordance with UBC Standard 8-1.
- d. Wire Staples: "Bostitch" or approved equal with 1/4" staple legs.

2.02 SUBSTITUTIONS

See Section 10, Article 19.

2.03 EQUALS

John Manville, U.S. Gypsum, DOW, Owens-Corning, Certainteed.

PART 3 EXECUTION

3.01 INSTALLATION

- a. Insulation shall be installed to form a complete barrier against the passage of heat and/or sound to the full extent of the thickness of the material and type of material specified. Holes, gaps, tears and other evidence of inferior installation will be cause for rejection. Batt insulation shall be stapled to face of supports at six inch (6") intervals. Where rafters are spaced at 48" o.c., two (2) 24" batts shall be laid on top and perpendicular to the ceiling stripping. All batts shall be butted tight and/or lapped so that there are no spaces between the batts or rafters. Staple side of batt adjoining rafter at six inch (6") centers.
- b. Insulation Laid over Suspended Plaster Ceiling System: Insulation shall be installed progressively to form a complete barrier against the passage of heat and/or sound to the full extent of the thickness of the material and type of material specified. Insulation shall be laid continuous over the tops of walls or adjacent rooms. At all ceiling access tiles and ceiling access scuttles insulation shall be neatly fitted around these openings and securely fastened to the top of these access units to allow for operation of same.
- c. Below slab, insulation shall be applied in strict conformance with the manufacturer's recommended installation procedures (latest edition).
- d. Roof insulation shall be placed up tight against roof deck and fixed in place with 18-gauge taut wire system or stapled per NFPA 13.

END OF SECTION
12/14/2022

**SPRAYED POLYURETHANE ROOFING SYSTEM
PERMAX-108/120/WHITE ROOFING GRANULES**

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION



(CHECKED BOX INDICATES DOUBLE GRANULE FINISH APPLYS TO SOME PORTIONS OF THIS PROJECT)

PART 1 GENERAL REQUIREMENTS

1.01 SCOPE

- A. This guide specification covers the installation of the, Sprayed Polyurethane Roofing System (SPRS) which consists of a seamless sprayed-in-place polyurethane foam insulation covered with an WHITE elastomeric coating which is a **Energy Star® Qualified Product** meeting **Title 24** requirements with a layer of white ceramic granules for use as an insulated roofing system for both new and retrofit (re-roofing) construction.
- B. The successful application of a SPRS is dependent upon the experience, technology and common sense of the designer and applicator/contractor. This guide specification is intended as a starting point for development of more complete specifications for SPRS. The successful application of a SPRS is dependent upon the experience, integrity and ability of the contractor.

1.02 QUALITY ASSURANCE

- A. In the absence of a general contract, the roofing contractor shall be the prime contractor. All subcontractors shall be identified and approved at the time the proposal is submitted.
- B. Contractor/Bidders shall be pre-qualified as follows:

All bidders shall be contractors (or divisions of established roof contracting companies) specifically engaged in the application of SPRS. Such bidders (or responsible managing employee of established roof contracting companies) shall have been engaged in the installation of these systems for not less than 5 years. Each bidder shall have performed at least 5 applications of similar size and type. The applicator shall have installed a minimum of 100,000 square feet of system specified.

In order to allow all bidders equal opportunity to bid, and to provide the District un-bias inspection and warranty service for this project, no bidder (contractor) shall be related to or a division of the product manufacturer in any way for this project.

- 1. Bidders shall submit a copy of the proposed warranty

2. from the manufacturer of the roofing materials ("the manufacturer") along with his bid.
 3. The contractor shall carry a minimum of \$2,000,000 in general liability insurance on a continuing basis. Verification of insurance shall be submitted at the time of the bid.
 4. The contractor shall carry a valid state C-39 roofing license.
- C. The manufacturer shall be pre-qualified as follows:
1. The manufacturer shall maintain a minimum of \$5,000,000 of product liability insurance on a continuing basis. Verification of insurance shall be submitted at the time of the bid.
 2. The manufacturer shall have a minimum of 1,000,000 square feet of successful roofing installed with the oldest being a minimum of 5 years old.
 3. The manufacturer shall have been in the roof materials manufacturing business for a minimum of 10 years.
 4. The bidders shall submit a letter from the manufacturer of the coating certifying that his **company and products** meet the requirements of paragraph C-1, C-2 and C-3. A copy of this letter shall accompany the bid. **Bids received without this letter shall be considered non-responsive.**

C. Inspection

A representative of the coating manufacturer shall inspect the roof after completion to assure that the detail work at the protrusions, drains, parapets and edges has been completed in conformance with accepted industry practice (including the requirements of the specified manufacturers warranty).

1.03 SUBMITTALS

A. **The following submittals shall accompany the bid:**

1. The bidders shall submit a letter from the manufacturer of the coating certifying that his products and company meet the requirements of paragraph 1.02, C, 1, 2 and 3.
2. Submit a copy of the approved applicator certificate from the manufacturer of the foam and coating supplier stating that the contractor of these products is a "qualified applicator".
3. Submit a copy of the manufacturers proposed warranty.

4. UL fire rating: Submit the current UL certification.
- B. The following technical data shall be submitted upon selection of the roofing contractor:
 1. Manufacturers Literature: Submit copy of the manufacturers technical data bulletins for specified foam and coating materials, and application information (guide specification).
 2. Samples: Submit 2 samples of the proposed coating system applied over urethane foam including the specified granule finish. Samples shall be 2 inches by 4 inches in size.

1.04 APPROVED SUBSTRATES

Approved substrates include the following:

Built-up Roofing	Metal decks	Base Sheet
Concrete	Wood	Recover Board

1.05 MATERIALS, DELIVERY AND STORAGE

- A. Materials shall be delivered in the manufacturers original, unopened containers, clearly labeled with the manufacturers name, product identification, safety information, batch and lot numbers.
- B. Containers shall be stored out of the weather and out of direct sunlight at temperatures specified by the manufacturer.

1.06 ENVIROMENTAL CONDITIONS

- A. Weather conditions must be within those listed on the manufacturers technical data bulletins. If weather conditions change during the applications and the stated conditions are not met, the application must be stopped until such time as the specified conditions are met. No application may proceed during inclement weather.

1.07 SCHEDULING

- A. Working Hours

The application of all roofing materials shall be performed on **off-school hours when the students are not in class and on weekends**. Roof preparation and installation of metal may be performed during regular working hours if it does not disturb classroom sessions.

B. Overtime Wage Waiver

The Division of Labor Standards and enforcement of the provisions of the California Code of Regulations, Title 8, Section 16200, Subsection 3 (F), permits a waiver for payment of overtime wages for night, holiday and weekend work "if work cannot be performed during normal business hours and work, if necessary, at off hours to avoid danger to life and property".

C. All Other Prevailing Wage Provisions

All other provisions of the prevailing wage status remains in full force and effect, including, but not limited to, payment of overtime wages for work in excess of eight (8) hours per day, or forty (40) hours per week.

D. All other trades such as structural, mechanical, electrical should have completed their work prior to the installation of the SPRS.**1.08 WARRANTY**

- A. The polyurethane and acrylic elastomer system shall carry a 10-year non-depreciating warranty. The contractor is to provide labor and the material manufacturer, the materials, for all repairs covered during the warranty period.
- B. Warranty terms shall begin upon "essential completion of SPRS construction" or completion of final inspection/punch list items (if any) not to exceed 45 days from the date that RTC is notified by the contractor with a written request for warranty.

1.09 INSPECTION

- A. A representative of the material manufacturer shall inspect the roof after completion to assure that all work has been completed in conformance with the specifications and accepted industry practice. All material thickness shall be verified.

1.10 SAFETY REQUIREMENTS

The following technical bulletins are available from the Spray Polyurethane Foam Alliance, American Plastics Council, 1-800-523-6154.

Spray Polyurethane Foam Product Stewardship Guidance booklet shall be available at the jobsite for review by anyone involved in this project. It shall be used as a reference guide for the pre-construction meeting. It is available at; www.spraypolyurethane.com

AX-119: MDI-based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal.

AX-171: Spray Foam Self Defense and Module 11: Health, Safety and Environmental Aspects of Spray Polyurethane Foams and Coatings.

AX-178: PMDI User Guidelines for Chemical Protective Clothing Selection.

AX-197: MDI Transportation Guidelines: Information for Drivers.
The Bayer Material Science handbook; "Spray Polyurethane Foam Insulation", Safe use and handling guidelines for installers shall be available to all workmen and associates involved with this project.

PART 2 PRODUCTS

The following materials are identified as a baseline minimum for quality and performance, other materials shall be considered.

2.01 PRIMER AND INTENDED APPLICATION SUBSTRATE

- A. **Asphalt/BUR, Masonry & Plywood:** Primer shall be single-component bonding primer, black in color. The product shall be Acryprime-Substrate SG Primer as manufactured by Resin Technology Company, Ontario, CA, 1-800-729-0795.
- B. **Polyurethane Foam (Addition of new foam over existing for repair):** Primer shall be single component bonding primer. The product shall be Acryprime-Substrate primer as manufactured by Resin Technology Company, Ontario, CA, 1-800-729-0795.
- C. **New Galvanized Steel:**
 - 1. Galvanized Metal and Other Non-Ferrous Metals: Pretreatment Primer No. 4860-420 (Reducer 1000-44) as manufactured by Cardinal Industrial Finishes, El Monte, CA, (213-283-9335) or Sherwin Williams DTM Wash Primer.
Or
 - 2. Sherwin Williams DTM Wash Primer. Krylon Water Soluble primer is also approved.

2.02 BASE SHEET AND FASTENERS

- A. A base sheet if required shall be 72 Lb. fiberglass, mineral surfaced cap sheet as manufactured by Schuller, GAF, ConGlass or equal.
- B. Nailable decks; The fasteners shall be 1-inch, square head, ring-shank nails as manufactured by Simplex or equal with sufficient length to penetrate sheathing or embed a minimum 1-inch into sheathing.
- C. Mechanical Fasteners and Plates; Screws shall be No. 12, coated, self-taping screws of sufficient length to penetrate the existing BUR and insulation with 1 inch penetration (minimum) into the substrate. The plates

shall be 2 inch square, coated plates. The screws and plates shall be as manufactured by Olympic, DeckFast or equal.

2.03 RECOVER BOARD/FIRE PROTECTION BOARD

- A. A recover board or fire protection board between a wood deck using diagonal sheathing or insulation board if required shall be Georgia-Pacific Corporation 1/4-inch Dens-Deck 4' x 8' sheets. Dens-Deck may be installed parallel or perpendicular to sheathing, stagger all joints. Prime per 2.01 above.
- B. Fire Resistance; Flamespread O, smoke development O, when tested in accordance with ASTM E-84. Noncombustible when tested in accordance with ASTM E136.

2.04 POLYURETHANE INSULATION

Polyurethane insulation shall be a two component polyurethane insulation system formulated for use through airless equipment. The product shall be RT-2035-3 as manufactured by Resin Technology Company, Ontario, California. The 'B' component shall not contain any flammable or red label materials. The product shall exhibit the following typical physical properties.

Density (sprayed in place)	3.0 pcf
Compressive strength	45-50 psi
Tensile strength	70 psi
Shear strength	45 psi
Closed cell content	90 % min.
K factor (aged)	0.159
Flame spread UL-723 (ASTM E-84)	75 max.*
Roof Deck Classification	UL 790 (ASTM E-108)
Non Combustible Deck	Class A
Combustible Deck	Class B
Maintenance and Repair	Class A

Note: For specific details regarding UL 790 roof assemblies, refer to "Roofing Materials & System Directory," Underwriters Laboratories, Northbrook, IL.

***This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.**

2.05 FLUID APPLIED ELASTOMERIC COATINGS

The elastomeric coating material shall be an acrylic elastomeric coating and shall be an **Energy Star® Listed Product** and meet **Title 24** requirements for the Standards for Liquid Applied Coating Used in Roofing ASTM D-6083-97a. The product shall be **Permax-108 or Permax-120** as manufactured by Resin

Technology Company, Ontario, California, with the following typical physical properties:

Solids Content, by wgt.	68.0% ($\pm 2.0\%$)
Solids Content, by vol.	60.0% ($\pm 2.0\%$)
Viscosity	95-105 KU
Weight Per Gallon	11.2 \pm 0.3 lbs.
Flash Point	none below boiling point of product
Gloss at 60 ° Geometry	10
Clean-up solvent (wet Material)	Water
Coverage (mils/100 SF/gal)	9.5 Dry Mils \pm 1
Drying Time a 24 wet mils	
Dry to Touch	4 hours
Dry – Through	12 hours
Dry-to-Recoat	12 – 24 hours
Total Cure Time (aprx.)	20 – 30 days
Permeance @ 20 mils	50 Perms
Tensile Strength @ break	390 \pm 100
Tear Resistance	126 lbf/in.
Elongation, to break	Initial 245 \pm 100 Aged, 1000 hrs 230 \pm 100
Elastic Recovery (from 100%)	100%
Impact Resistance (ASTM D-2794-69)	Exceeds 160 in. lb.
Adhesion/peel test on foam	2.4 lbs/in.
Hardness Shore A (ASTM D-2240)	45
Accelerated Weathering	8000 hours (no checking, fading or significant cracking)
Water Swelling	6.6%
Low Temperature Flex	Pass
Service Temperature Range	40° to 200°F
Roof Deck Classification:	UL 790 (ASTM E-108)
Non Combustible Deck	Class A
Combustible Deck	Class B
Maintenance and Repair	Class A

The minimum thickness of the acrylic coating shall be 32 dry mils. Note: A double granule finish can not be applied using 30 dry mils of coating (see paragraph 3.07, E, for the double granule application requirements).

Coating materials such as Silicone, Single-Component or Catalyzed Polyurethane Elastomers, Plasticized Acrylics, Vinyls, EVA, Terpolymer and PVA materials shall not be considered.

2.06 CAULKING OR SEALANTS

- A. Caulking material shall either be single component polyurethane elastomers such as "Vulkem-921" or Sikaflex-1A. Caulking of fabricated metal components or lapping metal joints (except equipment pan seams, see para. 3.04,G,2,B) shall use only the polyurethane sealants.

2.07 GRANULES

- A. First Granule Application (If Double Granule Option is Used) Granules shall be 3M (No. 11, C-93) light gray ceramic or "RTC WHITE" granules shall be broadcast into the first granule application while it is still wet (See paragraph 3.07,C for application instructions).
- B. Granules shall be Permax White **Energy Star® Listed Product** Granules. Granules shall be broadcast into the white top-coat application at an application rate of 40-50 lbs. per 100 sq. ft. while the coating is still wet (See paragraph 3.07,C for application instructions). **Pre-striping by roller application and granulating of the roofs edge is required to ensure complete coverage to edge metal.** Substitute granules shall not be allowed if the project is to be Warranted by Henry/RTC.

2.08 EQUIPMENT

- A. Equipment for spraying foam shall be manufactured specifically for the application of polyurethane foam. The equipment shall be airless, capable of maintaining a 1:1 volume ratio and have primary and hose heaters (300 feet of material hose maximum allowable to meet mix pressure requirements, Gusmer GX-7 gun with 90 PCD suggested for winter-grade foam systems).
- B. Coating equipment shall be an airless type as recommended by the coating manufacturer.

PART 3 EXECUTION**3.01 GENERAL**

- A. In the absence of a general contract, the roofing contractor is the prime contractor and shall be responsible for additional roof related work which may include but not be limited to the following:
- B. **The roof contractor shall be responsible for the verification of all measurements relative to this project.**
- C. Raising, repairing and modifying existing air conditioning systems for the installation of curbs, metal pans and duct work.

3.02 ROOF RELATED CARPENTRY WORK STRUCTURAL MODIFICATIONS

- A. Roof related metal work. Note: All metal work to receive insulation directly shall be cleaned and free from oil, dirt and oxidation and shall be primed.
- B. Raising all utility rigid conduit sufficiently for the unobstructed application of roofing insulation materials underneath. The conduit may be raised permanently or temporarily and reset upon new wood sleepers on top of the new SPRS. Wood sleeper shall be redwood or treated lumber. Minimum length shall be 12-inches.
- C. Overflow drains or scuppers shall be added to the existing drain system if nonexistent or not in accordance with the local building code. All new drains/scuppers shall comply with the local building code.
- D. Verify that all roof top equipment is in proper working condition at the conclusion of the re-roofing work or before the next facility business day if the roof work is not yet complete.
- E. Before roof construction starts, water test all drain bowls/sumps and associated plumbing to insure that they are water tight and clear to the discharge level.

3.03 SURFACE CONDITION

- A. The contractor shall be responsible for determining whether the roof deck is in compliance with applicable building codes.
- B. Owner shall insure that roof top equipment does not discharge liquids onto roof. All blowers shall exhaust into a container or the atmosphere and not onto the roof surface.
- C. The surface shall be free from solvent, grease, dust, sediment, dirt and sticky mastic.

3.04 SURFACE PREPARATION

- A. All new metal flashing and existing galvanized steel surfaces shall be primed with 1/3 to 1/2 gallons per 100 square feet of wash primer (see para. 2.01). Neoprene or urethane primers are unacceptable for this application due to poor adhesion.
- B. Gravel surfaced roof systems must be vacuumed, swept, and re-vacuumed to provide a clean dust free surface. All roof surfaces are to be primed with 1/3 to 1/2 gallons of primer (see para. 2.01) per 100 square feet to the prepared surface.

C. Masking and Clean up

1. All surfaces not to receive foam, such as windows, walls, air conditioners and other roof mounted equipment are to be carefully masked with tape and paper to avoid overspray of these surfaces with foam or coating. All coating is to be terminated in clean straight lines.
2. **NOTES:** When masking A/C equipment, all covering of the air intakes shall be removed at the end of each work shift. No foam shall be allowed to accumulate on fan blades or cooling fins.
3. **Over spray:** All shrubbery, windows and walk ways will remain in the same condition as prior to construction. **The owners inspector shall have daily disposition authority concerning this matter.**

D. **Install new perimeter edge metal, unless otherwise directed.** The new edge metal shall be made from 24 gauge (galvanized steel, "Bonderized" or "Paint-Loc" finishes), 1 inch high (minimum), with a drip edge and return with a fascia long enough to cover the existing metal if retained. Each joint shall have a 4" minimum lap at both adjoining pieces of edge metal. All metal laps shall be buttered with elastomeric "urethane" caulking as specified in paragraph 2.04. Edge metal shall be designed with butt plates at 5' O.C. All butt plate material shall be 22 gauge (minimum) galvanized steel. The flange on the roof shall be 4 inches wide. On nailable substrates the flange shall be fastened using appropriate roofing fasteners, two rows staggered on 4-inch centers. Perimeter metal attached to metal substrates shall be attached using self-taping screws on 6-inch centers. Perimeter edge metal attached over concrete substrates shall be attached over a treated wood nailer mechanically fastened to the substrate, or if attached directly to the concrete, shall be fastened using "TapCon" concrete screws, "Raul-Spike" or "Z-Mac" fasteners on 9 inch centers. All new metal shall be factory color coated or cleaned, primed and painted to match the existing.

E. Base Sheet Attachment; Square head nails attached per I-90 requirements

F. Recover Board Attachment; Shall be as specified mechanically attached with screws and metal plate using no less than 12 fasteners per 4 x 8 sheet.

G. HVAC and Roof Mounted Equipment

1. Field Assembled HVAC Curbs
 - a. Fully enclosed (boxed) platforms constructed from 2 x 8 (minimum) lumber with 1/2 inch CDX plywood top shall be fabricated. **The finished grade of the top of the platform shall be 8-inches (minimum) above the new roof level.** A layer of Henry "Ruftac" or singleply roofing shall be set over the plywood top of the platform and turned down at the edge one inch. A new 24 ga. Galvanized, seamless sheet metal cover shall

be installed over the platform. Where large platform covers are required all seams shall be soldered or constructed with a 1 1/2 inches minimum standing seam. **Caulking of the seams shall not be acceptable.** The new metal cover shall be 2 inches larger than the wood curb on all sides with a 2-inch X 60° degree turndown and 1/4-inch hem.

- b. Prior to setting the new platform into place spray apply a minimum of 4-inches of polyurethane foam insulation into the underside of the platform to provide insulation, structural strength, and sound deadening. It may be necessary to foam the vertical sides of the platform prior to setting it into place if clearance on all four sides is not sufficient for proper foaming. **Do not foam the sheet metal cover into the roof.** See roof Detail 1.
2. Pre-Engineered/Manufactured Curbs
 - a. New galvanized steel manufactured curbs shall be graded and installed by others to accommodate downdraft or side discharge HVAC units. **The finished grade of the top of the manufactured curb shall be 8-inches (minimum) above the new roof level.** It is important that if the new curb is supplied with a nailer under the mounting flange that it be removed prior to sealing the curb into the roof with polyurethane foam and protective coating. Steel curbs must be primed. See Roof Detail 46.
3. If line voltage, low voltage, gas line, and condensate connections are new and only stubbed-out they must be a minimum of 12-inches above the finished grade of the roof and supported at the deck. **NOTE: ALL ELECTRICAL CONNECTIONS AND GAS CONNECTIONS MUST BE DISCONNECTED PRIOR TO RAISING THE UNIT AND RECONNECTED AND TESTED AFTER THE UNIT IS RESET.**
4. All conduit and gas lines must be raised off the roof. After the roof has been foamed, the conduit can be reset on 2 × 4's set on top of the foam. **The old conduit supports shall not be reused.**
5. All duct work shall receive one inch of foam. **NOTE: The duct walls at the roof penetration shall receive 1 inch of foam on all four sides with a smooth flashing transition to both the roof and the A/C platform sides.** (This may require either disassembly of the duct work or moving the A/C unit prior to foaming.)
6. **NOTE: ALL ELECTRICAL CONNECTIONS AND GAS CONNECTIONS MUST BE DISCONNECTED PRIOR TO RAISING THE UNIT AND RECONNECTED AND TESTED AFTER THE UNIT IS RESET.**

7. All conduit and gas lines must be raised off the roof. After the roof has been foamed, the conduit can be reset on 2 × 4's set on top of the foam. **The old conduit supports shall not be reused.**

H. Internal Drains;

NOTE: Replacement or new drain bowls must be manufactured from cast iron, welded steel, copper stainless steel. Manufacturers such as Josam, Thunderbird and Zurn are acceptable. All drain surfaces to receive foam shall be primed as specified. **PVC drains shall not be used.**

1. All internal roof drains shall be flushed with water to insure that the drains are clear to the discharge level prior to starting the roofing work.
2. Remove the clamping ring from the drain bowl. Apply a bead of elastomeric caulking to the drain bowl clamping ring contact areas and refasten the clamping ring with new bolts. Remove excess caulking from inside of the drain bowl and clamping ring. Mask the inside of the drain and spray a "water block" from the deck to the top of the clamping ring. Grind excess insulation flush with the top of the clamping ring. The elastomeric coating shall be applied and "back rolled" in a "picture frame" fashion to achieve double the specified thickness of coating around the water entry area. Flush drains (a second time) with water to insure that the drains are clear to the discharge level after all roofing work is completed. The strainers shall be locked over the drain opening (use existing or new locking rings or install new hardware and fasteners as necessary). All internal drains shall be fitted with appropriate strainers or leaf catchers. If new strainers or catchers are required (or missing), they shall be metal. **Plastic strainers and leaf catchers shall not be used.**
- I. Repair or replace all A/C condensate lines and run to a drain. Condensate shall not be discharged into soil pipes or other vents.
- J. Low areas: Low areas over 100 square feet in size and greater than 1/2 inch deep shall be filled with foam to match the surrounding grade and prior to the application of the specified thickness of foam.
- K. Roof dividers and low parapet walls separating roofs shall be encapsulated with 1-inch of foam.
- L. All soil pipes and other roof vents shall be masked and remain fully open after foaming.
- M. All "T" tops and other roof vents shall be raised as necessary to remain 2 inches above the new foam line. Two way roof vents shall be demolished.

- N. All scuppers shall be opened to comply with local codes regarding the size of the water entry opening.
- O. All antennae shall be attached to curbs or antenna mounts and guy wires shall not be secured through the roof.
- P. All skylights which are essentially flush with the existing roof line will be raised and reset on new 2 × 6 inch (minimum) wood curbs. The finish of the inside of the new curb shall be discussed at the job walk. **All skylights shall have appropriate "Fall-Through" protection during the construction phase.**
- Q. All roof fields adjacent to gutters shall be free from obstruction of water flow into the gutter.
- R. Conduit and Piping;
 - 1. All small conduit and gas lines, 1 1/2 inch and under must be raised off the roof. After the roof has been foamed, the conduit shall be reset on new redwood 2 × 4's set on top of the foam. The wood blocks shall be caulked to strips of Yellow Spaghetti walk pads which are caulked to the granulated top coated foam roof. The old conduit supports shall not be reused. Replace any broken EMT connectors.
 - 2. Large conduit and piping, 1 3/4 inch and larger, shall have new redwood blocks with 24 ga. Galvanized sheet metal boxes fabricated with minimum 6 inch flange on roof with all joints soldered. These boxes with wood blocks shall be nailed over the existing roof membrane, primed, and foamed into place. Piping shall be set onto the blocks and covers and conduit attached with clamps. **Note: Conduit and piping which move during use such that the roof system may be damaged shall be set upon appropriate roller saddle supports or other vibration isolating devices.**

3.05 SPECIFIC SITE CONDITIONS

- A. TO BE DETERMINED

3.06 APPLICATION OF POLYURETHANE INSULATION

- A. Environmental conditions
 - 1. Wind velocity shall not exceed 12 miles per hour.
 - 2. Contact RTC before application of spray foam if ambient temperature is less than 60 degrees Fahrenheit.
- B. Spray foam is not to be applied over moist substrates or where rain or inclement weather is imminent.

- C. The field of the polyurethane foam shall be applied in minimum 1/2-inch lifts to a thickness of **1-1/2 inch**. Polyurethane foam may be gradually tapered to edge metal (1-inch rise metal), roof drains, and scuppers from a distance of up to two feet from edge or drain outlet. Polyurethane foam may be applied to greater thickness than 1/2-inch per lift if all other requirements and conditions are met. The maximum polyurethane foam thickness shall not exceed 4-inches. Low areas over 100 sq. ft. in size and greater than 1/2-inch deep shall be filled with foam to match the surrounding grade and prior to the application of the specified thickness of foam. All parapet walls and duct work shall receive a minimum of 1-inch of foam and the specified protective coating.

Note: Freshly sprayed foam shall be allowed to set for 15 minutes before being walked upon.

- D. Only as much area as can be brought to final thickness should be attempted in a day. Phasing of the foam is strictly forbidden. (Phasing is foam application on one day and coming back the next day or thereafter and applying another layer of foam. This procedure may lead to the development of blisters in time). If additional foam must be added after the 24 hour period, the existing foam **must be primed** (see para. 2.01). a minimum of 1/2 inch of foam in a single pass shall be applied.
- E. The foam shall be free from bumps, pinholes and ridges. The surface shall exhibit a smooth or "orange peel" surface texture. "Popcorn" or "tree bark" surfaces shall be deemed unacceptable.
- F. At the internal drain openings, grind the foam to a smooth slope for ease of water entry. New metal leaf catchers shall be provided if the original catchers are missing.
- G. The foam thickness shall be checked at a minimum of every 500 square feet prior to coating application.
- H. If "slip-sheets" are needed to waterproof under piping or other obstructions the following method shall be used. The specified foam thickness shall be applied to 1/4 inch DensDeck and positioned under the obstruction. Full edge attachment shall be accomplished using screws and 2 inch plates, 9 inches on center with screw length sufficient to penetrate the roof deck (**NOTE:** Leave a 4 inch gap between the end of the sheets, do not "butt-joint." Foam a "tie-in" in the gap and trim the excess foam). If the roof deck is concrete then "Tub-Loc", "Zonotite", or "Rawl Spike" fasteners shall be used. Foam shall be applied to the edges of the slip sheet and adjoining roof area and the "tie-in" ground smooth if the profile is irregular.

3.07 APPLICATION OF FLUID APPLIED PROTECTIVE COATING

A. General

1. Sprayed polyurethane foam must be protected from ultraviolet light in order to avoid degradation of the polymer. Coating also protects the foam from liquid, water and adverse weather conditions. Coating must be specifically formulated for use over polyurethane roofing foam.
2. Elastomeric coating shall be applied in a picture frame fashion and back-rolled at the roof perimeter. The coating shall be applied **1.5 X** the specified thickness and finished with a “**HEAVY APPLICATION**” of roofing granules. This procedure shall ensure proper sealing of these critical areas.
3. Other areas where the foam has been ground shall also be back rolled and coated to **1.5 X** the specified thickness of elastomer.

B. Spray Applications - Fluid Applied Elastomeric Coating:

Base coat and mid coat only

Acrylic Elastomer roof coating: The elastomeric coating shall be an acrylic elastomer coating using the Rohm and Haas EC Resins. This product shall meet or exceed the following physical properties:

Solids content (by volume)	50% min.
Elongation	300% min.
Tensile Strength	280 psi min.
Ultra Violet Exposure in Atlas Weatherometer	no cracking, checking, or fading - 8000 hours
Roof Deck Classification ASTM E-108 (UL 790)	
Existing BUR combustible deck	Class B

The acrylic protective coating shall be based solely on 100 percent Rohm and Haas Rhoplex EC 1791 resins and formulation. No other blend or substitute of this formulation will be accepted. Bidder must provide written certification from the manufacturer of the coating materials that the coating offered meets these requirements. Failure to meet this requirement shall render the bid as non-responsive.

Thickness: The minimum dry mil thickness of the base and mid coating shall be 22-24 dry mils. The coating shall be applied in two (2) uniform passes. The base coat and the mid coat shall be of contrasting colors to assure uniformity of coverage. (Base coat 11-12 mils, intermediate coat 11-12 mils with a minimum of 40 lbs of roofing granules embedded into the wet coating.)

Plasticized acrylics, vinyls, EVAs, terpolymers, PVA coatings, single component urethanes, and catalyzed urethanes shall not be considered.

Top Coat - High tensile strength acrylic elastomer Lock

Acrylic elastomer Lock-Coat material: The elastomeric coating shall be an acrylic elastomer coating using the Rohm and Haas EC 2885 resins. The top coating shall be compliment with the EPA Energy Star Program.

This product shall meet or exceed the following physical properties:

Solids content (by volume)	55% - 60%
Elongation	450% min
Tensile strength	500 psi min
Ultra Violet Exposure in Atlas Weatherometer	no cracking, checking, or fading - 8000 hours
Roof Deck Classification ASTM E-108 (UL 790)	
Existing Bur combustible deck	Class B

The lock-coat shall be applied at a minimum rate of two (2) gallons per 100 sq. ft. to a minimum dry film thickness of 15 mils. There shall not be any voids, exposed granules, or base coat showing; 100% encapsulation of granules is required. A total coating thickness of 37-40 mils shall be achieved.

Plasticized acrylics, vinyls, EVA, terpolymers, PVA coatings, single component urethanes and catalyzed urethanes shall not be considered.

The specified thickness of coating shall be verified using an optical comparator.

- C. Granules
 - 1. Remove all loose granules after the roof coating has cured to prevent them from washing into gutters or onto the ground.
- D. Walkways
 - 1. Areas approximately 4 feet wide around equipment installations, designated walkways, roof top landings (may be wider than 4 feet), hatchways and at the bottom of equipment wells shall receive the following treatment.
 - 2. After the initial granule finish has completely cured, remove all loose granules and apply an additional 2.0 gallons per 100 square feet of protective top coating and embed 40 to 50 lbs. per 100 square feet of ceramic granules into the wet coating. Walkway granules shall be a contrasting color (White, Gray or Tan) to those used to finish the roof field.

E. Double Granules (Optional): HVAC Roof Area

1. Apply 1 1/2 gallon per 100 square feet of base coat, gray in color. After the base coat has cured, apply an intermediate coat (of contrasting color) at 1 1/2 gallons per 100 square feet of coating and broadcast 30 lbs. per 100 square feet of 3M ceramic granules into the wet coating.
2. After the coating has cured, remove all loose granules and apply 2 gallons per 100 square feet of White Permax-108 top coating and broadcast 50 lbs. per 100 square feet of RTC WHITE granules into the wet coating.

END OF SECTION
12/17/2014

CAULKINGS AND SEALANTS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- a. The work of this Section includes caulking and sealing all joints where shown on the drawings and elsewhere as required to provide a positive barrier against passage of moisture.
- b. Related work described elsewhere: Adhere strictly to the caulking and sealant details shown on the drawings.

1.02 WORK INCLUDED (But not limited to the following):

- a. Caulking as specified hereafter except for those items specifically mentioned under another section.
- b. Caulking of all exterior cracks, and joints in, metal, flashing, to provide a watertight and weatherproof seal.
- c. Polyurethane sealants in conjunction with expansion joints.
- d. Joint filler material.
- e. Backing rod materials.
- f. Surface preparation and priming.
- g. Mixing.
- h. Application and curing.

1.03 RELATED WORK

- a. Flashing and Sheet Metal:

1.04 REFERENCES

- a. ASTM C-920: Recommended Practices for Use of Elastomeric Joint Sealants.
- b. ASTM C-804: Recommended Practice for Use of Solvent-Release Type Sealants.
- c. ASTM D-1056: Flexible Cellular Materials - Sponge or Expanded Rubber.
- d. ASTM D-1565: Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open Cell Foam).
- e. FS TT-S-227: Sealing Compounds, Polyurethane Base, Multi Component, Chemically Curing.
- f. FS TT-S-230: Sealing compounds synthetic - rubber base, single component, chemically curing.

1.05 GUARANTEE

Contractor shall guarantee to maintain all caulking in a watertight condition for a period of two (2) years and remove and replace sealants, which fail due to a loss of adhesion or cohesion or incomplete cure, bubbling, etc.

1.06 SUBMITTALS

- a. Manufacturer's Data: Submit the following for review by the Architect, per Section 01301:
 - 1. A complete materials list showing all items proposed to be furnished and installed under this Section.
 - 2. Sufficient data to demonstrate that all such materials meet or exceed the specified requirements.
 - 3. Specifications, installation instructions, and general recommendations from the materials manufacturers showing procedures under which it is proposed that the materials will be installed.

1.07 PRODUCT HANDLING

- a. Delivery and Storage: Deliver all materials of this Section to the job site in the original unopened containers with all labels intact and legible at time of use. Store only under conditions recommended by the manufacturers. Do not retain on the job site any material, which has exceeded the shelf life recommended by its manufacturer.
- b. Protection: Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.
- c. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Architect and at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- a. Sika Corporation
- b. Tremco Commercial Sealants
- c. BASF Corporation
- d. Georgia Pacific Company
- e. P.P.G. Industries
- f. Approved Equals

2.02 SEALANTS

- a. Provide the following materials manufactured by Products Research & Chemical Corporation, or equals approved by the Architect, where indicated and where otherwise required for a complete and proper installation:

	<u>Material</u>	<u>Location of Use</u>
1.	Sikaflex 150 Vulkem Dymonic 100 Masterseal NP 100	Throughout the Work, except where other sealant is specified, where anticipated joint movement will be 50% or less;
2.	Sikaflex 1a Vulkem 116 Masterseal NP 1	Throughout the Work, except where other sealant is specified, where anticipated joint movement will be 25% or less;
3.	Sikaflex 2cSL Sonneborne MP2 Vulkem 445 SSL Masterseal SL1/2	Horizontal joints exposed to pedestrian and vehicular traffic, and all joints subject to immersion

4. Sikaflex 150 Vertical and horizontal joints subject to extreme movement;
Masterseal NP100
Spectrem 800
5. Gyproc 90 Fire Halt Pipes and conduits penetrating fire separations;
PR-812 Firewall sealant
6. Polyethylene backer rod where required to prevent 3-point adhesion.
 - a. For other services, provide products especially formulated for the proposed use and approved by the Architect.
 - b. Colors:
 1. Colors for each sealant installation will be selected by the Architect from standard colors normally available from the specified manufacturer.
 2. Should such standard color not be available from the approved manufacturer except at additional charge, provide such colors at no additional cost to the Owner.
 3. In concealed installations, and in partially or fully exposed installations where so approved by the Architect, use standard gray or black sealant.

2.03 PRIMERS

Use only those primers, which have been tested for durability on the surfaces to be sealed and are specifically recommended for this installation by the manufacturer of the sealant used.

2.04 BACKUP MATERIALS

Use only those backup materials which are specifically recommended for this installation by the manufacturer of the sealant used, and which are nonabsorbent and nonstaining.

2.05 BOND PREVENTIVE MATERIALS

Use only one of the following as best suited for the application and as recommended by the manufacturer of the sealant used.

- a. Polyethylene tape, pressure sensitive adhesive, with the adhesive required only to hold tape to the construction materials as indicated.
- b. Aluminum foil conforming to MIL-SPEC-MIL-A-148E.
- c. Wax paper conforming to Fed. Spec. UU-P-270.

2.06 MASKING TAPE

For masking around joints, provide masking tape conforming to Fed. Spec. UU-T-106c.

2.07 OTHER MATERIALS

All other materials, not specifically described, but required for complete and proper caulking and installation of sealants, shall be first quality of their respective kinds, new, and as selected by the Contractor subject to the review by the Architect.

PART 3 EXECUTION**3.01 INSPECTION**

Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 QUALITY ASSURANCE

- a. **Qualifications of Manufacturers:** Products used in the work of this section shall be produced by manufacturers regularly engaged in manufacture of similar items with a history of successful production acceptable to the Architect.
- b. **Qualifications of Installers:**
 - 1. Proper caulking and proper installation of sealants require that installers be thoroughly trained and experienced in the necessary skills and thoroughly familiar with the specified requirements.
 - 2. For caulking and installation of sealants throughout the work, use only personnel who have been specifically trained in such procedures and who are completely familiar with the joint details shown on the drawings and the installation requirements called for in this section.

3.03 PRODUCT HANDLING

- a. **Delivery and Storage:** Deliver all materials of this section to the job site in the original unopened containers with all labels intact and legible at time of use. Store only under conditions recommended by the manufacturers. Do not retain on the job site any material, which has exceeded the shelf life recommended by its manufacturer.
- b. **Protection:** Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.
- c. **Replacements:** In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Architect and at no additional cost to the Owner.

3.04 PREPARATION

- a. All surfaces in contact with sealant shall be dry, sound, and well brushed and wiped free from dust.
- b. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
- c. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing
- d. Remove all laitance and mortar from joint cavities.
- e. Where joint filler is required, insert the approved backup material in the joint cavity to the depth required to provide required width/depth ratio.

3.05 INSTALLATION OF BACKUP MATERIAL

Use only joint filler material recommended by the manufacturer of the sealant and reviewed by the Architect for the particular installation, compressing the backup material

25% to 50% to secure a positive and secure fit. When using backup of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock. Use semi rigid filler material with minimum shore hardness of at least 80 for control joint filler, type.

3.06 PRIMING

Use only the primer recommended by the manufacturer of the sealant and reviewed by the Architect for the particular installation. Apply the primer in strict accordance with the manufacturer's recommendations as reviewed by the Architect.

3.07 BOND BREAKER INSTALLATION

Install a bond breaker where recommended by the manufacturer of the sealant and where directed by the Architect, adhering strictly to the installation recommendations as reviewed by the Architect.

3.08 INSTALLATION OF SEALANTS

- a. Prior to start of installation in each joint, verify the joint type and verify that the required proportion of width of joint to depth of joint has been secured.
- b. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.
- c. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.
- d. Installation of Sealant: Install the sealant in strict accordance with the manufacturer's recommendations as reviewed by the Architect, thoroughly filling all joints to the recommended depth, typically flush with surface.
- e. Tooling: Tool all joints to the profile shown or as directed by Architect.
- f. Cleaning Up:
 1. Remove masking tape immediately after joints have been tooled.
 2. Clean adjacent surfaces free from sealant as the installation progresses. Use solvent or cleaning agent as recommended by the sealant manufacturer.
- g. Provide temporary protection/cover for caulking/sealant as required to prevent debris from becoming fouled in material.

END OF SECTION
06/27/2012

METAL DOORS AND FRAMES

DIVISIONS 00 & 01 ARE A PART OF THIS SECTION

PART 1 - GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, material, and appliances required to complete the metal door and framework indicated on the drawings and specified hereunder .

1.02 WORK INCLUDED

1. Hollow Metal Frames.
2. Hollow Metal Doors.
3. Hollow Metal Window Frames.

1.03 RELATED SECTIONS

1. Section 08 02 00 - Wood Doors
2. Section 08 71 00 - Finish Hardware.
3. Section 08 81 00 - Glazing.
4. Section 09 91 00 - Painting.

1.04 REFERENCES:

- A. ASTM E152, Fire Tests of Door Assemblies.
- B. ASTM A525, specification for Steel Sheet, Zinc Coated.
- C. ANSI/SDI 100, Recommended Specifications for Standard Steel Doors and Frames.
- D. ANSI/SDI 119, Performance test Procedures for Steel Door Frames and Anchors.
- E. NFPA 80, Standard for Fire Doors and Windows.
- F. NFPA 101, Life Safety Code.
- G. ANSI A151.1, Test Procedure, and Acceptance Criteria for Physical Endurance, Steel Doors, and Frames.
- H. ANSI A224.1, Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- I. SDI 107, Hardware on Steel Doors, Reinforcement Application.
- J. Applicable model building code.
- K. California Title 24.
- L. L/L IOC Standard for positive pressure fire test.
- M. UBC 7-4, Fire Tests of Window Assemblies.

1.05 SUBSTITUTIONS & SUBMITTALS:

- A. Shop Drawings: Submit six copies. Indicate door and frame elevations, sections, materials, gauges, finish, fabrication/erection details, locations of hardware and vision lites and louvers.
- B. Certification of Compliance: Provide letter of certification that all materials comply with these Specifications.

- C. Samples: Submit as requested by Architect. Samples shall be returned after review.
- D. Substitutions: Make substitution requests in accordance with Article 19, Section 10. Architect reserves the right to assess an hourly fee to review and evaluate substitutions.

1.06 QUALITY ASSURANCE:

- A. Steel Door and Frame Supplier: direct factory supplier who employs a Certified Door Consultant (CDC) or person with equivalent experience, available at reasonable times during course of Work, for consultation to Owner, Architect, and Contractor.
- B. Label Construction: A physical label or approved marking shall be affixed to the fire door or fire door frame at an authorized facility as evidence of compliance with procedures of the labeling agency.

1.07 DELIVERY, STORAGE, AND HANDLING:

- A. Delivery: coordinate delivery to the appropriate locations (shop or field) for installation.
- B. Storage of Doors: Doors shall be stored in an upright position under cover. Place the units on at least 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. If the corrugated wrapper on the door becomes wet, or moisture appears, remove the wrapper immediately. Provide a 1/4" (6.35 mm) space between the doors to promote air circulation.
- C. Storage of Frames: Frames shall be stored under cover on 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. Assembled frames shall be stored in a vertical position, five units maximum in a stack. Provide a 1/4" (6.35 mm) space between frames to promote air circulation.
- D. Inspect delivered items for damage. Minor damage may be repaired provided repaired items are equal to new Work and accepted by the Architect. Provide new items when directed. Comply with VOC regulations when repairing damage.

1.08 SEQUENCING AND SCHEDULING

- A. Deliver doors and frames to the jobsite in a timely manner so not to delay progress of other trades.
- B. Issue purchase orders to suppliers so as not to interfere with normal quoted delivery times.

1.09 WARRANTY

- A. Steel doors and frames supplied with a one (1) year warranty against defects in materials and workmanship.

1.10 ENVIRONMENTAL

- A. Packaging and Disposal: package in biodegradable packs, paper, or cardboard boxes. Dispose of non-biodegradable packs, plastic, styrofoam, polystyrene, and polyurethane to a licensed or authorized collector for proper disposal. Comply with the applicable standards and laws for VOC.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Steelcraft Manufacturing Co., Cincinnati, Ohio
- B. Ceco Corp., Oakbrook, Illinois
- C. Or Approved Equal

2.02 MATERIALS:

- A. Steel requirements: doors and frames manufactured of commercial quality, stretcher leveled flatness, cold rolled steel per ASTM A366 and A568 general requirements. Galvanized doors and frames to A60 minimum coating weight. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM A569.
- B. Coating Materials:
 - 1. Primer: Manufacturer's standard rust inhibiting primer to ANSI A224.1.
- C. Core Materials
 - 1. Doors: non-toxic honeycomb, manufactured of hot rolled, pickled and oiled steel per ASTM A569.
 - 2. Fire labeled doors with temperature rise rating: mineral fiber core, temperature rating per code.
- D. Glass Light Frames: flush with door face, fabricated of 18 ga. steel.

2.03 FABRICATION

- A. Doors
 - 1. Classification: SDI 100.

GRADE	MODEL	GAUGE	DESCRIPTION	CYCLES
III	1	16	Extra Heavy Duty, Full Flush	1,000,000

- 2. Vertical lock edges:
 - (1) Beveled 1/8 inch in 2 inches.
 - (2) Manufacturers standard interlocking and glued edge.
- 3. Top and bottom channels:
 - (1) Not less than 16 gauge, flush or inverted.
 - (2) Welded to the face sheets.

- (3) Exterior doors: flush steel top channel. Seal top channel.
 - 4. Astragals: flat security type or Z type per details.
- B. Frames
 - 1. Construction:
 - (1) 16 gauge cold rolled steel.
 - 2. Corner Construction: face weld, grind smooth and re-prime.
 - 3. Provide temporary shipping spreaders to help protect frames from damage during transit and handling. Remove spreaders prior to setting frame.
- C. Frame Anchors
 - 1. Attachment to Masonry Construction:
 - (1) Galvanized
 - (2) Adjustable, flat, corrugated or perforated T shaped with leg not less than 2 inches wide by 10 inches long, or wire type, not less than 3/16 inches in diameter.
 - 2. Attachment to Drywall Construction:
 - (1) Steel or Wood Stud type to accommodate frame jamb depth and face dimension on welded or standard knock-down type frame.
 - 3. Provide one anchor for every 30 inches of jamb or fraction thereof.
 - 4. Floor Anchor: angle clip type.
 - (1) 16 Gauge.
 - (2) Two fasteners per jamb.
 - (3) Weld to bottom of each jamb.
 - 5. Existing Masonry or Concrete
 - (1) 3/8 inch countersunk flat head bolt and expansion shields.
 - (2) Locate 6 inches from top and bottom and maximum 24 inches on center.
 - (3) Weld pipe spacers or other type of spacers, per manufacturers standard design, in back of frame soffit.
- D. Preparation for Hardware
 - 1. Reinforce per SDI 107.
 - 2. Lock and Closer reinforcement: box type.
 - 3. Door Hinge reinforcement: 7 gauge or equivalent, manufacturer's standard.
 - 4. Punch strike jambs to receive three silencers; double leaf frames to receive manufacturer's standard preparation.
 - 5. Hardware locations per "Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames".
 - 6. Provide welded in place guards for all hardware cutouts in frame.

PART 3 EXECUTION

3.01 SETTING FRAMES

- A. Set frames in accordance with SDI 105.

- B. Set welded frames in place prior to construction of adjacent partition work. Properly brace frame until permanent anchors are set.

3.02 DOOR INSTALLATION

- A. Clearances:
 - 1. Per SDI and NFPA 80.

3.03 ADJUSTMENT AND CLEANING

- A. Remove dirt and excess sealants, mortar, or glazing compounds from exposed surfaces.
- B. Adjust moving parts for smooth operation. Use shims as required.
- C. Fill dents, holes, etc. with metal filler and sand smooth and flush with adjacent surfaces. Paint to match adjacent surface.

END OF SECTION

10/31/2016

WOOD DOORS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- a. The work of this Section shall include all labor, material, equipment, and appliances required to complete all the wood door work shown on the drawings and specified hereunder.

1.02 WORK INCLUDED

- a. Provide all wood doors, including labeled fire doors.
- b. Provide and install all glass and glazing of light openings in wood doors.
- c. Provide and install all metal or wood louvers in wood doors.

1.03 RELATED WORK

- a. Finish hardware is specified in, Section 08 71 00.
- b. Installation of finish hardware and hanging of doors is specified in, Section 06 10 00.
- c. Painting of doors is specified in, Section 09 91 00.

1.04 SUBSTITUTIONS

See Article 19, Section 10 of these Specifications.

1.05 SHOP DRAWINGS/SUBMITTALS

Blueprints of shop drawings shall be submitted to the Architect for approval per Sections 10, Article 14, and 01 33 00 prior to fabrication.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURERS

- a. Marshfield Door Systems, Inc. formerly the Door Division of Weyerhaeuser
- b. VT. Industries
- c. Vancouver Door
- d. Graham
- e. Or approved equal

2.02 MATERIALS

- a. Wood doors:
 - 1. Interior: (Refer to Door Schedule, for door sizes and type designations. 3'.0" x 7'.0" min. size unless noted otherwise.)

- (a) Solid Core Door: Shall be Marshfield Door System formerly the Door Division of Weyerhaeuser, flush, particle board core, premier architectural door conforming to NWWDA Industry Standards I.S. 1 Series, AWI Quality Standards for type PC-5 and WIC Section 20 Doors, or an approved equal door. Door shall be model #DPC-1, 1-3/4" thick, with a plain sliced, AWI Grade-I, facing veneer of book-matched white birch.
- (b) Fire Door: Shall be Marshfield Door Systems, Inc. formerly the Door Division of Weyerhaeuser mineral core, architectural fire doors conforming to VBC7-2 and VC10. Flush door with plain sliced, AWI grade-I, facing veneer of book-matched white birch. Door shall bear the U.L. or Warnock Hersey label designating the fire rating. Edge Construction to be solid wood veneer face edge.
- (c) Hollow Core Door: Shall be Marshfield Door Systems, Inc. formerly the Door Division of Weyerhaeuser Marshfield, flush, honey-comb core, premier architectural door, conforming to NWWDA Industry Standards I.S. 1 Series, AWI Quality Standards for Type IHC and WIC Section 20-Doors, or an approved equal door. Door shall be Model #DHC-1, 1-3/4" thick, flush door with plain-sliced, AWI Grade-1 facing veneer of book-matched white birch.
- (d) Finishing: Refer to Finish Schedule on Architectural Drawings. When doors are to have natural (glazed) or stained finish they shall be finished with, color as selected by Architect under Specification Section 09 91 00, Painting. When doors are to have a painted finish, door-facing veneer shall be AWI Grade III in lieu of Grade I, see section 09900.
- (e) Guarantee: (Life of original installation for solid core interior doors, 5 yrs. for interior hollow core doors). The door manufacturer will repair, replace, or make a fair allowance for above listed premium quality door that fails to perform in accordance with this guarantee. It will pay reasonable costs of field finishing and installation of the replacement, except when defects should have been apparent upon reasonable inspection prior to working, finishing, or installation.

2. Exterior:

- (a) Solid Core Door: Shall be Doorcraft 'Weatherbeater', 1-3/4" thick, flush, particle board core door, conforming to Industry Standards I.S 1-87 and NWWDA requirements. Door shall have Type I, 1/8" hardwood face veneer fused with a resin-impregnated fiber sheet embossed with a natural oak texture. Door top and bottom shall have an aluminum flashing.
- (b) Fire Door: Shall be Doorcraft 'Weatherbeater', 1-3/4" thick, flush, mineral core fire door conforming to AWI Quality Standards for FD 1-1/2, FDI and FD 3/4 and WIC Section 20-Doors. Doors shall be 90, 60 or 45 min. rated, see Door Schedule. Door shall bear U.L. or Warnock Hersey label designating fire rating. Door top and bottom shall have an aluminum flashing.
- (c) Guarantee: (unrated doors) Shall be 25 yr. limited warranty against warping, checking, or delamination. The door manufacturer will repair, replace, or make a fair allowance for the above listed door that fails to perform in accordance with this guarantee. It will pay reasonable costs of field finishing and installation of this replacement, except when defects should have been apparent upon reasonable inspection prior to finishing or installation.

b. Light Openings:

1. Metal Stopped: All light openings in rated wood doors shall be factory cut and shall be factory supplied with steel stops as per Marshfield Door Systems, Inc. formerly the Door Division of Weyerhaeuser's #109 Beveled Frame or Air Louvers Inc. #VLF-B1 or approved equal with thru-bolting as per the requirements of Underwriters Laboratories Inc. (U.L. rating). Door light opening shall not exceed 1,296 sq. in. for 45 and 20 min. doors, 100 sq. in. for 90 and 60 min. doors or be closer than 6" to door edge or morise cut-outs.
2. Wood Stopped: All light openings in 20 min. or unrated wood doors shall be wood stopped as per Marshfield Door Systems, Inc. formerly the Door Division of Weyerhaeuser Standard Door Molding W-3 or W-3 20 min.
3. Glass: All wood doors with light openings shall be glazed with 1/4" thick 'Misco' or 'Boroque', wire glass with parallel strand Type II U.L. approved, Class I mesh of woven stainless steel wire of 1/2" grid size, manufactured by Pilkington Glass Company or glazing may be 1/4" thick tempered, clear or tinted. Door lights shall be 1" thick dual glazed at exterior doors. Exterior door lights shall have aluminum sill flashing type. u.n.o.
- c. Door Louvers: All louvers in rated wood doors shall be Model 1900-A, prime coated, for 1-3/4" thick doors as manufactured by Air Louvers or approved equal. Opening sizes shall not exceed the maximum allowable for the U.L. rating of the door. All louvers in non-rated wood doors shall be Model 1100-A, prime coated, for 1-3/4" thick doors as manufactured by Aire Louvers Inc. or approved equal.
- d. Intumescent seals: Furnish fire-labeled opening assemblies complete and in full compliance with UL10C/UBC-7-2. Furnish flush with door edge type intumescent seals, exposed at top rails and veneer covered at stiles. Surface applied adhesive seals will not be accepted. Use alternative door core materials as needed to allow use of flush with door edge type seals. Coordinate frame fabrication to allow use of kerfed in frame type seals options.

PART 3 EXECUTION

3.01 MANUFACTURER'S SPECIFICATION

- a. All materials shall be applied in accordance with the manufacturer's printed directions.
- b. Doors and frames shall be installed in accordance with W.I.C. "Manual of Millwork", Section 26 and W.I.C. Technical Bulletin 420R, conforming to requirements of fit tolerances, and be adjusted for smooth and balanced movement, see Section 06 10 00.

3.02 PROTECTION

The Contractor shall cover all his work as necessary to protect from damage until completion and acceptance of building.

END OF SECTION
03/05/2008

ALUMINUM ENTRANCES AND STOREFRONTS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

All labor, materials, tools, equipment, facilities, transportation and services necessary for and reasonably incidental to furnishing, fabrication, delivery and installation of storefront entrance doors and window units as shown and noted on drawings, and as specified herein.

1.02 WORK INCLUDED (But not limited to the following):

- a. Provide aluminum tubes, channels, plates, reinforcing and fasteners for storefront work and entrance doors.
- b. Provide and install aluminum storefront sections.
- c. Provide and install aluminum tube column covers.
- d. Provide and install storefront entrance doors, including hardware specified in this Section.
- e. All caulking work required in this Section in accordance with Section 07 91 00.

1.03 RELATED WORK

- a. All glass and glazing is specified in Section 08 81 00.
- b. Structural supports and framing are specified in Section 06 10 00.
- c. Section 08 71 00 Hardware supplier shall coordinate with storefront manufacturer.
- d. Contract Closeout per Specification Section 10, Article 54.

1.04 SUBSTITUTIONS

See Div. 00, Section 10, Article 19 of these Specifications.

1.05 SHOP DRAWINGS

- a. Submit drawings of installation details for wall and entrance units to Architect for approval as specified in Section 10, Article 14 and 01 33 00. Submittals shall include Structural Calculations by a licensed California Engineer for all components and connections required.

- b. Installation of aluminum entrances and storefronts shall not be started until detailed plans and specifications are approved by the Division of the State Architect.

1.06 PROTECTION

All exposed surfaces of aluminum shall be protected until final acceptance of the work in a manner sufficient to prevent damage or discoloration. Any work damaged or discolored in any way before final acceptance of the work shall be replaced without additional cost to the Owner.

1.07 SHOP PAINTING

All ferrous metal work shall be given a coat of Rust-Oleum #1386 gray primer.

1.08 REPLACEMENTS AND CLEANING

At completion of work, all glass, and aluminum, work shall be free from cracks, scratches, and other defects. Any defective work that may appear before acceptance, or within one year warranty period that is a direct result of manufacturing, transporting or performance of this Contractor, shall be removed and replaced with new work without cost to Owner. Remove from site all boxes, crates, containers and other debris used for this work.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURERS/SYSTEMS

- a. Kawneer Company Inc. - TRIFAB V.G. 451 - Center Set-Inside Glazing
- b. U.S. Aluminum Corp. - IT451
- b. Approved equal

2.02 MATERIALS

- a. Storefront Window Units:
 - (1) Work Required: Storefront material shall be as detailed on the drawings and the glazing contractor shall furnish all necessary material, labor and equipment for the complete installation of storefront division and corner bar; sill and jamb trim; bulkheads; aluminum frame sections and doors.
 - (2) Materials: Storefront sections shall be Kawneer TRIFAB V.G. 451 (4 1/2" x 2"), extruded of 6063-T5 aluminum alloy and temper, per ASTM B-221-88. Formed sections (break metal) where indicated shall be .050" aluminum alloy of shape as shown on the drawings. Fasteners, where exposed, shall be stainless steel or zinc plated steel, per ASTM A-164-88. Perimeter anchors shall be coated steel sheet metal screws, #12x2-1/2" at 16" o.c. max. Glazing gaskets shall be elastomeric extrusions. Single acting entrance frame weathering shall be a non-porous, polymeric material.

- (3) Finish: All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain a Class I color anodic coating conforming to Aluminum Association's Standard #AA-M12-C22-A42/44, Kawneer's #40 Dark Bronze.
- b. Entrance Doors: Shall be Series #500 wide stile doors as manufactured by Kawneer Co., Inc.
 - (1) Sections: Shall be extruded 6063-T5 aluminum alloy and temper, per ASTM B-221-88. Major tubular portions of door stiles and rails shall not be less than .125" in thickness and glazing moldings not less than .050" in thickness.
 - (2) Workmanship: Entrance units shall be complete factory assemblies including specified hardware. Corners of doors shall be accurately joined and fitted with a flush hairline joint. Door corner shall consist of mechanical clip fastening, sigma deep penetration and fillet welds. Glazing stops of doors shall be snap-in type without exposed screws with vinyl glazing gaskets. All cutouts, recesses, mortising or milling operations required for hardware shall be accurately made and reinforced with backing plates as required to insure adequate strength of the connections. Door sills shall be 10" high sheet aluminum kick plates edgemilled and interlocked at bottom tubing and upper rail.

PART 3 EXECUTION

3.01 FABRICATION AND INSTALLATION

- a. Storefront and entrance unit construction assemblies are described in brief outline to indicate in addition to the drawings, the general design and details desired. Work of this section shall be done only by craftsmen regularly engaged in this type of work.
- b. Construction: All necessary methods of construction, parts, etc., required to cause work of this section to function as indicated shall be supplied and included though not shown on drawings or mentioned in these specifications, where such materials are clearly a part of this work.
- c. All welds: Shall be ground flush and smooth and shall be of same texture as adjoining metals before finish is to be applied.
- d. All setting: Shall be so designed to allow for natural expansion and contraction of glass and to counteract shocks and vibrations.
- e. Erection: All items shall be set in their correct locations as shown on the details; shall be set level, plumb, square, and at their proper elevations and in alignment with all work. All joints between metal and adjoining work shall be tightly caulked to prevent leakage. All metal shall be secured in place with fasteners as recommended by the manufacturer. At all points where moldings are joined, they should be accurately cut and neatly fitted to result in a tightly closed joint. After erection, the Prime Contractor shall adequately protect all exposed portions of the metal work from damage by grinding and polishing machines, plaster lime, acid, cement, paint or other harmful materials.
- f. Setting blocks and spacer shims: Shall be fabricated from neoprene or treated hardwood. Shape to the required sizes and thickness. Material used for blocks

and spacers must be compatible with type of compounds and sealants used and shall not cause staining or discoloration of the sealant or the frame. Shore durometer hardness for setting block and shim material shall be 70 to 90 points for setting blocks and 40 to 50 points for spacer shims, unless otherwise recommended by compound or sealant manufacturer.

- g. Preparation of Glass and Rabbets: Clean the sealing surfaces at perimeter of glass and sealing surfaces of storefront. Use only the approved solvents and cleaning agents recommended by the compound manufacturer.
- h. Positioning Glass: Center in glazing rabbet to maintain specified clearances at perimeter on all four sides. Maintain centered position of glass in rabbet and provide the required sealer thickness (1/8" minimum) on both sides of glass. Whenever glass dimensions are larger than 50 inches, provide setting blocks at sill and spacer shims on all four sides; locate setting blocks one quarter way in from each end of glass.

3.02 CLEANING

The contractor shall be responsible for removal of protective materials and cleaning of the aluminum. All aluminum shall be thoroughly cleaned with plain water and soap. No abrasive or caustic agents shall be used.

END OF SECTION
12/14/2022

FINISH HARDWARE**PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Door Hardware.

B. Related Sections:

1. Section 06 20 00 - Finish Carpentry: Finish Hardware Installation
2. Section 07 90 00 - Joint Sealers – exterior thresholds
3. Section 08 10 00 - Metal Doors and Frames
4. Section 08 20 00 - Wood Doors

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Installation.
6. Rough hardware.
7. Access doors and panels, except cylinders where detailed.
8. Corner Guards.

1.2 REFERENCES:

Use date of standard in effect as of Bid date.

- A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- B. BHMA – Builders Hardware Manufacturers Association
- C. DHI – Door and Hardware Institute
- D. NFPA – National Fire Protection Association
 1. NFPA 80 – Fire Doors and Windows
 2. NFPA 105 – Smoke and Draft Control Door Assemblies
 3. NFPA 252 – Fire Tests of Door Assemblies
- E. UL – Underwriters Laboratories

1. UL10C – Positive Pressure Fire Tests of Door Assemblies.
2. UL 305 – Panic Hardware
- F. WHI – Warnock Hersey Incorporated
- G. State of California Building Code
- H. Local applicable codes
- I. SDI – Steel Door Institute
- J. WI – Woodwork Institute
- K. AWI – Architectural Woodwork Institute
- L. NAAMM – National Association of Architectural Metal Manufacturers

1.3 SUBMITTALS & SUBSTITUTIONS

- A. SUBMITTALS: Submit six copies of schedule per Section 01330. Only submittals printed one sided will be accepted and reviewed. Organize vertically formatted schedule into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
 1. Type, style, function, size, quantity and finish of hardware items.
 2. Use BHMA Finish codes per ANSI A156.18.
 3. Name, part number and manufacturer of each item.
 4. Fastenings and other pertinent information.
 5. Description of door location using space names and numbers as published in the drawings.
 6. Explanation of abbreviations, symbols, and codes contained in schedule.
 7. Mounting locations for hardware.
 8. Door and frame sizes, handing, materials, fire-rating and degrees of swing.
 9. List of manufacturers used and their nearest representative with address and phone number.
 10. Catalog cuts.
 11. Manufacturer’s technical data and installation instructions for electronic hardware.
 12. Date of jobsite visit.
- B. Bid and submit manufacturer’s updated/improved item if scheduled item is discontinued.
- C. Deviations: Highlight, encircle or otherwise identify deviations from “Schedule of Finish Hardware” on submittal with notations clearly designating those portions as deviating from this section.

- D. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, note the discrepancy in the submittal and request direction from Architect for resolution.
- E. Substitutions per Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.
- F. Items listed with no substitute manufacturers have been requested by Owner to meet existing standard.
- G. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4 QUALITY ASSURANCE:

- A. Qualifications:
- B. A recognized architectural door hardware supplier with warehousing facilities in the Project's vicinity that has a record of successful in-service performance for supplying door hardware that is similar in quantity, type, and quality to that specified for this Project, and who employs an experienced architectural hardware consultant who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
 - a) Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.
- C. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.
- D. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.
- E. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.
 - 1. Note: scheduled resilient seals may exceed selected door manufacturer's requirements.
 - 2. See 2.6.E for added information regarding resilient and intumescent seals.
- F. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: coordinate delivery to appropriate locations (shop or field).

1. Permanent keys and cores: secured delivery direct to Owner's representative.
- B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.
- C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.6 PROJECT CONDITIONS AND COORDINATION:

- A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.
- B. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents. Furnish related trades with the following information:
 1. Location of embedded and attached items to concrete.
 2. Location of wall-mounted hardware, including wall stops.
 3. Location of finish floor materials and floor-mounted hardware.
 4. Manufacturer templates to door and frame fabricators.
- C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation. Do not order hardware until the submittal has been reviewed by the frame and door suppliers for compatibility with their products.
- D. Prior to submittal, carefully inspect existing conditions at each opening to verify finish hardware required to complete Work, including sizes, quantities, existing hardware scheduled for re-use, and sill condition material. If conflict or incompatibility between the specified/scheduled hardware and existing conditions, submit request for direction from Architect. Include date of jobsite visit in the submittal.
 1. Submittals prepared without thorough jobsite visit by qualified hardware expert will be rejected as non-compliant.

1.7 WARRANTY:

- A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties:
- | | | |
|----|----------------|-------------|
| 1. | Locksets: | Three years |
| 2. | Exit Devices: | Three years |
| 3. | Closers: | Ten years |
| 4. | Other Hardware | Two years |

1.8 COMMISSIONING:

- A. Conduct these tests prior to request for certificate of substantial completion:
1. With installer present, test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
 2. With installer, access control contractor and electrical contractor present, test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
 3. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.

1.9 REGULATORY REQUIREMENTS:

- A. Locate latching hardware between 34" to 44" above the finished floor, per California Building Code, Section 1010.1.9.2 and 11B-404.2.7.
- B. Handles, pull, latches, locks, other operating devices: readily openable without tight grasping, tight pinching, or twisting of the wrist to operate. California Building Code 1010.1.9.1 and 11B-309.4.
- C. Adjust doors to open with not more than 5.0 lbs pressure to open at exterior doors and 5.0 lbs at interior doors. As allowed per California Building Code, Section 11B-404.2.9, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15 lbs.
- D. Adjust door closer sweep periods so that from an open position of 90 degrees, the door will take at least 5 seconds to move to a point 12 degrees from the latch, measured to the landing side of the door, per California Building Code Section 11B-404.2.8.1.
- E. Smooth surfaces at bottom 10" of push sides of doors, facilitating push-open with wheelchair footrests, per California Building Code Section 11B-404.2.10.
- F. Door opening clear width no less than 32", measured from face of frame stop, or edge of inactive leaf of pair of doors, to door face with door opened to 90 degrees. Hardware projection not a factor in clear width if located above 34" and the hardware projects no more than 4". California Building Code Section 11B-404.2.3, 11B-404.2.4, and 1010.1.1.

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- G. Door opening height shall not be less than 80 inches. Doors closers and door stops shall be permitted to be 78 inches minimum above the floor. California Building Code Section 11B-404.2.3 and 1010.1.1.1.
- H. Thresholds: floor or landing no more than 1/2" below the top of the threshold of the doorway. Change in level between 1/4" and 1/2": beveled to slope no greater than 1:2 (50 percent slope). California Building Code Section 11B-404.2.5.
- I. Floor stops: Do not locate in path of travel. Locate no more than 4" from walls..
- J. Pairs of doors: limit swing of one leaf to 90 degrees to protect persons reading wall-mounted tactile signage.
- K. New Buildings on a K-12 Public School campus shall be provided with locks which allow the doors to classrooms and any other room with an occupant load of five or more persons to be locked from the inside. Locks shall conform to the specification and requirements of Section 1010.1.11. Exceptions include doors that are normally locked from the outside, relocatable moved within the same campus, and reconstruction projects.

PART 2 PRODUCTS

2.1 MANUFACTURERS:

- A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

ITEM:	MANUFACTURER:	ACCEPTABLE SUB:
Hinges	(IVE) Ives	Bommer
Key System	(YAL) Yale	District Standard
Locks	(YAL) Yale	District Standard
Electronic Locks	(SCE) Schlage Electronics	
Exit Devices	(YAL) Yale	District Standard
Closers	(NOR) Norton	District Standard
Silencers	(IVE) Ives	Trimco
Kickplates	(IVE) Ives	Trimco
Stops & Holders	(IVE) Ives	Trimco
Overhead Stops	(GLY) Glynn-Johnson	Rixson
Thresholds	(PEM) Pemko	Zero
Seals & Bottoms	(PEM) Pemko	Zero

2.2 HINGING METHODS:

- A. Drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.
- B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.
- C. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.
1. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins and security studs.

2. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.

2.3 LOCKSETS, LATCHSETS:

- A. Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.
 1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
 2. Backset: 2-3/4" typically, more or less as needed to accommodate frame, door or other hardware.
 3. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to door face.
 4. Electric operation: Manufacturer-installed continuous duty solenoid.
 5. Strikes: 1 1/2 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.
 6. Lock Series and Design: Yale 5400LN series, "AU" design.
 7. Certifications:
 - a) ANSI A156.2, 1994, Series 4000, Grade 1.
 - b) UL listed for A label and lesser class single doors up to 4ft x 8ft.
 8. Comply with CBC Section 11B-309.4.

2.4 EXIT DEVICES / PANIC HARDWARE

- A. General features:
 1. Push-through push-pad design.
 2. 0.75-inch throw deadlocking latchbolts.
 3. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
 4. Releasable in normal operation with 5-lb. maximum operating force per California State Fire Marshal Standard 12-10-3, and with 32 lb. maximum pressure under 250-lb. load to the door.
 5. Where devices span over door lite frame and the face of the selected lite manufacturer's frame is raised from the face of the door, furnish panic hardware manufacturer's fitted shims or glass-bead kits at no additional cost to the project.
 6. Comply with CBC Section 11B-309.4.

2.5 CLOSERS

- A. Surface Closers:
 1. Full rack-and-pinion type cylinder.

2. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
3. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
4. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 11B-404.2.9, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.
5. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
6. Exterior doors: seasonal adjustments not required for temperatures from 120 degrees F to -30 degrees F, furnish checking fluid data on request.
7. Non-flaming fluid, will not fuel door or floor covering fires.
8. Pressure Relief Valves (PRV) not permitted.

2.6 OTHER HARDWARE

- A. Overhead Stops: Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.
- B. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.
- C. Door Stops: Provide stops to protect walls, casework or other hardware.
 1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.
 2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.
- D. Seals: Finished to match adjacent frame color. Resilient seal material: polyurethane, polypropylene, nylon brush, silicone rubber or solid high-grade neoprene as scheduled. Do not furnish vinyl seal material. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability.
 1. Proposed substitutions: submit for approval.
 2. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
 3. Non-corroding fasteners at in-swinging exterior doors.

4. Fire-rated Doors, Resilient Seals: UL10C compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.
 5. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required
- E. Thresholds: As scheduled and per details. Comply with CBC Section 11B-404.2.5. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.
1. Exteriors: Seal perimeter to exclude water and vermin. Use Dow Corning 795 Silicone or approved equal. Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
 2. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.
 3. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.
- F. Exposed Through-Bolts: Do not use SNB, grommet nuts, sleeve nuts or other such clamping type fasteners, intent is for minimal exposed hardware. Coordinate with wood doors; ensure provision of proper blocking to support wood screws for mounting panic hardware and door closers. Coordinate with metal doors and frames; ensure provision of proper reinforcement to support machine screws for mounting panic hardware and door closers.
- G. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.
- 2.7 FINISH:
- A. Generally BHMA 626 Satin Chromium.
 1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.
 - B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

- C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.8 KEYING REQUIREMENTS:

- A. Key System: Yale keyway, interchangeable core throughout. Key blanks available only from factory-direct sources, not available from after-market keyblank manufacturers. For estimate use factory GMK charge. Initiate and conduct meeting(s) with Owner to determine system keyway(s), keybow styles, and structure. Furnish Owner's written approval of the system.
 - 1. Existing master key system.
 - 2. Construction keying: furnish temporary keyed-alike cores. Remove at substantial completion and install permanent cylinders/cores in Owner's presence. Demonstrate that construction key no longer operates.
 - 3. Temporary cylinders/cores remain supplier's property.
 - 4. Furnish 10 construction keys.
 - 5. Furnish 2 construction control keys.
 - 6. Key Cylinders: furnish 6-pin solid brass construction.
- B. Cylinders/cores: keyed at factory of lock manufacturer where permanent records are maintained. Locksets and cylinders same manufacturer.
- C. Permanent keys: use secured shipment direct from point of origination to Owner.
 - 1. For estimate: 3 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.
 - 2. For estimate: VKC stamping plus "Do Not Duplicate".
- D. Bitting List: use secured shipment direct from point of origination to Owner at completion.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

- A. Can read and understand manufacturers' templates, suppliers' hardware schedules and printed installation instructions. Can readily distinguish drywall screws from manufacturers' furnished fasteners. Available to meet with manufacturers' representatives and related trades to discuss installation of hardware.

3.2 PREPARATION:

- A. Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation.
- B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
 - 1. Notify Architect of code conflicts before ordering material.

2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 34 inches to 44 inches above the finished floor, per CBC Section 11B-404.2.7.
 3. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.
- D. Existing frames and doors to be retrofitted with new hardware:
1. Field-verify conditions and dimensions prior to ordering hardware. Fill existing hardware cut outs not being reused by the new hardware. Remove existing hardware not being reused, return to Owner unless directed otherwise.

3.3 INSTALLATION

- A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
 2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
 3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
 4. Replace fasteners damaged by power-driven tools.
 5. Drawings typically depict doors at 90 degrees, doors will swing to maximum allowable. Install door closers to maximum allowable swing in conjunction with door stops.
- B. Locate floor stops no more than 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.
- C. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.
- D. Drill pilot holes for fasteners in wood doors and/or frames. Centerpunch hole locations before using self-drilling type screws to prevent skating. Replace screws that are not centered in their holes.

3.4. ADJUSTING

- A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
 - 1. Hardware damaged by improper installation or adjustment methods: repair or replace to Owner's satisfaction.
 - 2. Adjust doors to fully latch with no more than 1 pound of pressure.
 - 3. Adjust door closers per 1.9 this section.

3.5 DEMONSTRATION:

- A. Demonstrate mechanical hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

- A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
- B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.7 SCHEDULE OF FINISH HARDWARE

- A. See door schedule in drawings for hardware set assignments.
- B. Miscellaneous material:
 - 25 ea. Key Fob 7610 SCE

HW SET: 01

3	EA	HINGE	BB1199 5 X 4.5 NRP	630	HAG
1	EA	EXIT DEVICE	5CA-7155 X 626F	626	YAL
1	EA		IC MORTISE CYLINDER W/ TEMP CORE (DOGGING)	626	YAL
1	EA		IC RIM CYLINDER (W/ TEMP CORE)	626	YAL
2	EA		PERMANENT IC CORE ONLY	626	YAL
1	EA	SURFACE CLOSER	P7500-H	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	SECURITY FLOOR STOP	FS18S	BLK	IVE
1	EA	HEAD SEAL	2891AS	AL	PEM
2	EA	JAMB SEALS	290AS	CL	PEM
1	EA	DOOR SWEEP	368N	AL	PEM
1	EA	THRESHOLD	272A MS/LA	AL	PEM

INSTALL HEAD SEAL BEFORE CLOSER

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HW SET: 02

3	EA	HINGE	BB1168 4.5 X 4.5	652	HAG
1	EA	PASSAGE LATCH	AU5401LN	626	YAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 03

3	EA	HINGE	BB1199 5 X 4.5 NRP	630	HAG
1	EA	CLASSROOM LOCK	AU5417LN X 1210	626	YAL
1	EA	LOCK GUARD	5000-T	630	TRI
1	EA	SURFACE CLOSER	P7500-H	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	SECURITY FLOOR STOP	FS18S	BLK	IVE
1	EA	HEAD SEAL	2891AS	AL	PEM
2	EA	JAMB SEALS	290AS	CL	PEM
1	EA	DOOR SWEEP	368N	AL	PEM
1	EA	THRESHOLD	272A MS/LA	AL	PEM

INSTALL HEAD SEAL BEFORE CLOSER

HW SET: 04

3	EA	HINGE	BB1168 4.5 X 4.5	652	HAG
1	EA	ENTRANCE LOCK	AU5407LN X 1210	626	YAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 05

3	EA	HINGE	BB1168 4.5 X 4.5	652	HAG
1	EA	PRIVACY LOCK	AU5402LN	626	YAL
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

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HW SET: 06

3	EA	HINGE	BB1168 4.5 X 4.5	652	HAG
1	EA		PERMANENT IC CORE ONLY	626	YAL
1	EA	ELECTRONIC LOCK	CO-200-CY-40-PRK-RHO-YALE IC	626	SCE
1	EA	SURFACE CLOSER	P7500	689	NOR
1	EA	OVERHEAD STOP	100S	630	GLY
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	SET	SEALS	S88 HEAD AND JAMBS	BLK	PEM

HW SET: 07

3	EA	HINGE	BB1199 4.5 X 4.5 NRP	630	HAG
1	EA	CLASSROOM LOCK	357 X 2196	626	YAL
1	EA	PUSH PLATE	8200 8" X 16" CFTT	630	IVE
1	EA	PULL PLATE	8302-0 4" X 16" CFC	630	IVE
1	EA	DOOR HOLDER	PAH60	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	SECURITY FLOOR STOP	FS18S	BLK	IVE
1	EA	HEAD SEAL	2891AS	AL	PEM
2	EA	JAMB SEALS	290AS	CL	PEM
1	EA	DOOR SWEEP	368N	AL	PEM
1	EA	THRESHOLD	272A MS/LA	AL	PEM

INSTALL HEAD SEAL BEFORE DOOR HOLDER

HW SET: 08

3	EA	HINGE	BB1168 4.5 X 4.5	652	HAG
1	EA	ENTRANCE LOCK	AU5407LN X 1210	626	YAL
1	EA	SURFACE CLOSER	P7500	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	SET	SEALS	S88 HEAD AND JAMBS	BLK	PEM

END OF SECTION

GLASS AND GLAZING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- a. The work of this Section shall include all labor, materials, scaffolding, equipment and appliances necessary to complete all the work indicated on the drawings and/or specified hereunder.
- b. See Details on drawings.

1.02 WORK INCLUDED

- a. Glass and glazing of all aluminum sash in aluminum glazing clips and/or all steel sash with putty or in continuous metal glazing angles, including back putty.
- b. Glass and glazing of all fixed glass.
- c. Mirrors and frames.
- d. Glass and glazing of all metal doors.
- e. All metal stop molds for fixed glass, except in hollow metal doors.
- f. Transitop panels.
- g. All caulking in connection with this work and in strict accordance with Section 07 91 00.
- h. Glass and glazing of all display cases.

1.03 RELATED WORK

- a. Glass and glazing of wood doors is specified under Wood Doors, Section 08 14 20.
- b. Cleaning is specified under Carpentry Specification Section 06 10 00.
- c. Glass and glazing of Storefront Entrance Units, Section 08 41 13

PART 2 PRODUCTS

- a. L.O.F.
- b. Pittsburgh Plate Glass Co.
- c. Amerada Glass Corp.
- d. Northrop.
- e. U.S. Plywood.
- f. Bobrick.
- g. DAPS.
- h. General Electric (GE Plastics)
- i. Downey Glass
- j. Nippon Electric Glass
- k. Pilkington
- i. SaftiFirst
- m. Or approved equal. See Section 10, Article 19.

2.02 MATERIALS

- a. Clear Glass: Clear D.S.B. quality.
- b. Float Glass: 1/4" min. thick ASTM C1036, Type I transparent flat, Class 1 clear, quality q³ glazing select.
- c. Fire Rated Glass: 5/16" FireLite Plus® as manufactured by Nippon Electric Glass Company, Ltd., and distributed by Technical Glass Products, 8107 Bracken Place SE, Snoqualmie, WA 98065, voice 1-800-426-0279, fax 1-800-451-9857,
- d. Obscure Glass: 7/32" Burlap, smooth side out.
- e. Solar Grey: 1/4" PPG Solarban 60 (2) Solargray, "Low-E" glass.
- f. Luxite Coolite: 1/4", glare reducing.
- g. Wire Coolite: 1/4", glare reducing.
- h. Heavy Sheet Glass: 3/16" Float Glass, B grade.

- i. Mirrors: 1/4" float glass. Backs of mirrors shall have a protective coating of copper deposited by electrolysis and shall be guaranteed against silver oxidation and shall have manufacturer's label on the face and identification on back. Mirrors shall be Bobrick No. 290 or approved equal, one piece roll formed frame, 3/4" x 3/4" type 304 stainless steel angle with satin finish. Frame shall have continuous integral stiffener on all sides for added strength. Corners shall be heliarc welded, ground and polished smooth. Mirror edges shall be protected with plastic filler strips to prevent chipping; back to be protected by 1/8" thick, waterproof, shock absorbing polyethylene padding. 20 ga. galvanized steel back attached to frame with concealed screws. Mirror to be installed on concealed wall hanger and secured in place by two theft-resistant locking screws. Mounting heights from top of frame to floor in Women's Toilets is 6'-0" and in Men's Toilets is 6'-6". See plans for mounting heights in Boys and Girls Toilet Rooms. Mounting heights in other areas shall be as indicated on drawings.
- j. Metal Sash Putty shall conform to specifications, Federal Symbol TT-G-00410a (GSA-FS) entitled "Putty and Elastic compound for Metal Sash Glazing.
- k. Aluminum Sash Putty: Blue Ribbon Aluminum Putty (Fed. Spec. Type 2) as manufactured by DAPS.
- l. Display Case: Glass, trim shelves as per details.
- m. Gray Plate Safety Glass: 1/4" gray laminated safety glass, 12% light transmission, Twi-lite 12 as manufactured by Amerada Glass Corp., 3301 South Prairie Ave., Chicago, Illinois, or approved equal.
- n. Metal Stop Molds: Northrop Stop #20-023 Aluminum Molds - 5/8" x 1/2".
- o. Transitop Panels shall be Glasweld by U.S. Plywood, or approved equal, 11/16" thick with lightweight fiberboard core and exterior and interior 1/8" thick panels. The 11/16" thickness includes the two panels. Color both sides as selected.
- p. One-Way Glass shall be Mirropane, as manufactured by L.O.F. or approved equal, 1/4" thick, polished plate glass as defined by Fed. Spec. DD-G-451a.
- q. Safety (Tempered) Glass shall be ASTM C1048, Kind FT, fully tempered with horizontal tempering condition A uncoated, Type 1 transparent flat, Class I transparent, Quality q³ glazing select, conforming to ANSI Z97.1.
- r. Insulated (Double Pane) Glazing:
 - (1) Non-Tempered shall be P.P.G. Industries; 1/4" Solarban 60 (2) Solargray at exterior and 1/4" clear glass at interior, with a sealed airspace between.
 - (2) Tempered shall be P.P.G. Industries; 1/4" Solarban 60 (2) Solargray glass at exterior and 1/4" Clear Tempered glass at interior, with a sealed air space between.

2.03 SUBSTITUTIONS

See Section 10, Article 19.

2.04 STANDARD OF QUALITY

- a. Comply with T24, Part 2, Chapter 24 and:
 - (1) UBC Standard No. 24-1, Glass Standard Specification
 - (2) UBC Standard No. 24-2, Safety Glazing
- b. Fire Rated Glass: Fire rating listed and labeled by UL for fire rating scheduled at opening locations on drawings, when tested in accordance with [ASTM E2074-00 and ASTM E2010-01] [ULC Standards CAN4 S-104 and CAN4 S-106] [NPFA 252 and NFPA 257] [UL 9, UL 10B and UL 10C].

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- a. Workmanship: Only skilled workmen experienced in their respective trades and work shall be employed. All work shall be performed in a first-class workmanlike manner and shall be subject to the approval of the Architect or his representative.
- b. Grading, Labeling and Certification:
 - (1) All glass shall be graded in accordance with these specifications.
 - (2) Each piece of glass shall be labeled showing the name of the manufacturer and the grade of quality thereof. The label shall be intact after installation.
- c. Time of Application: All glass shall be set after the general work is completed, but shall be set in ample time for the putty work to thoroughly set before painting is started.

3.02 SPECIAL REQUIREMENTS

- a. Glazing: All glass in steel sash shall be set with metal clips. Putty shall be forced into place with a knife to secure a full and solid fill, which shall be run to a straight and true line.
- b. Glazing Procedure for Snap-On Glazing Beads:
 - (1) Fill sill section of all lights with non-drying gun grade mastic.
 - (2) Start sill beads in glazing lock and force bead into position with wood block, using steady pressure. Fill groove with putty.
 - (3) Back putty glazing flanges, top, and both jams.
 - (4) Set glass in bottom groove, pressing down until top of glass clears frame, then press glass against back putty until it has uniform bed.
 - (5) Start op bead into place and snap into place, starting at one end. Fill remaining groove between glass and bead with putty and smooth out.

- (6) Apply putty at all corners.
- (7) Snap side beads into place.
- (8) Trim off back putty on inside of glass and clean off aluminum glazing bead with damp cloth or thinner.
- c. Mirrors: Do necessary drilling for mounting screws and mount mirrors plumb and true.
- d. GLAZING COMPOUND FOR FIRE-RATED GLAZING MATERIALS
 - (1) Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent. Glass panels that exceed 1,393 sq. inches for 90-minute ratings must be glazed with fire-rated glazing tape supplied by manufacturer or,
 - (2) Glazing Compound: DAP 33 putty or,
 - (3) Silicone Sealant: One-part neutral curing silicone, medium modulus sealant, Type S; Grade NS; Class 25 with additional movement capability of 50 percent in both extension and compression (total 100 percent); Use (Exposure) NT; Uses (Substrates) G, A, and O as applicable. Available Products:
 - (a) Dow Corning 795 - Dow Corning Corp.
 - (b) Silglaze-II 2800 - General Electric Co.
 - (c) Spectrem 2 - Tremco Inc.]
 - (4) Setting Blocks: Neoprene, EPDM, or silicone; tested for compatibility with glazing compound; of 70 to 90 Shore A hardness.

END OF SECTION
12/13/2022

LATHING AND PLASTERING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

- a. The work of this Section shall include all labor, material, scaffolding, equipment, and appliances required to complete all the work shown on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

- a. Furnish and install all rough hardware, wiring, paper, mesh, metal lath, metal studs, gypsum lath, screeds, beads, casings, metal trim, resilient clips, and plaster.
- b. Furnish and install waterproof paper, metal lath, and scratch coat for the application of ceramic tile.
- c. Suspended Plaster Ceiling Systems:
 - 1. For suspended steel channel system with metal lath and plaster: Furnishing and installing of the entire system.
 - 2. For suspended wood frame system with either gypsum board lath or metal lath and plaster: Furnishing and installing of lath and plaster only (suspended wood framing system by others).

1.03 RELATED WORK

- a. All head/jamb and sill window surrounds.
- b. All sheet metal window jambs that extend above or below window.
- c. Setting bed coat for ceramic tile.
- d. Installation of hollow metal door frames in plastered walls is by Carpentry.
- e. Installation of suspended wood framing system for plaster ceilings.

1.04 REGULATORY REQUIREMENTS

- a. Adhesives, sealants and caulking shall comply with 2013 California Green Building Standards Code, Section 5.504.4.1 and Tables 5.504.4.1 Adhesive VOC limit, 5.504.4.2 Sealant VOC Limit, 5.504.4.3 VOC Content Limits for Architectural Coatings and SCAQMD Rule 1168 VOC Limits. Contractor shall submit literature to demonstrate compliance with these regulations prior to beginning installation.

PART 2 PRODUCTS**2.01 APPROVED MANUFACTURERS**

- a. U.S. Gypsum
- b. Blue Diamond
- c. Kaiser
- d. Gold Bond
- e. Approved equal

2.02 PRODUCT REQUIREMENTS

Lathing and plastering shall conform to Materials, Testing, and installation Standards; UBC Vol. 3 listed in Chapters 25 and 35 and Chapter 25A, Part 2 of Title 24, C.B.C.

- a. Plaster:
 1. Gypsum Plaster shall conform to the ASTM C-28 and Materials, Testing and Installation Standards, UBC Vol. 3, No. 25-1.
 2. Keenes Cement shall comply with ASTM C-61 and Materials, Testing and Installation Standards, UBC Vol. 3, No. 25-1.
 3. Colored Plaster: Highland Stucco and Lime Products, Inc. or approved equal and shall be factory mixed, per standards for manufacturer's stucco finishes.
 4. Acoustic Plaster: Zonolite Acoustical Plaster or approved equal. No. 60 NRC rating at 1/2" thickness.
 5. Cold Box Plaster: Walls - white Portland cement; Ceiling - Fire-Ban Cement.
- b. Cement: Portland of an approved brand conforming to the tests proposed by the ASTM Year Book, latest edition.
- c. Hydrated Lime shall conform to the "Standard Specification for Hydrated Lime for Structural Purposes," ASTM Designation C-6-44.
- d. Lime Putty shall be made of quick lime or hydrated lime. Quick lime shall be prepared in an approved manner, stored and protected for an approved period of time.
- e. Sand shall be clean, sharp, well graded sand, free from loam, clay, etc., in excess of 5% of weight and shall be entirely free from vegetable or animal matter. Sand shall conform closely to ASTM latest specification for plastering sand.
- f. Water shall be clean, fresh water, free from alkalies or organic matter and shall be fit for drinking purposes.
- g. Wire: For exterior work, 18 gauge soft annealed galvanized wire.
- h. Plastic or Waterproof Cement shall comply with "Standard Specifications for Portland Cement, ASTM Designation C-150, Type I or II, except in respect to the limitation on insoluble residue air entrainment and additions subsequent to calcination.
- i. Paper Backing shall be weather resistant barrier backing as manufactured by "TYVEK" and shall be TYVEK stucco wrap. Product shall comply with ASTM E-1677, Type I air retarder and shall have a water vapor transmission greater than 50 perms per ASTM E-96-90 and shall have a water penetration resistance of 200 cm on Hydrostatic head in accordance with AATCC-127. Install per manufacturer recommendation's
- j. Mesh Netting: One inch (1") 18 gauge galvanized iron netting, or 1-1/2" 17 gauge.
- k. Metal Studs: USG Trussteel studs of open truss design or approved equal.
- l. Metal Lath: USG Junior Diamond, Pennmetal, Milcor, Gold Bond, or approved equal.
 1. Copper bearing metal lath weighing not less than 3.4 pounds per square yard after expanding and painting with rust-inhibitive paint. Metal lath for exterior ceilings and soffits shall be galvanized.
 2. Self-furring lath 3.4 pounds per square yard. Copper bearing metal lath with rust-inhibitive paint. 1/4" dimple indentations spaced 1-1/2" on center.
 3. Rib lath shall be copper bearing metal not less than 3.4 pounds per square yard with rust-inhibitive paint. 3/8" "V" shaped ribs, used at soffits with spans between 16" and 24".
 4. Corner lath shall be 3.4 pounds copper bearing metal lath with two (2) four-inch (4") wings.
- m. Gypsum Lath shall be 3/8" thick 16.2 x 48" plain lath.
- n. Resilient Clips (For Gypsum Lath) shall be U.S. Gypsum Co. or approved equal. R-1 resilient clips for wood studs, R-2 resilient cops for corners and angles, R-3

resilient clips for suspended ceilings attached to furring channels and R-5 resilient clips for plywood sheathing on masonry walls.

- o. Resilient Furring Channels shall be galvanized steel Gold Bond RF channels.
- p. Nails and Staples:
 - 1. Roofing Nails: 7/8" 13 gauge galvanized, barbed, large head roofing nails for application of exterior papering.
 - 2. Furring Nails: 1-1/4" 12 gauge galvanized self-furring nails for application of exterior netting and interior lath over structural plywood.
 - 3. Wall Lathing Nails: 6d common wire cut nails for application of metal lath on walls.
 - 4. Ceiling Lath Nails: 1-1/2" long 11 gauge steel wire with a 1/16" head for application of metal lath on ceilings. (Note ceiling lath also secured to ceiling striping as hereinafter specified).
 - 5. Gypsum Lath Nails: 1-1/8" 13 gauge 19/64" diameter head blued nails.
- q. Metal Trim: Approved manufacturers are: Milcor, Superior, Pennmetal, U.S. Gypsum or approved equal.
 - 1. Interior Corner Bead: Milcor #1 or U.S. Gypsum Cornerite 26 gauge expansion corner bead or approved equal.
 - 2. Exterior Corner Screed: U.S. Gypsum 2-A or approved equal.
 - 3. Casing: Superior #20, #21, #22 or U.S. Gypsum #66, 24 gauge for 1/2", 3/4" and 7/8" plaster.
 - 4. Base Screed: Milcor #3 or approved equal.
 - 5. Wainscot Screed: Milcor #3, or approved equal, 24 gauge for 1/2" and 3/4" plaster.
 - 6. Exterior Expansion Screeds: Superior #15 or approved equal, 26 gauge zinc galvanized steel, 3/4" wide.
 - 7. Exterior Soffit Vents: Superior #115 or approved equal, 26 gauge zinc galvanized steel one inch (1") wide, or Durasteel 931 Soffit Vent, 8" x 14" (stucco) 1/4" mesh hardware cloth or Superior "V" Type Ventilation Screed No. 120 (2" wide x 3/4").

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- a. Metal Trim:
 - 1. Metal trim shall be installed as indicated by the details and securely fastened to adjacent work. All corners shall be coped and fitted to a close joint and the entire work shall be made true to line, ready to receive metal lath. All exterior metal trim shall be installed over paper backing and wire netting.
 - 2. Where metal trim is applied to masonry, install a four-inch (4") strip of expanded metal lath secured to masonry. Lath to extend over full width of back flange of metal trim and lap over onto masonry.
 - 3. Where wood stud and plated walls or ceilings butt to concrete or masonry walls, provide Superior No. 21 casings to stop plaster at masonry walls. Where plaster is applied to masonry or concrete walls, use two (2) casings butted together at intersection of walls.
 - 4. All exposed plaster shall terminate into a metal plaster stop. In concealed areas such as above suspended ceilings or behind rubber base, a wood screed shall be used. This wood screed shall be supplied and installed as a portion of the Carpentry Section of these Specifications.
- b. Cutting and Patching shall be done by this Contractor as required for the work of other trades, or necessary for the proper completion of all work and he shall make good all damage, occasioned by cutting, and at the completion of the entire work, leave plastering in a finished state.
- c. Measuring: Materials shall be measured in calibrated boxes.

- d. **Temperature:** Precaution shall be taken to insure correct temperature of rooms while plastering is being done. Temporary heat by this Contractor. This Contractor shall provide heaters to maintain a dry, clean heat (oil burners not acceptable) at 70 deg. F. for a period required to completely cure all interior plastering.
- e. **Curing:** All interior and exterior plaster work shall be protected against intense sun and wind by use of tarpaulins or wet burlap until it has sufficiently hardened to permit sprinkling. All plaster work shall be protected from freezing.
- f. **Sprinkling and Interval Between Coats:** The exterior plaster scratch coat shall be kept continuously moist for a period of forty-eight (48) hours and the finish coat shall not be applied over brown coat for twenty-one (21) days. The brown coat shall be kept continuously moist during the twenty-one day curing period.
- g. **Painting and Patching:** Replacing or patching of plaster unnecessarily damaged by other contractors shall be done by this Contractor and shall be paid for by the contractors responsible for such damage. Point up around all trim and other set work after all other trades have finished their work and leave the job in complete and perfect condition.
- h. **Replacement:** Plaster cracks, blisters, pits, checks, discoloration and uneven surfaces will not be acceptable. In every case, the plastering throughout shall be delivered clean and perfect in every respect.
- i. **Damage:** This Contractor shall protect his work from damage until completion and acceptance of the building.
- j. **Cleaning:** Immediately upon completion of the plastering work, clean all floors, walls, windows, doors and other work that is to receive painter's finish. Cleaning shall be done in such a manner that other work is not damaged and so that other trades, may proceed with their work without delay.
- k. **Substitutions:** All substituted material shall be approved in writing from the Architect in accordance with Section 10, Article 19.
- l. **Guarantee:** This Contractor shall guarantee this work for a period of one (1) year from date of acceptance and shall make good any defects or imperfections, such as pops, cracks, rust stains, etc., which may develop within that time.
- m. **Qualifications:** All materials, unless otherwise indicated, shall be manufactured by an approved manufacturer (See Part 2, Paragraph 2.01) and shall be installed in accordance with its current printed directions.
- n. **Delivery and Storage of Materials:** All materials shall be in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.
- o. **Environmental Conditions:**
 - 1. In cold weather, all glazing shall be completed and the building heated to a minimum of 55 deg. F. Before plaster base installation, ventilation shall be provided to carry off excess moisture.
 - 2. When low humidity, high temperatures and rapid drying conditions exist during plaster base and plaster application, Durabond Joint Compound and Perf-A-Tape Reinforcement shall be used on all joints, internal corners, trim and corner beads and allowed to set and dry thoroughly before plaster application.

3.02 SPECIAL REQUIREMENTS

- a. Exterior Lathing on Stud Walls shall be Type SFB "Breather Paperbacking Self-Furred Paperback Lath, 1-1/2" mesh, 17 gauge keymesh with 18 gauge galvanized longitudinal wires woven into netting on 6" centers attached to 18 gauge galvanized wires laminated between high wet strength suction paper and Grade D paper, with continuous 1/4" deep furring crimps horizontally, spaced 6" vertically, following each 18 gauge longitudinal wire woven into the netting, wires in the continuous horizontal crimps painted red to mark proper attachment point.

Weight 2.2 lbs. per square yard. End use - for backing and reinforcement for Portland Cement plaster applied direct to structural supports.

1. Install expansion screeds. All expansion screeds shall be independently backed on each side of the screed and shall be wired separately to the lath material on each side of screed. Special attention shall be given to proper location and true alignment.
- b. Lathing Over Exterior Plywood: Wire mesh or metal lath shall be applied over two layers of paper backing. Metal reinforcement shall be furred out from the backing at least one-fourth inch (1/4") by an approved furring method and shall be nailed with galvanized nails or approved furring devices driven to at least three-fourths inch (3/4") penetration which shall be spaced not more than six inches (6") apart vertically and sixteen inches (16") apart horizontally on each bearing. Metal reinforcement shall be lapped at least one full mesh at all joints. When no sheathing is used, all vertical joints shall be made at the studs, and horizontal joints where expanded metal or metal lath is used shall have at least one (1) tie between studs, made with No. 18 U.S. Steel wire gauge galvanized annealed tie wire.
 1. Install expansion screeds. All expansion screeds shall be independently backed on each side of the screed and shall be wired separately to the lath material on each side of screed. Special attention shall be given to proper location and true alignment.
- c. Exterior Plastering on Stud Walls:
 1. All walls over which paper and mesh netting have been applied shall be plastered with cement plaster finishing seven-eighths inch (7/8") thick. Finish shall be dashed. All expansion screeds shall be installed as noted above in paragraphs a.1 and b.1.
 2. Install expansion screeds. All expansion screeds shall be independently backed on each side of the screed and shall be wired separately to the lath material on each side of screed. Special attention shall be given to proper location and true alignment.
 3. First Coat (Scratch):
One part (by volume) Portland Cement
Two and one-half (2-1/2) parts (by volume) sand
 4. Second Coat (Brown):
One (1) part (by volume) Portland Cement
Three and one-half (3-1/2) parts (by volume) sand
 5. Third Coat (Finish Mixed on Site: (Follow manufacturer's instructions on Factory Mix)
One (1) sack Portland Cement
Three (3) sacks sand
Lime - 25% of volume Portland Cement (not permitted when plastic or waterproof cement is used).
(a) If stucco finish:
One (1) sack Portland Cement
Two to three (2 - 3) sacks sand
Two (2) sacks lime
Finish coat for exterior plastered ceilings and walls shall be integrally colored. It shall be waterproof and the color and texture shall be selected by the Architect and applied in strict conformance with the manufacturer's directions. Dashed finish shall be applied in two (2) coats. First coat must be completely dry before second coat is applied.
 6. Special Condition for Exterior Plastering: Contractor shall plaster exterior surfaces from top of wall to bottom of wall, then move scaffold. (Finish coat only). Wall shall be dampened sufficiently and joint worked in to provide a professional looking job on hand applications.
- d. Exterior lathing of Exterior Ceiling Soffits:

1. Install expansion screeds. All expansion screeds shall be independently backed on each side of the screed and shall be wired separately to the lath material on each side of screed. Special attention shall be given to proper location and true alignment.
2. Lath with metal lath, starting at corners. End laps shall be two inches (2") and side laps one inch (1"). Where plaster continues down onto walls, bend lath down on walls to form a six inch (6") apron or drop down the wall. All exterior lath shall be galvanized. All metal lath shall be laced together with 18 gauge galvanized wire. Nail the metal lath to each bearing (joints, stripping or ground) with 1-1/2" long, 11 gauge, barbed galvanized roofing nails with 7/16" heads or 1-1/4", 16 ga. staples with 3/4" crown straddling the lath ribs at 4-1/2" on center along the wood supports. Fasteners shall be driven to full penetration without injury to lath and shall be spaced not to exceed six inches (6") o.c. for nails and 4-1/2" o.c. for staples on each bearing. Nails shall be driven to full penetration without injury to lath and shall be spaced not to exceed six inches (6") o.c. on each bearing. In addition to the regular nailing, metal lath shall be fastened to horizontal wood supports 1-1/2", 9 gauge, zinc plated Stronghold staples, with 10d nails laid across each staple, at each support at one edge of each sheet of lath, per Section 2507.3, C.B.C.
3. When spans exceed sixteen inches (16"), use 3/8" rib metal lath (3.4 lbs. per square yard).
- e. Exterior Plastering on Ceiling and Soffits: All areas so lathed shall be plastered with cement plaster finishing 3/4" thick. Proportions shall be same as specified for Plastering on Exterior Stud Walls and shall be textured as directed by the Architect.
- f. All exterior plaster surfaces shall be divided by the use of screeds into sections with a maximum dimension of 10'-0" unless shown otherwise on the drawings.
- g. Interior Lathing (Metal Lath):
 1. Application, Lapping and Tying of Sheets:
 - (a) Metal lath shall be attached to vertical wood supports with one inch (1") roofing nails with 7/16" diameter heads driven to a penetration of at least 3/4" and spaced not to exceed six inches (6") on center and sixteen inches (16") apart on bearing and clinch all nails upward. Common wire nails when used shall be bent over to engage at least three (3) strands of lath and shall be 4d blued driven to a minimum penetration of 3/4" at six inches (6") on center.
 - (b) Metal lath shall be attached to horizontal wood supports by 1-1/2", 11 gauge, barbed galvanized roofing nails with 7/16" heads driven home and spaced not to exceed six inches (6") on center. In addition to the regular nailing, metal lath shall be fastened with 10d nails over lath held with 1-1/2", 9 gauge zinc coated Stronghold staple at twenty-seven inches (27") on center at every joist, per Section 2507.3, C.B.C.
 - (c) Lapping and Tying of Sheets: All metal lath shall be lapped at sides of sheets not less than one inch (1") and at ends of sheets not less than one inch (1"). If ends do not occur over supports, they shall be attached to each support and side laps shall be wired at intervals of not more than nine inches (9") between supports.
 - (d) Paper Backing: Apply one (1) layer of paper backing on wood studs before lathing for tile work only.
 2. Lathing on Ceilings: All ceilings to be plastered (see Room Finish Schedule) shall be lathed with metal lath. Lath shall be first applied to ceilings and sheets and shall be carried down two inches (2") on the wall or partitions, so that no joints occur at junction of ceilings or walls.

3. Lathing on Stud Walls: All walls to be plastered (see Room Finish Schedule) shall be lathed with metal lath. Lath shall be started one (1) stud away from the corner, be bent at the corner and carried onto the abutting wall, where same is to be plastered.
 4. Reinforced Metal Lath Corners: Apply for ceramic tile work only.
- h. Interior Plastering on Metal Lath:
1. All walls and ceilings over which metal lath is applied shall be plastered as hereinafter specified, finishing 3/4" thick, measured from face of lath supports.
 First Coat (Scratch):
 One (1) part (by volume) gypsum plaster
 Two (2) parts (by volume) sand
 Second Coat (Brown):
 One (1) part (by volume) gypsum plaster
 Three (3) parts (by volume) sand
 This coat shall be darbied, rodged and scored for finish coat.
 Third Coat (Finish - Keene Trowel Smooth):
 Two (2) parts Keene's Cement
 One (1) part lime putty
 Add hardwall plaster to aid set
 Third Coat (Finish - Keen Sand):
 Four and one-half (4-1/2) parts No. 30 sand
 One and one-half (1-1/2) parts Keene's cement
 Two (2) parts lime putty
 2. Metal Corner Bed and Expansion Screed: Apply in all rooms indicating plaster walls on Room Finish Schedule. All said metal trim shall be of one (1) length, or in as long lengths as procurable and shall be set plumb and true without splicing. Apply corner bead at junction of all stud and plaster partitions and ceilings to concrete and/or masonry walls.
- i. Interior Plastering on Concrete Block Walls: Plaster with cement plaster, finishing 1/2" thick. Two (2) coats same as brown and finish coats for exterior plastering. Prior to plastering, this Contractor shall apply by brush or roller, one (1) coat of A.C. Horn's Hornbond, 400 sq. ft./gallon or Maritime Concrete Bonder #5, applied as per manufacturer's directions.
- j. Interior Lathing and Cement Plastering for Stud Walls:
1. Lath walls as per subparagraph 3.02 g., except use galvanized lath and apply two (2) layers of 30 lb. felt on studs before lathing.
 2. Plaster walls as per subparagraph 3.02 c.
- k. Interior Lathing and Cement Plastering on Ceilings:
1. Lathing as per subparagraph 3.02 d.
 2. Plaster walls as per subparagraph 3.02 e.
- l. Interior Lathing (Plain Gypsum Lath) on Stud Walls: Plain gypsum lath shall be applied to face out with the long dimension at right angles to framing members and with end joints staggered and over framing members. Perforated gypsum lath shall be attached to framing members by means of R-1 resilient clips (U.S. Gypsum or approved equal) nailed to framing and placed at every intersection of perforated gypsum lath edges and at corners with R-2 resilient clips so that the perforated gypsum lath is secured by clips (R-1 and R-2) spaced sixteen inches (16") on center in both directions. Resilient clips shall be secured to framing with 13 gauge, 1/8" lathing nails. Under no circumstances shall perforated gypsum lath be attached directly to the framing. (Gypsum lath nailed directly to studs shall be applied strictly in conformance with manufacturer's recommendations.
- m. Interior Plastering on Plain Firecode Gypsum Lath:
1. All walls over which perforated gypsum lath is applied shall be plastered as hereinafter specified, finishing 1/2" thick, measured from face of the perforated gypsum lath.

2. Two-coat work shall be doubled back to bring the plaster out to grounds and straightened to a true surface and left rough to receive the finish coat.

Base Coat:

One (1) part (by volume) gypsum plaster
 Two (2) parts (by volume) sand
 This coat shall be darbled, rodded and scored for finish coat.
Finish Coat (Keene's):
 Three (3) parts Keene's cement
 One (1) part lime putty
 Add hardwall plaster to aid set
Finish Coat (Keene - Sand):
 Four and one-half (4-1/2) parts No. 30 sand
 one and one-half (1-1/2) parts Keene's Cement
 Two (2) parts lime putty

- n. **Acoustic Plaster:** To be applied before any wall plaster is applied. All walls and ceilings over which metal lath is applied shall be plastered as hereinafter specified, finish one inch (1") thick measured from face of lath supports.

First Coat (Scratch):

One (1) part (by volume) gypsum plaster
 Two (2) parts (by volume) sand

- Note:** As soon as scratch coat is set, apply the brown coat.

Second Coat (Brown):

One (1) part (by volume) gypsum plaster
 Three (3) parts (by volume) sand

- Note:** Total thickness of first and second coats shall be 1/2" maximum.

Third Coat:

1/2" thick coat of Highland Acoustic Plaster

- o. **Plastering of Walk-In Boxes and/or Freezers (On Styrofoam Insulation):**

1. Walls over which rigid insulation has been applied shall be covered with a scratch and finish coat of white waterproof Portland Cement plaster. Room temperature for application and drying shall be above 50 deg. F. Point all open joints, voids and broken corners. Install corner beads or screeds around columns, beams, openings and wall-to-wall and wall-to-ceiling junctions. Apply plaster directly in two (2) 1/4" coats, curing each properly. V-score the finish coat through to the first coat in maximum of 2'-0" squares and all corners.

First and Second Coats, 1/4" Each:

One (1) part (by volume) whit Portland Cement
 Three (3) parts (by volume) mason's sand
 One-half (1/2) part (by volume) lime

2. Ceiling over which the rigid insulation has been applied shall be finished with Fire-Ban Cement, being a minimum of 3/16" thick for walk-in boxes and 1/4" thick for freezers. The Fire-Ban Cement shall be mixed and applied in strict conformance with the manufacturer's instructions.

3. Walk-in box insulation and door are specified elsewhere in the specifications.

- p. Furnish and Install Metal Screeds at junction of plaster walls to ceilings when ceilings are of a material and finish other than plaster.

- q. Where plaster is used as part of required fire-resistive construction, it shall conform to Chapter 7, Tile 24, Part 2 C.B.C.

- r. **Portland Cement Surfaces to Receive Ceramic Tile:** See subparagraphs 3.02 i. for specific requirements for cement plaster. Apply scratch coat only. Setting bed coat shall be applied under Section 09 21 00 of these Specifications.

- s. **Resilient Furring System:**

1. **Location:** Refer to the drawings and Room Finish Schedule for walls and/or ceilings to receive resilient furring system.

2. Installation (RCI Channels on One Side of Partition): Wood framing shall be erected in accordance with conventional procedure, studs 16" o.c. or 24" o.c. as noted on the drawings. A 1/2" x 3" shim strip of gypsum wallboard shall be nailed to the base plate and top plate continuously on the resilient side of the partition. RF channels shall be located horizontally, 24" o.c. maximum, and be secured through alternating flanges at each stud with 1-1/4" GWB-54 nails or Type W drywall screws. Abutting channel ends shall be located over studs, shall be gapped 3/8" and shall be fastened through both flanges. Gypsum wallboard shall be secured to RF channels with Type S drywall screws 12" o.c. Non-resilient side of partition shall be finished with gypsum wallboard in accordance with specifications for single or double layer wallboard application.
3. Installation (RF Channels on Ceilings): Wood framing shall be erected in accordance with conventional procedure, 16" o.c. or 24" o.c. as noted on drawings. R.F. channels shall be installed perpendicular to joists, spaced 16" o.c. and a maximum of 6" from ceiling-wall line. Abutting channel ends shall be gapped 3/8" and shall be fastened through both flanges at each joist with Type W drywall screws.
4. Caulking: Caulking material must be non-hardening, non-staining, and easily applied with a caulking gun. Caulking beads should be 1/4" diameter minimum but bead must be increased in size as necessary to assure positive seal. Caulking is recommended at the following locations:
 - (a) One serpentine bead under floor track or sole plate in all cases. (A single, straight bead under cent of track is acceptable if positive seal is accomplished.)
 - (b) A similar bead under ceiling or wall track if junction is not otherwise sealed. (When wall or ceiling junction is taped, caulking is not required.)
 - (c) Where partition is finished with a casing bead at junction of ceiling or wall, use 500 VB casing bead or a bead of caulking located so the inner edge of casing bead compresses the caulking.
 - (d) A similar bead at floor line after finish layer of wallboard is applied and before installation of base.
- t. Suspended Plaster Ceiling system (Steel Channel Grid System):
 1. Location: Refer to the drawings and Room Finish Schedule for surface and/or ceilings to receive steel channel suspension system.
 2. Installation of Channels, Wire Hangers and Ties: 9 ga. hangers not over 3'-0" in direction of main runner channels, not over 4'-0" at right angles to main runners and within 6'-0" of ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity. In concrete, anchor hangers by attachment to reinforcing steel, by loops embedded at least 2" or by approved inserts. For steel supports, wrap hanger around beams or joists. Install 1-1/2" main runner channels spaced not over 4'-0" o.c., properly positioned, leveled and secured to hanger wire saddle-tied along channel. Locate channels within 6" of walls to support furring channel ends. Erect cross furring channels at right angles to main runners or framing. Space channels 16" o.c. and securely saddle-tie to main runners or steel joists with double strand 16 ga. tie wire. Saddle-tie hangers from concrete joists to furring channels. Provide 1" clearance between ends of main runners and furring channels and abutting masonry walls. At channel splices, overlap ends at least 8" and secure with double-strand 16 ga. tie wire 1" from each end. At light troffers or any opening that interrupts the main runner or furring channels, install additional cross reinforcing to restore lateral stability of rillage.
 3. Lathing: Lath shall be applied with the long dimension across the furring channels and shall be secured every 6 inches along each channel with No.

18 gauge galvanized annealed wire. End laps of at least 1 inch shall be made over furring channels. Sides of metal lath shall be lapped not less than one inch (1"). Side laps between channels shall be wire-tied at intervals of not more than 9 inches. Where ceilings, cornices or other features formed with metal lath joint masonry walls, partitions or arch soffits, the lath shall extend onto the masonry surface at least 6 inches. In the case of 3/8" rib lath, the corner shall be made with 3" Cornerite.

4. Plastering: Refer to subparagraph 3.02 g., this Section.
- u. Suspended Plaster Ceiling System (Wood Frame Grid System):
1. Location: Refer to the drawings and Room Finish Schedule for ceilings to receive wood frame grid suspension system.
 2. Wood frame grid suspension system is by others as detailed on the drawings.
 3. Lathing: Metal lath or gypsum board lath (refer to subparagraph 3.02 f. or g., this section).
 4. Plastering: Refer to subparagraphs 3.02 f. or g., this section.

END OF SECTION
12/23/2013

EXTERIOR PLASTER FINISHING SYSTEM

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, material, scaffolding, equipment, and appliances required to complete all the work shown on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

Supply and install materials for an acrylic/cement based exterior plaster finish system.

1.03 RELATED WORK

- a. Plaster Substrate, see Section 09 21 01
- b. Concrete Substrate, see Section 03 10 00

1.04 QUALITY ASSURANCE

- a. The manufacturer of the system shall have:
 - 1. Marketed exterior insulation and finish systems in the United States for at least 10 years.
 - 2. Completed projects of the similar building type, size, and substrate types as this project.
- b. The Applicator/Contractor shall:
 - 1. Have been trained in the installation of the system,
 - 2. Possess a current certificate of training.
 - 3. Shall be experienced and competent in the installation of plaster-like materials.
- c. Substrate System (See Lathing & Plastering Section 09 21 01)
 - 1. Shall be engineered to withstand all applicable loads, including live, dead, positive, and suction wind, seismic, etc. Bond strength, fastener strength, and connection strength shall be analyzed and engineered. Appropriate factors of safety shall be used.
 - 2. The maximum deflection under positive or suction full design loads of the substrate system shall not exceed the following values: $1/240^{\text{th}}$ of the span.
- d. Substrates: Application of the system shall be the following substrates only:
 - 1. Sound unpainted concrete.
 - 2. Sound, unpainted stucco.
 - 3. Substrates other than those listed above shall be approved by the Architect in writing prior to installation of the system.
 - 4. Sheathing substrates shall be oriented with their strong axis perpendicular to the supporting framing. Plywood and other structural wood panels shall follow APA spacing recommendations for edge, and end joints.
 - 5. The Contractor shall verify that the proposed substrate is acceptable to the applicable regulatory authorities prior to installation of the system.

- e. Expansion Joints: See Section 09 21 01.
- f. The manufacturer's latest published information shall be followed for standard detail treatments.
- g. Concrete and cement plaster substrates shall be flat within 1/4" within any 4' radius.

1.05 SUBMITTALS

Samples: Two (2" x 4") samples of the system mounted on plaster over 3/8" plywood sheathing of each finish, texture and color, used on the project, shall be submitted to the Architect. Each sample shall be prepared using the same tools and techniques proposed for the actual installation by the Contractor.

1.06 MAINTENANCE KIT

The following materials shall be delivered to the location where the system is being applied:

- a. For each finish and color, one can of finish
- b. One can of adhesive
- c. Twenty square feet of the reinforcing mesh used on this project.

1.07 DELIVERY, STORAGE AND HANDLING

- a. All materials shall be delivered to the location where they will be applied in the original, unopened packages with labels intact. Upon arrival, materials shall be inspected for damage and the manufacturer informed of any discrepancies. Unsatisfactory materials shall not be used.
- b. All materials shall be stored in a cool, dry location, out of sunlight, protected from weather and other damage and at temperatures not less than 40° F.
- c. All materials supplied by others such as substrates, framing, sealants, etc., shall be stored per manufacturers' instructions.

1.08 JOB CONDITIONS

- a. The contractor shall provide access to electric power and clean, potable water at the area where the materials are installed.
- b. Environmental Conditions:
 - 1. The ambient air temperature shall be 40 ° F. or greater and rising at the time of installation of the materials and shall remain so for at least 24 hours thereafter.
 - 2. The materials shall not be applied to substrates that are at a temperature of 40 ° F. or less.
- c. Protection:
 - 1. Adjacent materials shall be protected from damage during the installation of the materials.
 - 2. The materials shall be protected from weather and other damage immediately after installation, including installation of sealants and flashings.
- d. Sequencing and Scheduling:
 - 1. Installation of the materials shall be coordinated with the other construction trades.

2. Sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffold lines, texture variations, etc.

1.09 REGULATORY REQUIREMENTS

- a. Adhesives, sealants and caulking shall comply with 2013 California Green Building Standards Code, Section 5.504.4.1 and Tables 5.504.4.1 Adhesive VOC limit, 5.504.4.2 Sealant VOC Limit, 5.504.4.3 VOC Content Limits for Architectural Coatings and SCAQMD Rule 1168 VOC Limits. Contractor shall submit literature to verify conformance with these regulations prior to beginning installation.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURERS

- a. Dryvit System, Inc.
- b. Parex Lahabra
- c. STO Corp
- d. Approved Equal

2.02 MATERIALS

- a. Adhesive shall be a 100% acrylic-based product, Dryvit's Primus or equal. The bond strength to various substrates shall meet or exceed the following values when tested per ASTM D-897:
 1. Concrete: 160 psi
- b. Reinforcing Mesh:
 1. Shall be Dryvit's Hi-Standard Plus or approved equal
 2. Shall be an approved treated, open weave, glass fiber mesh
- c. Elastomeric Finish:
 1. Base coat shall be Dryvit - Color Prime, Omega - Akroflex Base Primer.
 2. Elastomeric Finish Top Coat shall be Dryvit-Weatherlastic, Omega Akrolastic
 3. Shall be Dryvit's Sandblast or equal. Texture shall be integral and final texture shall be determined by application technique.
 4. Shall be factory-mixed, 100% pure acrylic based and contain integral color and texture.
- d. Portland Cement: shall be Type I, II or III, meeting ASTM C-150, white or gray in color, fresh and free of lumps.
- e. Water shall be clean, potable and free of all foreign matter.
- f. Substrate shall be protected before, during and after the application of the system until the building is fully enclosed and watertight, including during the handling and shipping, using temporary methods such as tarps and plastic sheets as needed, to ensure that damage to the substrate does not occur.
- g. Sealant Systems: See Caulking and Sealants, Section 07 91 00.

2.03 MIXING AND PREPARATION

- a. Adhesive:
 1. A clean container, free of foreign substances shall be used for mixing and preparation. Containers, which have come in contact with petroleum products, shall not be used.

2. The adhesive shall be stirred to obtain a homogeneous consistency using a Goldblatt Jiffler Mixer #15311H7 or equivalent, powered by a 1/2" drill at 400-500 rpm.
 3. A given weight of adhesive shall be measured into a container, and an equal weight of Portland cement measured into another container.
 4. While stirring the adhesive, small amounts of Portland cement shall be added in increments to obtain a final ration of one-to-one by weight. Stirring shall continue until the mixture is homogeneous.
 5. Small amounts of water may be added to the adhesive mixture to adjust workability. The mixture shall not be "watered down".
 6. A period of five minutes shall lapse after the initial mixing, then the mixture shall be tempered by stirring again.
 7. Mixture shall be used immediately after tempering. Pot life is the same as plaster-like materials and depends on ambient temperature and humidity conditions and substrate. Keep container closed when not in use.
 8. No additives, or materials of any kind, such as rapid binders, antifreeze, accelerators, fillers, pigments, etc. shall be added under any circumstances.
- b. "Sandblast" Finish:
1. The finish shall be thoroughly stirred with a clean high-speed mixer such as Goldblatt Jiffler Mixer #15311H7 or equivalent, powered by a 1/2" { 400-500 rpm drill, until a uniform workable consistency is obtained.
 2. A small amount of water may be added to adjust workability. The finish shall not be "watered down". The water must be clean and potable.
 3. No additives or materials of any kind, such as rapid binders, antifreeze, accelerators, fillers, pigments, etc. shall be added under any circumstances.
 4. The finish shall be used immediately after mixing. The container shall be kept closed when not in use. Pot life depends on ambient temperature and humidity conditions.
 5. The mixing tool shall be cleaned immediately after use.
- c. Reinforcing Meshes shall be "reversed-rolled" to remove the tendency of the mesh to curl.

PART 3 EXECUTION

3.01 INSPECTION

- a. Prior to installation of the System, the substrate shall be examined by the Contractor as follows:
 1. The substrate shall be a type approved by the manufacturer.
 2. The substrate surface shall be free of foreign materials such as oil, dust, dirt, form-release agents, paint, wax, glazing, water, moisture, frost, etc.
 3. The substrate shall be examined for compliance with these contract documents.
 4. The substrate shall be examined for soundness, such as tightness of connections, crumbling or looseness of surface, voids and projections, etc.
 5. The substrate shall be examined for dimensional correctness per this specification.
- b. The Architect and Contractor shall be advised of all discrepancies. Work shall not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- a. Standard Base Coat:
 1. Using a stainless steel trowel, the adhesive mixture shall be applied to the surface of the substrate to a uniform thickness of 1/16".

2. The Hi-Standard II reinforcing mesh shall immediately be embedded into the wet adhesive mixture using a trowel. The surface of the adhesive mixture shall be smoothed with a trowel until the Standard Plus reinforcing mesh is fully embedded. The pattern of the Standard Plus reinforcing mesh shall not be visible beneath the surface of the adhesive mixture.
 3. The Standard Plus reinforcing mesh pieces shall be lapped a minimum of 2-1/2" on all sides, working from the center to the edge while smoothing out wrinkles.
 4. A period of 24 hours shall lapse to allow the base coat to form a positive bond. The base coat shall be protected from damage and weather while curing.
 5. Details of the installation of the base coat at the ends of walls, windows, panel edges, corners, etc. shall be in accordance with the manufacturer's latest published detailed installation instructions.
- b. Finish:
1. Finish shall be applied continuously and in one operation to the entire wall surface. A wet edge shall be maintained. The finish shall not be allowed to set up in a distinct area. Sufficient manpower, scaffolding and equipment shall be employed to ensure a continuous operation and a uniform appearance.
 2. Work shall proceed toward the joints and corners.
 3. A small amount of water may be used to adjust the workability of the finish. The water shall be clean and potable.
 4. Certain finishes can be spray-applied. Contact the manufacturer for specific information for this project.
 5. Until dry, the finish shall be protected from airborne contamination due to dust, soot, etc. and from weather and other damage.
 6. A tight coat of "Sandblast" finish shall be applied to the base coat. Leveling and texturing shall take place in one operation.
 7. The maximum thickness of the finish shall be no greater than that of the largest aggregate.

3.03 FIELD QUALITY CONTROL

- a. During construction, the jobsite shall be visited by a manufacturer's representative.

3.04 CLEAN UP

- a. Materials left over by the Contractor at the jobsite shall be removed.
- b. The Contractor shall clean adjacent materials and surfaces and the work area of foreign materials resulting from their work.

END OF SECTION
12/16/2013

VENEER PLASTER

DIVISION 00 AND 01 ARE PART OF THIS SECTION

PART 1 GENERAL

1.01 STANDARD OF QUALITY

- a. The work of this Section shall include all labor, materials, equipment, and appliances required to complete all the work shown on drawings and or specified herein.
- b. Notwithstanding any reference in the specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, such references shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the contractor, in such cases, may, at his option use any article, device, product, material, fixture, form or type of construction which, in the judgment of the Architect, expressed in writing, is equal to that specified. All requests for substitutions shall be submitted per Article 19 of Specification Section 10.
- c. Any material or operation specified by reference to the published specifications of a manufacturer, institute, association, governmental agency, or other published standards, shall comply with the requirements of the current specification or standard listed. In case of conflicts between the referenced specification and the project specifications, the project specifications shall govern. In case of conflicts between the referenced specifications or standards, the one having the more stringent requirements, as interpreted by the Architect, shall govern.
- d. The Contractor, if requested, shall furnish an affidavit from the manufacturer, certifying that the materials or products delivered to the job meet the requirement specified; however, such certification shall not relieve the Contractor from the responsibility of complying with any added requirements specified herein.

1.02 WORK INCLUDED

- a. This section covers a non-load bearing, non-combustible fire-rated and sound rated Imperial Plaster as manufactured by United States Gypsum Company, complete.
- b. Installation of hollow metal jambs and metal glass frames in wood stud walls.

1.03 GENERAL REQUIREMENTS

- a. For the purpose of establishing a minimum acceptable construction standard, the following specifications are based on the product of U.S. Gypsum Co. Alternately, the products of Flintkote, Blue Diamond or Gold Bond will be considered equal under the terms of this specification providing the general intent is complied with and materials and finishes enumerated and supplied.
- b. All materials included herein shall be manufactured by the U.S. Gypsum Co., and shall be applied where indicated and as specified hereinafter. The installation of plaster partition materials shall be done by workmen experienced in this trade.

- c. Partition Thickness: The finished plaster partition system thickness shall be as indicated on the drawings. Stud sizes 2 x 4 or 2 x 6 or as noted on the drawings.

1.04 CERTIFICATES OF COMPLIANCE

Prior to shipping any plaster partition material to the site, the Contractor shall submit to the Architect 5 copies of manufacturer's certificates showing compliance with the specified minimum material requirements for the completed plaster partition system and installation and workmanship instructions.

1.05 IMPERIAL PLASTER PARTITION

All interior partitions, unless otherwise noted on the drawings, shall consist of 2x4 wood studs or 1-5/8" to 6" 25 ga. metal studs, 1/2" and 1/8" finish plaster on each side. Install insulation in wall or as specified on plans.

1.06 DELIVERY AND STORAGE OF MATERIALS

All materials shall be delivered in their original unopened packages, containers, and bundles bearing the name of the manufacturer and the brand name. Materials shall be stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

1.07 REGULATORY REQUIREMENTS

- a. Adhesives, sealants and caulking shall comply with 2013 California Green Building Standards Code, Section 5.504.4.1 and Tables 5.504.4.1 Adhesive VOC limit, 5.504.4.2 Sealant VOC Limit, 5.504.4.3 VOC Content Limits for Architectural Coatings and SCAQMD Rule 1168 VOC Limits. Contractor shall submit literature demonstrating compliance with these regulations prior to beginning installation.

PART 2 PRODUCTS**2.01 MATERIALS**

- a. Plaster Base shall be a high-strength, high-density core covered with special absorption face paper designed for veneer plastering. Plaster base shall conform to ASTM Designation C37 and Federal Specification SS-L-30c, Type 1.
- b. Imperial Plaster Base, Type X shall be 5/8" thick, 48" wide, as shown on drawings.
- c. Sheetrock W/R Wallboard shall be 5/8" thick, 48" wide with a special water resistant core.
- d. Fasteners for Plaster Base shall be 1-3/8" or 1-5/8" Dri-type nails for wood construction, or 1" type S hi-low screws for 25 ga. metal attachment.
- e. Reinforcing Tape shall be 2-1/2" glass fiber lino-weave Imperial Tape, Type S.

- f. Corner Beads shall be No. 900, 26 ga. galvanized steel.
- g. Metal Trim, Channel Type shall be USG 700A, 26 ga. galvanized steel.
- h. Metal Trim, Angle Type shall be USG 700B, 26 ga. galvanized steel.
- i. Control Joints shall be USG No. 093 made from roll-formed zinc alloy. Locate control joint at maximum 30 ft. o.c. on continuous partitions.
- j. Plaster Aggregate shall conform to ASTM Designation C35, and shall be graded silica sand passing a 30 or 20 mesh screen.
- k. Plaster Water shall be potable and not contain impurities that affect the setting of gypsum.
- l. USG Metal Trim: No. 200A, 200B, 401, 402, 071B
- m. USG Corner Bead: Dur-A-Bead No. 900
- n. USG Control Joint: No. 093

PART 3 EXECUTION

3.01 PREPARATION FOR INSTALLATION

Installation shall not be started until windows are glazed and doors are installed unless openings are temporarily closed. In cold weather, the building temperature shall be maintained at a minimum comfortable working temperature. A temperature range of 55 to 60 deg. is recommended. Caution should be taken to avoid higher temperatures, which promote rapid drying conditions and are detrimental to the performance of veneer plaster systems. Air circulation shall also be maintained at a minimum level for 24 hours prior to, during, and after plastering until plaster is dry.

3.02 INSTALLATION

- a. Imperial Joint Reinforcement Tape shall be applied over the full length of all plaster base joints but shall not overlap at intersections.
- b. Type S Tape shall be firmly pressed along the entire length to insure a wrinkle-free attachment. Tape shall be secured with two 3/8" staples at top, one on each side of joints, 8" o.c. along length of taper, and alternating from side to side, with two staples at bottom. At wall-ceiling intersections and interior corners, tape shall be stapled 8" o.c. along ceiling edge or on one edge only.

3.03 CEILING GRILLAGE AND PLASTER BASE ERECTION

Imperial plaster base shall be applied face down with the long dimension at right angles to furring members and with all abutting ends occurring over framing members. Imperial plaster base of maximum practical length shall be used to minimize end joints, which shall not be staggered in adjacent rows. Plaster base

shall be fastened to channels with Dri-Type nails, spaced 6" o.c. in field of base and along abutting ends. Nails shall be driven at least 3/8" from ends and edges of bases.

3.04 ACCESSORIES

- a. Corner Beads: All vertical and horizontal exterior corners shall be reinforced with corner bead fastened with staples not over 12" o.c. on both flanges along the entire length of the bead.
- b. USG Metal Trim shall be applied over the Imperial plaster base and fastened on the perforated side with staples spaced not over 12" o.c.

3.05 MIXING

Plaster materials shall be mixed in conformance with the manufacturer's current printed instructions. Set plaster materials shall not be retempered. Mix 20 lbs. clean white silica sand per 80 lbs. of plaster, where sand finish is called for.

3.06 PLASTERING

Imperial basecoat plaster shall be applied over Imperial plaster base to a minimum finished thickness of 3/32" and a maximum of 1/8". All tape shall be embedded and beads shall be filled with a tight, thin coat of plaster material. When embedding plaster has set completely, a tight, thin coat shall be scratched in over the entire area immediately doubling back to the full thickness.

3.07 PATCHING

Plaster showing oversanding, cracks, blisters, pits, checks, or discoloration will not be acceptable. Such plaster shall be removed and replaced with new plaster. Patching of defective work will be permitted only when approved by the Architect and such patching shall match existing work in texture and color.

3.08 CLEANING

At the completion of the finish plastering work, all plaster daubs shall be cleaned from beads, control joints, and metal trim. All plaster rubbish shall be removed from the building, leaving floors broom clean. Excess material, scaffolding, tools, and other equipment shall be removed from the building and job site.

END OF SECTION
12/16/2013

TILE WORK

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, material, equipment, and appliances required to complete all the work shown on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

- a. All ceramic tile wall patches and floor/base patches and setting beds in (E) Building "F" Toilets.
- b. Where no lathing and plastering section is included in these Specifications, felt, lathing and a scratch coat for the setting beds shall be provided under this section of the Specifications.

1.03 RELATED WORK

Where a lathing and plastering section is included in these Specifications, felt lathing and scratch coat for the tile setting beds is specified under the Lathing and Plastering Section of these Specifications.

1.04 REGULATORY REQUIREMENTS

- a. Adhesives, sealants and caulking shall comply with 2013 California Green Building Standards Code, Section 5.504.4.1 and Tables 5.504.4.1 Adhesive VOC limit, 5.504.4.2 Sealant VOC Limit, 5.504.4.3 VOC Content Limits for Architectural Coatings and SCAQMD Rule 1168 VOC Limits. Contractor shall submit literature to demonstrate compliance with these regulations prior to beginning installation.

PART 2 PRODUCTS**2.01 MATERIALS**

- a. Metal Lath: U.S. Gypsum "Junior Diamond" or approved equal 3.4 lb. bearing metal lath.
- b. Cement: Portland cement conforming to ASTM C-150, Type 1.
- c. Grout cement shall comply with ANSI, A118.6.
- d. Wall Lathing Nails: 6d common wire cut nails for application of metal lath on walls.
- e. Lime Putty: High calcium, ASTM, C206, or C207, Type "S."
- f. Sand: ASTM C-144.
- g. Cleavage Membrane: 15-lb. roofing felt or 4-mil polyethylene film.

- h. Tile: All tile, unless otherwise specified, shall be the standard grade in price groups I thru III and comply with ANSI A137.1.
 - 1. Base Tile: Glazed 6" x 6" sanitary cove base. Color to be selected by Architect.
 - 2. Floor Tile: Unglazed ceramic mosaic, natural clay, cushion edge. Except as may be otherwise specified or approved in advance by the Architect, provide floor tiles with coefficient of friction of 0.60 or higher in accordance with pertinent provisions of ASTM C1028. Color to be selected by Architect.
 - 3. Wall Tile: 4-1/4" x 4-1/4" glazed tile, coved corners in all toilet and shower rooms maybe used unless tile pattern indicated on drawings would be interrupted and result in a discontinuity of the pattern indicated on the drawings, and/or 90% unglazed (natural clay) ceramic mosaic and 10% glazed (porcelain) ceramic tile, or sizes as noted on the drawings. All with square edges. 6" x 4-1/4" coved or bullnosed base may be used unless otherwise indicated on drawings. At inside and outside corners of vertical surfaces where accent tile patterns are indicated, the contractor shall mitre corners such as to allow a continuous flow of the pattern. Color to be selected by Architect.
 - 4. Quarry Tile: 6" x 6" unless noted otherwise, Quarry Tile as manufactured by American Olean, coved, bullnosed base and corners where indicated on plans. Color to be selected by Architect. Quarry Tile shall have a coefficient of friction of at least 0.6 per ASTM C1028.
- i. Water shall be clean, free from alkali or organic matter.

2.02 SUBSTITUTIONS

- a. See Article 19, Section 10.

2.03 PRODUCTS

- a. American Olean
- b. Dal-Tile
- c. Florida Tile
- d. Or approved equal

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- a. Materials: All materials and workmanship shall be installed in strict accordance with the "Handbook of Ceramic Tile Installation", latest edition, as published by the Tile Council of America, Inc. Except as may be otherwise specified or approved in advance by the Architect, provide floor tiles with coefficient of friction of 0.60 or higher in accordance with pertinent provisions of ASTM C1028.

- b. Color: Tile and grout color and design shall be selected by the Architect. Current sample colors shall be furnished to the Architect for color selection.
- c. Materials Not Permitted: The use of dry lime putty, fire clay or high magnesium lime putty in cement mix will not be permitted. White cement for setting bed and buttering shall not be used, except when mixed with grout.
- d. Completeness: Tile work under this specification shall not be considered complete unless proper angles and stops are used for base, cap, and other trim. Miterring of tile will not be accepted except when absolutely necessary to overcome certain conditions.
- e. Protection: The contractor shall cover all work as necessary and protect the work from damage until completion and acceptance of the building.
- f. Cleaning Site: Shall be per Specification Section 10, Article 46.
- g. Expansion Joints: Provide expansion joints maximum of 16'-0" both ways.

3.02 SPECIAL REQUIREMENTS

- a. Application of Wall Tile:
 - 1. Wall tile shall be installed per Ceramic Tile Institute Handbook Method No. W231.
 - 2. Setting Bed or Float Coat:
 - (a) Setting bed shall be composed of one (1) part by volume of Portland cement to five (5) parts by volume of clean sharp damp sand to one-half part Miracle Lime. Comply with ANSI A 108A-4.1a.2.1
 - (b) Setting bed shall be applied over scratch coat, which shall be sufficiently wetted to assure proper bonding of the setting bed.
 - (c) Surface shall be true and not less than 3/4".
 - 3. Application of Tile: ANSI Specifications A108-1B and A118.1, Ceramic Tile in Cement Mortar, insofar as any portion is applicable, are hereby made a direct part of this specification. Installation using thin-bed mortar and water resistant organic adhesives in accordance with manufacturer's directions and as Spec. A108-5 for dry set mortars of C.T.I. 0-010-61 for adhesives is acceptable.
 - 4. Dry Wall Grout: A mixture of Portland cement and additives providing water retentivity. Dry-wall grout has the same characteristics as Dry-Set mortar and is suitable for grouting all walls subject to ordinary use. This grout obviates soaking of wall tile, although dampening is sometimes required under very dry conditions. Comply with ANSI, A108.10.
- b. Application of Floor tile Quarry Tile
 - 1. Floor tile shall be installed per the Ceramic Tile Institute Handbook Method No. F-141 on wood floors and Method No. F111 for concrete slab floors.

2. Preparation: Thoroughly clean the concrete base over which tile is to be placed. Remove all high and uneven spots and all loose material and wash down with water.
 3. Setting Bed: Composed of one (1) part by volume Portland cement and five (5) parts sand with optional up to no more than 1/10th part hydrated lime. Bed shall not be less than one and one-half inch (1-1/2") thick. Comply with ANSI 108A-4.1a.2.2.
 4. Setting Floor Tile: Tile shall be set to a true and even surface with uniform joints of appropriate size depending upon the type of tile on a cured mortar bed with dry-set cement mortar. Comply with ANSI- A108.1B and ANSI A108.1C.
 5. Grouting Floors: Joints shall be grouted with grey cement mixed with clean water to a consistency of cream. Force grout into all joints and bring to a level surface with tile. Comply with ANSI, A108.10.
- c. Cutting and Patching:
1. The Contractor shall do all patching of his work as required for the installation of the work of other contractors.
 2. Immediately before turning the building over to the Owner, the Contractor for the tile work shall make a careful inspection of all tile and report to the Architect any damage done to same by other trades.
- d. Cleaning: Immediately upon completion and as directed, all tile shall be thoroughly cleaned with clean water. Cleaning shall be done only by those thoroughly familiar with the proper cleaning of tile. In no instance use acid or abrasive material on glazed tile surfaces. Just prior to acceptance of the completed building project, this cleaning process shall be repeated so that the tile work shall be in an acceptable, clean condition at the time of acceptance of the building.
- e. The contractor shall leave with the owner upon completion of all work; an amount of not less than 2% of each material specified for the use in future repairs.

END OF SECTION
09/07/2018

ACOUSTIC TILE

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- a. The work of this Section shall include all labor, material, scaffolding, equipment, and appliances necessary to complete the work indicated on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

- a. All acoustic tile for walls and ceilings.
- b. Metal trim for acoustic tile.
- c. All mastic and wood stripping for the direct application of acoustic tile.
- d. Suspended acoustical ceiling systems, support channels, steel suspension system, complete.
- e. Sound barriers over stud partitions where indicated on drawings.
- f. All #12 ga. slack safety hanger wires (including anchorage to the structural above) for support of light fixtures and air terminals.

1.03 RELATED WORK

- a. Plywood backing for acoustic tile is specified under the Carpentry section.
- b. No fiber trim shall be used.
- c. Wood stripping under all gypboard.
- d. All electrical work, including fixtures, wiring, conduits, and junction boxes, is specified under the electrical section.
- e. Suspended wood ceiling framing.
- f. Gypsum wallboard backing for acoustic tile is by Gypsum Drywall Contractor.
- g. Fastening of slack safety hanger wires to light fixtures and air terminals shall be by Electrical and HVAC Contractors, respectively.

1.04 SUBMITTALS

- a. Contractor shall provide a minimum of five (5) copies of manufacturer literature on all adhesives indicating compliance with 2013 California Green Building Standards Code, Section 5.504.4.1 and Table 5.504.4.1 Adhesive VOC limit and SCAQMD Rule 1168 VOC Limits for review and approval by the architect prior to beginning installation.
- b. Contractor shall submit a minimum of three (3) product sample for each product which indicates size, shape and color availabilities to the architect for review and selection by Architect.

PART 2 PRODUCTS

General: The quality, design and installation of all wall and ceiling coverings and support systems shall comply with the requirements and standards adopted by reference from set forth in Chapter 25A, Part 2, Title 24 C.B.C., UBC Materials, Testing and Installation Standards Vol. 3 No. 25-1, and Division of the State Architect's Interpretation of Regulations (IR) 25-5, current edition.

2.01 ACCEPTABLE MANUFACTURERS

- a. Acoustical Ceiling Panels and Adhesive Applied Acoustical Units
 - 1. U.S. Gypsum
 - 2. Celotex Corp.
 - 3. Conweb Corp.
 - 4. Gold Bond Building Products
 - 5. Kaiser
 - 6. Armstrong
 - 7. Manville
 - 8. National Gyp. Co.
- b. Exposed and concealed metal direct-hung suspension systems:
 - 1. Chicago Metallic Corporation
 - 2. Donn Corporation
- c. Composition Ceiling Panels
 - 1. "Fibroplank" - Martin Fire Proofing Georgia, Inc.
 - 2. "Tectum" - Tectum, Inc.
- d. Standard Lay in Acoustical Panels
 - 1. Armstrong "Minatone Cortega" style for texture and pattern used for reference only.
- e. Acoustical Sound Barriers
 - 1. Acoustical Solutions, 2420 Grenoble Rd. Richmond, VA 23294
(800) 782-4742

2.02 MATERIALS

All ceiling tiles shall have Class 1 F.S. rating (0-25) and smoke density not exceeding 450.

- a. Acoustic Tile:
 - (1) Mineral Tile: 12"x12"x5/8" thick Type 118, Class 1 Flame Spread (Classification Table No. 8A, Title 24, and UBC), incombustible, carrying Underwriters Lab., Inc. label, Class 1 Flame Spread rating according to Tunnel Test method, factory finish with three (3) coats of washable white paint.
 - (2) Mineral Fiber Lay-In Units: 23-3/4" x 47-3/4" x 5/8" thick for 2 ft. x 4 ft. grid ceilings, Class A (incombustible), carrying Underwriters Lab., Inc. label, Class 1 Flame Spread rating according to Tunnel Test method. Factories finish with three (3) coats of washable white paint.
 - (3) Plastic Coated Tile: Clear plastic overlay, washable, (CPO) shall be applied where indicated on Room Finish Schedule.
- b. Wood Stripping shall be grade "Construction Boards" conforming to Paragraph 118b of the W.C.L.I.B. Grading Rules No. 16.
- c. Nails: 1-1/4" Kollar nails - blued or cadmium.
- d. Mastic: "Webtex Acoustic Cement" or approved equal. Tile applied with mastic shall conform to governing 2013 CBC, Section 803 and 2013 California Green Building Standards Code, Section 5.504.4.1 and Table 5.504.4.1 Adhesive VOC limit and SCAQMD Rule 1168 VOC Limits.
- e. Painted Aluminum Trim: SC 5/8" for 5/8" tile and SC 3/4" for 3/4" tile, as manufactured by Chicago Metallic Sash Co., or approved equal.
- f. Suspension System: (non-rated or fire rated as indicated on the drawings) shall be heavy duty T-Bar system for 2 ft. x 4 ft. grid as approved and listed by Division of the State Architect and meeting tests showing compliance with Title 24, Section 1614A.1.12 and ASCE 7-05, Section 13.5.6. Cross tees eliminated at Quadrulon System light fixtures for 4'x4' opening.

- (1) Components: Main beams and cross tees In accordance with the International Building Code, Section 1621 for Category D, E and F as described in ESR-1308.
 - a) Structural Classification: ASTM C 635, Heavy Duty.
 - b) Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
 - c) Acceptable System: **Prelude XL Exposed Tee 15/16"** System as manufactured by Armstrong World Industries.
- (2) Attachment Devices: In accordance with the International Building Code, Section 1621 for Category D, E, and F.
- (3) Wire for Hangers and Ties: In accordance with the International Building Code, Section 1621.
- (4) Wall Moldings: 7/8"x7/8" Angle Molding for use with the BERC2 Clip. In accordance with the International Building Code, Section 1621 for Category D, E, and F or method as described in ESR-1308.
- (5) Accessories:
 - a) BERC2 - 2 inch Beam End Retaining Clip, 0.034 inch thick, hot-dipped galvanized cold-rolled steel per ASTM A568 - used to join main beam or cross tee to wall molding.
 - b) SJCG - Seismic Joint Clip, 5 inches x 1-1/2 inch, hot-dipped galvanized cold-rolled steel per ASTM A568. The two piece unit is designed to accommodate a seismic separation joint. The clip is compatible with 15/16 inch and 9/16 inch grid systems including Prelude, Suprafine, and Silhouette The SJCG is not suitable for use with Vector panel installations.
 - c) SJMR15 - Seismic Joint Clip - Main Beam, 1 inch x 4 inches, commercial quality cold rolled hot dipped galvanized steel per ASTM A568, chemically cleansed.
- g. Sound Barriers shall be ABBC-13 Audioseal (1" thickness) Combination Sound Blanket, hung vertically between partition top and floor (or roof) structure above to provide an air and sound tight barrier. Refer to reflected ceiling plans for locations of sound barriers. Refer to manufacturer's directions for installation. Sound Barrier shall have a Class 1 or A fire rating per ASTM E84.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- a. Examination of Surfaces: The contractor shall be held to have examined the surfaces over which acoustic tiled/or gypsum board are to be applied and if for any reason a perfect job is impossible or anything is detrimental to obtaining a perfect job (straight and true) and with assurance of obtaining the utmost value of the material, it shall be reported to the Architect before proceeding with the work.
- b. Application of Stripping: Stripping for ceilings applied to bottom of wood joists shall be laid flat and at right angles to joists, with Stronghold nails (approved by DSA) at each end and each bearing. Holes for nails at ends shall be pre-drilled. The contractor shall shim where required in order to have all stripping level to receive acoustic tile.
- c. Layout and Application of 12" x12" Units: Start layout from center of room to that all cut edges at walls shall be uniform size of not less than 6" in width. Cut in for light outlets. Lay all tile in a uniform straight pattern so that all tile are in an even plane with all butts and joints even and so that lines of butts are continuous, straight and true. Each piece of 12" x 12" tile shall be secured to solid backing at not less than four (4) spots of mastic or to wood stripping at not less than four (4) points of application with 1-1/4" Kollar nails.

- d. Scribing and Cutting: Scribe acoustic tile to walls with a close, snug fit. Neatly cut in for electrical fixtures and openings so that finish and fixture trim will cover the cut and leave a neat appearance.
- e. The contractor shall furnish to the Electrical Contractor locations for all fixture outlets in acoustic tile areas, locating same in the center of or at the corner intersection of tile prior to installation of electrical rough-in. Locations to be approved by Architect.
- f. Cleaning: Upon completion of the acoustic tile application, clean all tile of fingerprints, dirt, etc., and point up with factory finish and leave all surfaces in a clean and acceptable condition. Site cleaning as per Section 10, Article 30.
- g. Install suspension system and panels in accordance with the 2013 CBC 1616.10.16 ASCE 7, Section 13.5.6, and with the authorities having jurisdiction.
- h. ESR-1308, Section 4.4.3.1, Alternate Seismic Design Category D, E and F Installation:
Under this installation, the runners must be rated heavy-duty and have a minimum simple span uniform load of 16.35 pounds per lineal foot (238 N/m); maximum ceiling weight permitted is 1.80 pounds per square foot (8.78 kg/m²).
 - 1) The BERC-2 clip is used to secure the main runners and cross runners on two adjacent walls to the structure and the two opposite walls to the perimeter trim, as detailed below. A nominal 7/8-inch (22 mm) wall molding is used in lieu of the 2-inch (51 mm) perimeter supporting closure angle required by Section 1616.16.10 ASCE 7, Section 13.5.6.2.1 for Seismic Design Categories D, E and F. Except for the use of the BERC-2 clip and the 7/8-inch (22 mm) wall molding and elimination of spreader bars, installation of the ceiling system must be as prescribed by the applicable code.
 - 2) The BERC-2 clip is attached to the wall molding by sliding the locking lances over the hem of the vertical leg of the wall molding. Clips installed on the walls where the runners are fixed are attached to the runner by a sheet metal screw through the horizontal slot in the clip into the web of the runner.
 - 3) Clips installed on the walls where the runners are not fixed to the runner allow the terminal runner end to move 3/4 inch (19.1 mm) in both directions. BERC-2 clips installed in this manner are an acceptable means of preventing runners from spreading in lieu of spacer bars required in CISCA 3-4, which is referenced in Section 1616.16.10 ASCE 7, Section 13.5.6.2.1.
- i. The SJCG Seismic Separation Joint Clip is to be installed per the manufacturer's instructions, CS-3815.
- j. The SJMR15 Seismic Joint Clip Main Beam is to be installed per the manufacturer's instructions, CS-3955.
- k. The presence of a hanger wire within 3 inches of an expansion relief joint as called for in ASTM C636 shall be required in addition to the requirements of the 2013 CBC 2013 1616.10.16 ASCE 7, Section 13.5.6 and with the authorities having jurisdiction.
 - 1.) Only applies when using Prelude XL Fire Guard 15/16"; Prelude Plus XL Fire Guard 15/16"; and Suprafine XL Fire Guard 9/16" Exposed Tee Systems.
- L. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
- m. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.
- n. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.
- o. Suspend main beam from overhead construction with hanger wires spaced 4'-0" on center along the length of the main runner. Install hanger wires plumb and straight.

- p. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
- q. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
- r. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

Adhesive: Subcontractor shall install ceiling tile by glue-up method to drywall using acoustical tile cement. Wall Moldings: Shall be slip-on molding with 15/16" flange as follows:

- i. 1/2" thick, Item #7841
- ii. 5/8" thick, Item #7842
- iii. 3/4" thick, Item #7843
- iv. Accessories: To assist in leveling tiles use 1/16" thick fiber spline approximately 3" long at each corner

3.02 DESIGN AND CONSTRUCTION OF CEILING SUSPENSION SYSTEMS

- a. General: Ceiling suspension systems used primarily to support acoustical tile panels, plastic panels without light fixtures shall be installed and constructed in accordance with the provisions of 2013 CBC as required and according to the following interpretations:
- b. Materials: The materials, installation and workmanship for metal suspension systems for acoustical tile and lay-in panel ceilings shall comply with the requirements for *direct hung* ceilings of ASTM C-635, ASTM C-636 and E580, Section 5 and the provisions and exceptions of these notes.
- c. Design: In accordance with 2013 CBC Sec. 1616A.1.20(1616.10.16*), all ceilings shall be designed and detailed for a minimum lateral force of 1.4 pounds per square foot of ceiling area, or 30 percent of the weight of the ceiling construction and any ceiling-supported partitions, whichever is greater.
- d. Types of Systems: All ceilings shall have a minimum classification of "heavy duty" as defined by ASTM C-635.
- e. Details of Construction:
 - (1) General: The following requirements apply to ceiling systems whose total weight, including ceiling mounted air terminals, services and light fixtures, does not exceed four (4) psf. Heavier systems, and those supporting lateral loads from partitions, will require special design details. Ceilings shall not support material or other building components. Duct work, plumbing and like work shall have its own support system and shall not use the ceiling system or suspension wires. The slope of bracing wires shall not exceed 45 degrees from the plane of the ceiling and wires shall be taut. Splices in wires are not permitted without special DSA approval.
 - (2) Vertical Support System: #12 gage wire shall be 0.106 inches in diameter conforming to ASTM A641. #12 gage wire shall be soft annealed, galvanized steel wire with a class 1 coating and may be used for up to and including 4ft. by 4ft. grid spacing and shall be attached to main runners. When drilled-in concrete anchors or power actuated fasteners are used in reinforced concrete for hanger wires, 1 out of 10 wire/anchor assemblies must be field tested for 200 lbs. in tension. When drilled-in concrete anchors are used for bracing wires, 1 out of 2 wire/anchor assemblies must be field tested for 440 lbs. in tension in the direction of the wire. Shot-in anchors in concrete are not permitted for bracing wires.

Note: Drilled-in or power actuated fasteners require special DSA approval

prior to use in prestressed concrete. Fasten #12 hanger wires with not less than three (3) tight turns. Fasten #10 or #12 bracing wires with four (4) tight turns. Make all tight turns within a distance of 1-1/2 inches. Hanger or bracing wire anchors to the structure should be installed in such a manner that the direction of the anchor aligns as closely as possible with the direction of the wire. **Note:** Wire turns made by machine where both strands have been deformed or bent in wrapping can waive the 1-1/2 inch requirement, but the number of turns should be maintained, and be as tight as possible. Provide #12 gage hanger wires at the ends of all main and cross runners within eight (8) inches of the support or within one-fourth (1/4) of the length of the end tee, whichever is least, for the perimeter of the ceiling area. Perimeter wires are not required when the length of the end tee is eight (8) inches or less. Separate all ceiling hanger and bracing wires at least six (6) inches from all unbraced ducts, pipes, conduit, etc. Provide trapeze or other supplementary support members at obstructions to typical hanger spacing. Provide additional hangers, struts or braces as required at all ceiling breaks, soffits, or discontinuous areas. Hanger wires that are more than 1 (horizontal) in 6 (vertical) out of plumb are to have counter-sloping wires.

- (3) Horizontal Support System: The lateral support system for ceilings shall be shown on the reflected ceiling drawings. The adequacy of the system shall be demonstrated by calculations and/or tests, including the adequacy of the main runner splices and cross runner intersection connections and shall comply with 2013 CBC Section 808. Calculations shall be based on the required lateral loads as called for; tests shall show a capacity of twice the calculated load to allow for a factor of safety. A set of 4 splay wires shall be provided for each 144 sq. ft. for schools unless other specially designed and detailed bracing is provided. First set of splay wires shall be 6'-0" or less from any wall for schools. Splay wires must have 4 tight turns for #12 ga. or 3 tight turns for #10 ga. Wires shall be taut without causing ceiling to lift. Provisions shall be made for possible deferential movement between ceilings and side walls. Terminal ends of each main and each cross runner shall be wire supported with #12 hanger wire attached within 8" of wall or soffit; wall trim angles shall not provide primary support for runners. Lateral support of ceilings shall not be provided by the angle trim and runner may be riveted to wall at a maximum of 2 adjacent walls; the ceiling must be at least 3/4" free of other walls. Cross runners over 12" long and all main runners not connected to walls must be interconnected near the free end with a metal strut securely attached to prevent spreading. In computing the vertical component in a splayed wire ceiling bracing system, a seismic factor of .35. may be used. Any rational system that complies with the requirements of these notes will be acceptable.

- (4) Light Fixture and Air Terminal Support:
- (a) All light fixtures and air terminals shall be attached to the ceiling grid to resist a horizontal force equal to the weight of the fixtures. Screws or approved fasteners are required.
 - (b) Flush or recessed light fixtures, weighing less than 56 lbs. and mechanical terminals and services, weighing less than 20 lbs., may be supported directly on the runners of a heavy duty grid system but, in addition, they must have a minimum of two (2) #12 gage slack safety wires attached to the fixture at diagonal corners and

- anchored to the structure above. All 4ft. x 4ft. light fixtures must have slack safety wires at each corner.
- (c) All flush or recessed light fixtures weighing 56 lbs. or more and mechanical terminals and services, weighing 20 lbs. or more, must be independently supported by not less than four (4) taut #12 wires, each attached to the fixture and to the structure above.
 - (d) Support surface mounted light fixtures shall be supported by at least two positive clamping devices made of #14 ga. minimum steel which surround the ceiling runner and supported to the structure above with a #12 ga. wire. Rotational spring clips are not acceptable. A suspension wire shall be attached to the main runners within 6" of the location that the fixture loads the runners (at least 2 wires per fixture).
 - (e) Support pendant mounted light fixtures directly to the structure above with hanger wires through each pendant capable of supporting 4 times the load. The runner shall not be used in the support linkage, but shall be bypassed with a suitable device.
 - (f) All suspension hanger wires and anchors to structure above shall be furnished and installed by acoustic tile contractor. Connection of hanger wires to light fixtures and air terminals shall be by electrical and HVAC contractors, respectively.
 - (g) Provide additional supports when light fixtures are 8 feet or longer. Maximum spacing between supports shall not exceed 8 feet.
- (5) Partitions: If non-bearing partitions that extend to and terminate at a suspended ceiling are supported laterally by opposing splayed wires spaced a maximum of 8 ft. on center along the top edge of the partition or by other equivalent means, they may be considered as not addition to the lateral load required to be resisted by the ceiling system.

Suspended ceiling systems required to provide lateral support for the permanent or relocatable partitions, the connection of the partition to the ceiling system, the ceiling system members and their connections, and the lateral force bracing shall be designed to support the reaction force of the partition from the prescribed loads applied perpendicular to the face of the partition. Partition connectors, the suspended ceiling system and the lateral-force bracing shall all be engineered to suit the individual partition application and shall be as shown on the drawings or as per these specifications. Per 2013 CBC Section 16, 1616.10.16 ASCE 7 Section 13.5.6.2.2 paragraph 6.

- f. One Hour Rated Assembly: All buildings and/or rooms where indicated on the drawings, shall have a tested and approved one-hour assembly, installed in strict compliance with the requirements for said assembly.
 - (1) Provide U.L. Design No. or Fire Marshal Listing No. The design and installation must conform in every particular with the U.L. or SMF design.
 - (2) A set of 4 "splay" wires shall be provided for each 144 sf. for schools or 96 sf. for hospitals. The first set of splay wires shall be 4'-0" from any wall. Only one set of splay wires may be installed between any two expansion cutouts.
 - (3) There shall be no pop rivets, screws, or other attachments unless specifically detailed on the approved drawings and approved by U.L. and SFM recognized laboratories.
- g. Shop Drawings: The Contractor shall submit five (5) copies of shop drawings (with calcs) to the Architect prior to installation; no deferred approval permitted.

3.03 INSTALLATION OF SOUND BARRIERS

- a. Method #1: For long runs, plenum depth of 3'-7" or less, where run of sheet can be horizontal, notch both top corners of Acoustic-lead sheet 3" x 1-1/2", then fold over the 1-1/2" tab for vertical seams, and wrap top edge of sheet around outside of black iron channel. Fasten channel and lead to underside of deck 24" o.c., providing a minimum 2'-2 1/2" drape at bottom. Provide additional drape and/or auxiliary sealing with tape or staples. *For plenum depths greater than 3'-7", cut length of sheet equal to plenum depth plus 5" and proceed as above using 4' wide sections hung vertically.*
- b. Method #2: Alternate for plenum depth 3'-3" or less, where run of sheet can be horizontal, notch both top corners of Acoustilead sheet 7" x 1-1/2" and wrap 1-1/2 times around a spruce or plyscore 1 x 2 not exceeding 8' in length. Fasten ground and lead to deck as in Method #1, providing adequate drape at bottom. *For plenum depths greater than 3'-3", cut length of sheet equal to plenum depth plus 7" and proceed as above using 4' wide sections hung vertically.*
- c. General - All Methods: Seams shall be formed by turning up 1 1/2" tab at each vertical edge and sealing with 3" pressure sensitive tape. Pinch stapling 12" o.c. or crimping is optional. When used as a barrier in controlled air systems, barrier shall have a minimum 4" drape at bottom. Bottom edge shall be taped or sealed with butyl rubber or similar sealant to ceiling or top of partition. Stapling of vertical seams is mandatory for air distributing ceiling systems. If partition does not penetrate the acoustical ceiling, this joint must be gasketed or caulked and the barrier sheet should overlay the ceiling tiles where they straddle the partition. If metal pan ceiling tiles permit lateral travel of sound through the tiles, steps must be taken to block such leaks. Install Acoustilead strips in the metal pan under the insulation in all tiles which bridge the partition top or request further specific details.
- d. Various other methods of installation shall for special or unique conditions be in conformance with manufacturer's instructions and details.

3.04 EXTRA MATERIALS

- a. Acoustical Ceiling Tiles: Furnish quantity of full size units equal to 2.0 percent of amount installed.
- b. Exposed Suspension System Components: Furnish quantity of each exposed component equal to 2.0 percent of amount installed.

END OF SECTION
04/19/2018

RESILIENT FLOORING AND RUBBER TOPSET BASE

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, material, equipment, and appliances required to complete all the work shown on the drawings and/or specified hereunder. delivery to the building is considered part of this contract.

1.02 WORK INCLUDED

- a. All resilient tile flooring
- b. All rubber topset base on walls and cabinets
- c. All vinyl composition coved bases (including cove backing and metal cap trim)
- d. All flat rubber bases where called for at carpeting
- e. All sheet vinyl roll stock and coved base
- f. All waterproof adhesive in connection with setting of tile and bases
- g. Cleaning and waxing of all tile and bases

1.03 RELATED WORK

- a. Back-up bases or screeds upon which finish bases are to be laid.
- b. Metal thresholds are furnished by Finish Hardware and installed by Carpentry.

1.04 SUBSTITUTIONS

See Article 19, Specification Section 10.

1.05 SUBMITTALS

- a. Contractor shall provide a minimum of five (5) copies of manufacturer literature on all adhesives indicating compliance with 2013 California Green Building Standards Code, Section 5.504.4.1 and Table 5.504.4.1 Adhesive VOC limit and SCAQMD Rule 1168 VOC Limits for review and approval by the architect prior to beginning installation.
- b. Contractor shall submit a minimum of three (3) product sample for each product which indicates size, shape and color availabilities to the architect for review and selection by Architect.
- c. Contractor shall submit documentation that the Resilient Flooring Systems complies with the 2013 California Green Building Codes Standards, Section 5.504.4.6 per Section 5.504.4.6.1.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- a. Resilient Tile Flooring and Sheet Vinyl Flooring:
 - (1) Armstrong
 - (2) Altro
 - (3) G.A.F.
 - (4) Schuller
 - (5) Kentile
 - (6) Optima
- b. Base:
 - (1) Armstrong
 - (2) Burke
 - (3) Mercer
 - (4) Roppe

2.02 MATERIALS

- a. Vinyl Composition Tile: Armstrong Standard Excelon 12" x 12" x 1/8" thick, pattern and color as selected. Fed. Spec. SS-T-312B.
- b. Sheet (Roll Stock) Vinyl: Armstrong Connection Corlon, with Hydrocord back, or approved equal. Color and pattern as selected. Provide Altro Designer 25 commercial sheet vinyl in Kitchens and Food service areas where indicated on plans.
- c. Rubber Topset Base: 2-1/2", 4", and/or 6", 1/8" thick. Color as selected. Molded outside corners. Fed. Spec. SS-W-40A, Int. Amend. 1, Notice 1.
- d. Adhesive shall be waterproof and of the type recommended by the manufacturer of the material with which it is used. Adhesives shall comply with 2013 California Green Building Standards Code, Section 5.504.4.1 and Table 5.504.4.1 Adhesive VOC limit and SCAQMD Rule 1168 VOC Limits
- e. Metal Trim: Trimedge, Chromedge or approved equal, extruded white metal molding of shapes and designs indicated on the drawings and/or as herein specified.
- f. Cove Base Cap Trim: Trimedge A-604HG or approved equal for vinyl tile.
- g. Cleaner: Armstrong's Liquid Cleaner, Hillyard's "Super Shine-All" or approved equal.
- h. Wax: All first grade "Super Hil-Brite," as manufactured by Hillyard Chemical Co., Armstrong's "Linogloss" or approved equal.
- i. Vinyl Resilient Reducer Strips: Johnsonite or Mercer of size, shape and color selected by the Architect.
- j. Hydraulic Cement Self-Leveling Compounds shall be Ardex K15 or Napei Ultra Plan or other manufacturers recommended compound.
- k. All resilient flooring shall have a coefficient of friction of at least 0.6 per ASTM D0247.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- a. Workmanship: Only skilled workmen, experienced in their respective trades and work shall be employed. All work shall be performed in a first class workmanlike manner and shall be subject to the approval of the Architect or his representative.
- b. Examination of Surfaces: The contractor shall be held to have examined the floor surfaces over which resilient flooring is to be applied and if for any reason a perfect job is impossible or anything is detrimental to obtaining a perfect job with assurance of obtaining the utmost value of the floor, it shall be reported to the Architect before proceeding with the work. NOTE: If required, the contractor shall remove all sealer material from floor to receive floor tile.
- c. Colors of all material shall be as selected by the Architect. Current color samples shall be furnished to the Architect for color selection.
- d. Manufacturer's Recommendations: All materials shall be applied in accordance
- e. Moisture of Surfaces: All surfaces over which resilient flooring is to be applied shall be thoroughly dry before flooring is applied. Moisture tests shall be performed prior to the start of installation according to the RMA Calcium Chloride test method utilizing 1-test per 1,000 s.f. of floor area. No tests shall be taken until the buildings is climatically controlled to installation temperature flooring manufacturer recommendation. Test results shall not exceed 3-lbs./1000 s.f. /24 hours. Test results shall be mapped, charted and submitted to the Architect prior to installation.
- f. Temperature of Rooms: No materials shall be applied in any room where the temperature is less than 70 degrees F. and this temperature shall be maintained during the laying of all specified material. The materials shall be stored in a dry place in the building at a temperature of not less than 70 degrees F. for a period of 24 hours before laying.
- g. Cleaning: Upon completion of the work, clean all resilient flooring with specified cleaner or its approved equal; remove all traces of adhesive and wipe clean.
- h. Protection: The contractor shall cover all his work as necessary to protect from damage until completion and acceptance of the building.
- i. Tile, Base and Sheet Vinyl Stock For Owner: At completion of the work, the Contractor shall leave with the Owner for future repairs, 2% of total used in each color and pattern of material used.
- j. Bonding and PH testing shall be performed. Testing shall be at the expense of the contractor. Waiver of tests does not constitute waiver of any warranties or guarantees required by the terms of this contract.

3.02 INSTALLATION

- a. Contractor shall verify all substrates to be acceptable for installation of resilient flooring. The start of laying flooring shall be considered as the contractor acceptance of substrate. Provide and install cement self-leveling compounds where required to ensure an acceptable substrate.
- b. Laying of Resilient Tile Floors:

- (1) Sweep floors and bases clean of all dirt, loose and/or foreign materials.
 - (2) Lay out pattern marking to obtain uniform base widths, connections at thresholds, etc.
 - (3) Apply tile to floors and bases with waterproof adhesive as recommended by the manufacturer, making neat joints, cuts, etc.
- c. Laying of Rubber Topset Base or Flat Rubber Base:
- (1) Clean surface of all foreign matter.
 - (2) Apply rubber base in accordance with manufacturer's recommendation, using a waterproof adhesive. All joints shall be cut on the lap and shall be cut to a straight and true line.
- d. Laying of Cove Bases:
- (1) Clean surfaces of all foreign and loose material.
 - (2) Lay out pattern as related to floor tile and sheet vinyl.
 - (3) Apply wood cove bases to receive material and nail to wood grounds.
 - (4) Apply metal cove base cap trim setting to a straight and uniform height and fix in place with nails at 16" o.c. and/or as necessary to obtain a tight fit.
 - (5) Use long lengths of metal trim, miter at corners and scribe to adjoining metal and plaster in a neat workmanlike manner.
 - (6) Apply material to floors, and cove up into metal cove base trim using waterproof adhesive. Make neat joints, cuts, etc., and fit material neatly into metal cap trim. Form coves by heating material and roll into place over wood coves. Miter material at corners, angles and returns.
- e. Laying of Sheet Vinyl:
- (1) Sweep floors and bases clean of all dirt, loose and/or foreign material.
 - (2) Apply sheet vinyl to floors and bases with waterproof adhesive as recommended by manufacturer. Install with Seam Master.
- f. Seaming: All seams of sheet vinyl flooring shall be heat welded and sealed per manufacturer recommendation. All seam colors shall match adjacent flooring.
- g. Waxing: Clean all resilient flooring with cleaner as specified under Paragraph 3.01, subparagraph g. Wax and buff with two (2) coats of wax and polish to leave a clean and polished surface.
- h. Guarantee: All work executed under this Section of the Specifications shall be free from defects of materials and workmanship for a period of one (1) year from date of final acceptance of this work.

END OF SECTION
12/11/2013

PAINTING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, material, scaffolding, equipment and appliances necessary to complete the work indicated on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

- a. Preparation, sanding, scraping, putty work and cleaning of all woodwork and/or metal work to be painted.
- b. Painting, staining, or natural finishing of all exterior woodwork, trim and millwork.
- c. Painting of all heating and ventilating equipment where exposed, including roof mounted air conditioners.
- d. Painting of all exterior and interior exposed metal work (except aluminum).
- e. Paint or natural finishing of all interior woodwork, millwork, casework, counters, shelving, trim, plywood, etc.
- f. Painting of all interior and exterior plaster (not integrally colored).
- g. Painting of all gypsum board (where noted on Room Finish Schedule).
- h. Backpriming of all wood casework, eave fascias, etc.
- i. Field and touch up painting (except prime coat) of structural steel and miscellaneous iron.
- j. Touch-up painting of factory finished metal products, i.e., toilet stalls, shower stalls, lockers, shelving, etc. (Paint furnished by metal product supplier).
- k. Washing, priming and back priming of all sheet metal work.
- l. Painting of all galvanized metal expansion joints 1/2" and wider.
- m. Sealing and painting of all concrete block (where noted to be painted on Room Finish Schedule).
- n. Painting of all exposed steel decking.
- o. Painting of all playcourt markings.
- p. Remodel Work:
 - All New Work - Three (3) coats as specified.
 - Existing Work - Fill holes and cracks and apply two (2) coats (final two (2) coats as specified).

- q. Refer to Section 07 14 00, Waterproofing and Dampproofing, for materials to be applied by Painting Contractor.
- r. Vinyl wall covering.
- s. Finish painting of all factory primed metal equipment supplied under other sections of these specifications, including in wall table pockets.

1.03 RELATED WORK

- a. Installation of drywall accessories, taping, filling and surface finishing (texturing) of all gypsum board is specified under Section 09 26 00.
- b. Painting of all aluminum in contract with cement grout or asphalt.

1.04 REGULATORY REQUIREMENTS

- a. Adhesives, sealants and caulking shall comply with 2019 California Green Building Standards Code, Section 5.504.4.1 and Tables 5.504.4.1 Adhesive VOC limit, 5.504.4.2 Sealant VOC Limit, 5.504.4.3 VOC Content Limits for Architectural Coatings and SCAQMD Rule 1168 VOC Limits. Contractor shall submit literature to demonstrate compliance with these regulations prior to beginning installation.

PART 2 PRODUCTS

2.01 MATERIALS

- a. Inspection and Samples: Painters' materials are to be delivered at the building in their original labeled, unbroken packages and not opened until inspected and marked by the Architect or his representative. This Contractor shall furnish 12" x 12" sample plywood and masonite boards and shall experiment with colors for all surfaces on the job to the full satisfaction of the Architect or his representative. These sample boards shall not be destroyed until all painting is done and final approval is given.
- b. Names, Brands, Makes and Numbers hereafter specified are used solely for the purpose of establishing a strict first quality grade of paint. Any change from these grades may be had only upon written consent of the Architect. All paint products used on this project shall be the products of one manufacturer unless specifically set forth otherwise herein, in which case the primer and undercoats shall be the products of the same manufacturer as the final coat.
- c. Paint:
 - 1. Akzonobel Mfg of (Devoe High Performance Coatings, Glidden Professional Paints)
 - 2. Benjamin Moore and Co. (Moore)
 - 3. Dunn-Edwards
 - 4. Sherwin-Williams
 - 5. Or approved equal

- d. Semi-Transparent Stain:
 - 1. Akzonobel Mfg of (Devoo High Performance Coatings, Glidden Professional Paints, and Flood wood care products)
 - 2. Benjamin Moore & Co.
 - 3. Dunn-Edwards
 - 4. Sherwin-Williams
 - 5. Or approved equal
- e. Sealer:
 - 1. Rainguard International Mfg of (Micro seal, Blox-Loc) emulsion/siloxane solution sealer.
 - 2. Thompson's: Sealing of masonry walls

Anti-graffiti coatings: Two component aliphatic urethane polyester based mixture.

- 1. Benjamin Moore & Co.
- 2. Dunn-Edwards Corporation.
- 3. Rainguard International Mfg of Vandal Guard anti graffiti Coating.

2.02 SUBSTITUTIONS

See General Conditions, Section 33, Article 19

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- a. Workmanship: Only skilled workmen experienced in their respective trades and work shall be employed. All work shall be performed in a first class workmanlike manner and shall be subject to the approval of the Architect or his representative.
 - (1) All finishes shall meet the basic standards of practice, which are satisfactory to the Architect. Each coat shall be of the proper consistency and the mixing, thinning, preparation of surfaces and application in strict accordance with paint manufacturers specifications and/or instructions. Each coat of paint finish shall be well brushed out or flowed on, to obtain a uniform and even finish free of brush marks, runs, sags, crawls, dust, pimples, encrusted brush bristles, holidays and any variance in finish (color, shade, sheen or matt) or other blemishes to the finished surfaces.
 - (2) It is the responsibility of the Contractor for inspection of all surfaces, prior to application of any paint. If the manufacturer's representative or the Contractor consider any surface unsuitable for proper application and/or proper performance of the paint, the manufacturer's representative and the Contractor shall immediately notify the Architect in writing. Materials shall not be applied until such unsuitable surfaces or conditions have been made satisfactory. The manufacturer's representative or the Contractor shall furnish to the Architect a letter certifying that all surfaces were inspected and approved as above specified and that all materials furnished were as specified. The contractor shall furnish to the Architect a letter certifying that all materials used were as specified.

- b. Approvals: An approval for all brands of materials not mentioned in the following list shall be obtained in writing from the Architect before incorporation into the work. Before any paint has been delivered to the site, the Contractor shall submit four (4) lists of materials, which the Contractor proposes to use to the Architect for his review and approval. No deviation from the approved list will be allowed without written permission. Approved List-Glidden Professional Paints, Fuller O'Brien, Benjamin Moore, Dunn-Edwards, Pittsburgh Paints or approved equal. Requests for substitutions shall be accompanied by test reports from a commercial testing laboratory showing equality in weathering, hardness, washability, gloss and color retention, flow, hiding, flexibility, non-yellowing and general original appearance. These tests shall be conducted according to procedures set forth in Federal Specification TTL-P-141 of American Society of Testing Materials Specification.
- c. Storage: All materials shall be stored and mixed only in such rooms as will be designated for that purpose, by the Architect or his representative and such space shall be kept clean. Floor shall be covered with "Sisal Kraft" paper with joints lapped at least six inches (6"). All necessary precautions shall be taken to prevent fire and all oily rags shall be hung out flat and singly in open air.
- d. Manufacturer's Recommendations: The specifications and instructions of the paint manufacturer shall be carefully followed, especially regarding mixing, thinning, application and preparation of surface.
- e. Preparation of Surfaces: The Painter, before proceeding with his work must see that the carpenter has set all nails in finish, removed all bruises, stains, etc., where same show through finish. Scrape and sandpaper entire woodwork and remove finish hardware and see that the entire woodwork is in good condition before painting. **THE PAINTING CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTING THE WORK OF OTHERS PRIOR TO THE APPLICATION OF ANY PAINT OR FINISHING MATERIAL. IF ANY SURFACE TO BE FINISHED CANNOT BE PUT IN PROPER CONDITION FOR FINISHING BY CUSTOMARY CLEANING, SANDING AND PUTTYING OPERATIONS, THE PAINTING CONTRACTOR SHALL NOTIFY THE PRIME CONTRACTOR, ARCHITECT OR OWNER IN WRITING, OR ASSUME RESPONSIBILITY FOR RECTIFYING ANY UNSATISFACTORY FINISH RESULTING.** All interior woodwork shall be thoroughly hand sandpapered and dusted thoroughly with air and dry brush. All nail holes, cracks and defects shall be carefully puttied and in stained work shall match the color of the stain. In natural finish, it shall match the color of the wood.
- f. Knots and Pitch Pockets: Interior woodwork to receive shellac over all knots and sap pockets. Pitch pockets cut out by the carpenters and then spackled and shellacked.
- g. Condition of Surfaces: Paint, enamel, stain or varnish shall not be applied to wet, damp, dusty, greasy, fingermarked, rough, unfinished or defective surfaces. Application: Latex or vinyl paint shall only be applied when temperatures of surfaces to be painted and surrounding air temperatures are between 50 degrees F and 90 degrees F. Do not paint when temperature varies widely, which might result in condensation on freshly coated surfaces. Apply solvent thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees F and 95 degrees F. All Plaster Walls shall have a maximum of 15% moisture content as measured on a standard moisture met. It is the painter's responsibility to verify the moisture content prior to applying paint.

- h. Sanding: All woodwork shall be sandpapered smoother after each and every coat of material, except last coat, and all surfaces shall be free from dust, dirt or other imperfections.
- i. Priming of Millwork: All millwork must be primed and back-primed on **all** sides immediately on arrival at the job.
- j. Removal and Storage of Hardware: Remove all finish hardware before starting work, carefully labeling same as to its proper location and store carefully during progress of painting work.
- k. Protection: Floors and plumbing fixtures to be kept clean and protected. The dumping of paints, stains, or washes in plumbing fixtures will not be allowed. Great care shall be taken not to injure or spatter paint on adjacent work, which shall be covered and fully protected, but should any paint be spattered for found where not called for, the defective surface shall be cleaned off and the original surface restored.
- l. Rough Plumbing: All exposed plumbing and plumbing fixtures where not enameled shall be painted as specified for metal work.
- m. Inspection by Architect: After each and every coat of paint, sizing, enameling or other application, including sanding and rubbing, the work shall be inspected, passed on, approved and marked by the Architect, his representative or the job inspector before application of the following coats. Notice must be given after all coats and work done without approval of each coat will be rejected and an additional coat applied.
- n. Sample Boards: Furnish sample boards and experiment with colors for the surface on the job to the full satisfaction of the Architect. These sample boards shall not be destroyed until painting is done and until the final approval of the work.
- o. Colors: The color of every coat of paint, enamel, stain, etc., shall be as selected by the Architect. Every coat of paint shall be a slightly different shade. Current color chip samples shall be furnished to the Architect for color selections.
- p. Turpentine shall be used for thinner and drier only. Thinner shall only be used if approved by the Architect and only if recommended by the manufacturer.
- q. Rejected Materials shall be removed from the site immediately upon notification from the Architect.
- r. Cleaning: From time to time, remove all dirt, debris, waste, rubbish, etc., from the building site. All woodwork, hardware, floors or other adjacent work shall be cleaned. The painter shall protect and keep clean all portions of the work that are not to be painted, stained or varnished and upon completion shall have a neat, clean and workmanlike job. Cleaning includes the removal of all paint spots on glass and brush drags where cut in on sash.
- s. Spraying will be permitted on certain types of work **when approved and directed by the Architect** subject to the following stipulations: "Spraying regulations covering work to be done on this project shall be permitted in areas and on surfaces as covered by the "Standard Agreement" recommended by the California State Contractors Association and agreed to by the International Brotherhood of Painters, Paper Hangers and Decorators of America. Copies of this Agreement are

available to all contractors in all major cities of California. Any deviations or exceptions shall be referred to the Joint Committee and their ruling shall be final."

- t. Back Priming: All plaster and wood surfaces that will not be exposed to view shall be painted the same as the first coat of finish specified, except gypsum board.
- u. Multiple colors: Classrooms will have two colors selected for each room. Colors will be designated for entire wall. There will be no accent strips.
- v. Exterior Painting: Painter shall allow for three (3) color selections, plus the school colors for exterior painting and trim colors.

3.02 SPECIAL REQUIREMENTS

- a. All products listed are those of Glidden Professional Paints and are specified solely for establishing a quality standard.

- b. EXTERIOR WORK:

- (1) On Metal Work: (Metal trim Hollow Metal Doors and Frames)

- 1st coat: Devoe Devflex 4020 Primer
 - 2nd coat: Devoe Devflex 4216 Semi Gloss Finish
 - 3rd coat: Devoe Devflex 4216 semi Gloss
 - or
 - 1st coat: Ultra Spec Acrylic Metal Primer (HP04)
 - 2nd coat: DTM Acrylic Semi-Gloss Enamel (WH29)
 - 3rd coat: DTM Acrylic Semi-Gloss Enamel (WH29)

- (2) On Metal Work: (Bonderized or Base Metal and Shop Primed) (Total of 3 coats)

- 1st coat: Devoe Devflex 4020 Primer
 - 2nd coat: Glidden Professional Fortis 350 2406-xxx Enamel (Tinted toward final color)
 - 3rd coat: Glidden Professional Fortis 350 2406-xxx semi gloss enamel*
 - or
 - 1st coat: Ultra Spec Acrylic Metal Primer (HP04)
 - 2nd coat: Ultra Spec EXT Gloss Fininsh (N449)
 - 3rd coat: Ultra Spec EXT Gloss Fininsh (N449)

- (3) On Metal Work: (Galvanized) (Total of 4 coats)

- 1st coat: Chemical Etch Devoe Devprep 88
 - 2nd coat: Devoe Devflex 4020 Metal Primer 100% Acrylic Multi-Purpose Primer
 - 3rd coat: Glidden Professional Fortis 350 2406-xxx Exterior 100% Acrylic Semi-Gloss Paint (Tinted toward final color)
 - 4th coat: Same as 3rd coat
 - or
 - 1st coat: Fresh Start High-Hiding All Purpose Primer (046)
 - 2nd coat: Ultra Spec EXT Gloss Fininsh (N449)

3rd coat: Ultra Spec EXT Gloss Fininsh (N449)

(4) On Wood Work: (Total of 3 coats)

1st coat: Glidden Professional 6001-1200 Hydrosealer
Exterior 100% Acrylic Wood Primer
2nd coat: Glidden Professional Fortis 650 2406-xxx SEMI-
GLOSS Enamel (Tinted toward final color)
3rd coat: Same as 2nd coat*
or
1st coat: Ultra Spec EXT Latex Primer (N558)
2nd coat: Ultra Spec EXT Gloss Fininsh (N449)
3rd coat: Ultra Spec EXT Gloss Fininsh (N449)

(5) Back Priming: (Total of 1 coat)

1st coat: Glidden Professional 6001-1200 Hydro seal
Exterior 100% Acrylic Wood Primer
or
1st coat: Ultra Spec EXT Latex Primer (N558)

(6) Exterior Cement Plaster (over color coat or Existing paint)

1st coat Glidden Professional Fortis 650 2200-xxx Flat
Primer
2nd coat Glidden Professional Fortis 350 2200-xxx Exterior
100% Acrylic Flat Finish
or
1st coat: Ultra Spec EXT Latex Primer (N558)
2nd coat: Ultra Spec EXT Gloss Fininsh (N449)
3rd coat: Ultra Spec EXT Gloss Fininsh (N449)

c. INTERIOR WORK:

(1) Enamel For Metal Trim and Metal Doors and Jambs: (Total of 3 coats)

1st coat: Glidden Professional Gripper 3210 Multi-Primer
2nd coat: Devoe Devflex 4216 Semi Gloss Finish
3rd coat: Devoe Devflex 4216 Semi Gloss Finish
or
1st coat: Fresh Start High-Hiding All Purpose Primer (046)
2nd coat: DTM Acrylic Semi-Gloss Enamel (WH29)
3rd coat: DTM Acrylic Semi-Gloss Enamel (WH29)

(2) Enamels for Plaster Walls and Ceilings: (Total of 3 coats)

1st coat: Glidden Professional Bond Prep 3030-1200 Latex
Primer Sealer
2nd coat: Glidden Professional Diamond 350 1407-xxx
Acrylic Semi-gloss Interior Wall & Trim Enamel
3rd coat: Same as 2nd coat

or

- 1st coat: Fresh Start High-Hiding All Purpose Primer (046)
- 2nd coat: Ultra Spec 500 Interior Semi-Gloss (N539)
- 3rd coat: Ultra Spec 500 Interior Semi-Gloss (N539)

(3) Enamel for Gypsum Board Walls and Ceilings: (Total of 3 coats)

- 1st coat: Glidden Professional Prep Prime 1000-1200 Interior Acrylic Wall Primer Sealer
- 2nd coat: Glidden Professional Diamond 350 1407-xxx 100% Acrylic Latex Semi-Gloss or Satin 1403-xxx
- 3rd coat: Glidden Professional Diamond 350 1407-xxx 100% Acrylic Latex Semi-Gloss or Satin 1403-xxx

or

- 1st coat: Ultra Spec Interior Latex Primer (N534)
- 2nd coat: Ultra Spec 500 Interior Semi-Gloss (N539)
- 3rd coat: Ultra Spec 500 Interior Semi-Gloss (N539)

- d. Painting of Mechanical and Electrical Equipment: All mechanical and electrical equipment, piping and machinery (not factory finished) of any kind where exposed to view shall be painted as specified and shall be included as a part of this work. Inside of ducts, where exposed to view through register and grilles, shall be painted two (2) coats of black paint of type specified for metal work. All structural framing supporting equipment shall be painted same as for equipment where exposed to view. All ducts, plenums, ventilators, fan housings, ventilating equipment, etc., shall be painted as specified for metal work. All piping equipment and machinery (not factory finished) in heater rooms and/or mechanical rooms, shall be painted the same color but a different shade, as the walls or ceilings adjacent. Piping and equipment covered up in attic space, furred ceilings and furred pipe spaces will not require paint finishes.
- e. Miscellaneous Painting:
 - (1) Interior surfaces of all casework and cabinet work, including tops, bottoms, backs and interior surfaces of all drawers and trays shall be shellacked and varnished, one (1) coat of white shellac and two (2) (2) coats of clear "satinflat" varnish. (Sand after first and second coats.)
 - (2) Tops, bottoms, sides, edges and ends of all doors shall receive the same number of coats as specified for woodwork. All portions that cannot be painted shall be oiled.
- f. Cleaning and Touch Up:
 - (1) Carefully remove all spattering and traces of paint materials from the work of others; from glass, plumbing fixtures and trim, hardware, tile surfaces, floor covering, etc., and make good all damages thereto that may be caused by such materials or cleaning. Likewise, make a detailed inspection of all painting work and touch up or refinish satisfactorily all abraded, stained or otherwise disfigured portions thereof, as required to produce a first-class job.

- (2) Upon completion of the work herein before specified, remove all unused materials and implements of service, rubbish and debris resulting from the paint work and leave the entire building and premises, insofar as the work of this section is concerned, neat, clean and as approved by the Architect.
- g. Guarantee: All work executed under this Section of the Specifications will be free from defects of materials and workmanship for a period of one (1) year from date of final acceptance of this work.
- h. Extra Stock - Upon completion of the work of this Section, deliver to the Owner additional stock equaling 1 percent, but not less than a full unopened container of each color, type and gloss of paint used.

END OF SECTION
10/18/2022

CHALKBOARDS AND TACKBOARDS (M.D.F.)

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, material, scaffolding and appliances required to complete the chalkboard and tackboard work indicated on the drawings and specified hereunder.

1.02 WORK INCLUDED

- a. Provide and install all tackboard units complete with "Duracore" backing and aluminum trim.
- b. Provide and install all chalkboard units complete with foil-backed medium density fiberboard core, aluminum trim and eraser shelf.
- c. Provide and install continuous map rails with map hooks and one (1) flag holder over all chalkboards and separate tackboards.
- d. Provide all screws, toggle bolts, rawl plugs and adhesive for application of boards.
- e. Breaking in of all chalkboards upon completion of the installation.
- f. Cleaning of all chalkboards and tackboards.
- g. Provide and install all vertical sliding chalkboard units.

1.03 RELATED WORK

- a. Surfaces over which chalkboard and tackboards are to be applied are specified under other Sections of the Specifications.
- b. All chalkboards and tackboards, which are an integral part of cabinets, are specified in Sections 12 32 00 and 06 22 00.02.
- c. Chalkboards on operable walls (doors) are specified in Section 10 22 26.33.

1.04 SHOP DRAWINGS

Blueprints of shop drawings shall be submitted per Sections 10 and 01301 to the Architect for approval prior to fabrication.

PART 2 PRODUCTS**2.01 CHALKBOARDS**

Chalkboards shall be No. 1064 M "Duracite" as manufactured by Claridge Products, Inc.

- 1. Writing Surface: Shall be baked-in alkyd resin.

2. Core Material: Shall be 7/16" medium density fiberboard with aluminum foil backing.
3. Chalkboard Style: Shall be Series 3, with slip-on aluminum trim.
4. Color: Shall be as selected by Architect from (10) standard colors.
5. Ruling: Shall be permanently factory ruled (before baking) for Kindergarten classrooms, Grades 1-3, 4-6 and music rooms. See details for spacing.
6. Size: Standard height shall be 4', maximum length shall be 12' - see Interior Elevations.
7. Guarantee: The contractor shall provide manufacturer's 5 year warranty.

2.02 TACKBOARDS

Tackboards shall be No. 1380 "Fabricork" as manufactured by Claridge Products, Inc. Tackboard shall be vinyl covered 1/16" cork laminated over 3/8" 'Duracore' backing. Standard height shall be 4', maximum length shall be 16', see Interior Elevations. Color shall be as selected by Architect from (28) standard colors.

2.03 METAL TRIM

Metal trim for chalkboards and tackboard shall be extruded aluminum, etched and satin anodized, as manufactured by Claridge Products, Inc. or approved equal.

- a. Edge Trim: #180
- b. Divider: #186A
- c. Chalk Rail: #362
- d. Map Rail: #181 (slot bottom runner at 3'-0" on center to receive map hooks)
- e. Map Hook: #76M (at 24" on center)
- f. Flag Holder: #76FH (1 per board)

2.04 MANUFACTURERS

Shall be members of the Porcelain Enamel Institute, Inc., Washington D.C.

- a. Chalkboard equals: Carolina Chalkboard "Temperite II"
- b. Tackboard equals: Carolina Chalkboard "Plasti-Cork"; Greensteel Vinyl "Tac-TeX"
- c. Aluminum trim equals: Carolina Chalkboard Series 100 Trim; Greensteel A-Series Trim
- d. For substitutions - see Article 30, Section 10.

2.05 ADHESIVE

Shall be Claridge #16A or approved equal.

2.06 SCREWS

Shall be Phillips oval head countersunk chrome plated screws, # 8 x 2-1/2" at 24" o.c. max.

2.07 VERTICAL SLIDING CHALKBOARD

Vertical sliding chalkboard shall be as manufactured by Claridge Products and Equipment, Inc., Harrison, Arkansas, or approved equal, housing for operating mechanism and all framework and trim shall be heavy-gauge etched and satin anodized extruded aluminum. Panels to operate over roller bearing sheaves and to be equipped with spring mounted nylon rollers for elimination of side motion and noise. Chalkboards to be "Duracite" units, of dimensions shown on drawing and in accordance with manufacturer's specifications and shop drawings as approved by the Architect.

PART 3 EXECUTION**3.01 INSPECTION OF SURFACES**

Surfaces over which boards are to be applied shall be inspected. If there is any reason why a perfect job cannot be obtained, notify the Architect before proceeding with the installation.

3.02 INSTALLATION

All surfaces over which the boards are to be applied shall be thoroughly clean and dry before application. Boards shall be installed per manufacturer's directions at such time as directed by the Prime Contractor. The height at which the boards are to be installed shall be verified with the Architect and Owner immediately prior to starting installation. Holes for toggle or rawl plugs shall be neatly drilled so that the trim will properly cover and that unit boards may be easily removed and replaced without additional drilling or disfigurement of walls.

3.03 CLEANING AND BREAKING-IN

- a. The entire surface of the chalkboard shall be "chalked-in" after installation by laying a piece of first quality chalk on its side and running it over the entire surface, then erasing with a clean eraser. The chalkboards and tackboards shall be cleaned of all fingerprints, dirt, marks, etc., upon completion of the installation.
- b. The contractor shall clean all surfaces soiled by work of the trade and shall remove all debris and rubbish at completion of work.

END OF SECTION
03/05/2008

SIGNS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL**1.01 SCOPE OF WORK**

The work of this Section shall include all labor, materials, appliances, equipment, and transportation in connection with furnishing and installing of all plastic identifying devices, complete, as shown on the drawings and specified herein.

1.02 RELATED WORK

- a. Installation of signs is specified under Carpentry Section, 06 10 00.
- b. Painted Signage is specified under Section 09 91 00.

PART 2 PRODUCTS**2.01 APPROVED MANUFACTURERS**

- a. Mohawk Sign Systems-Photo Graphic Image Series
- b. Vomar Products, Inc.
- c. ASI Sign Systems
- d. Specialized Builder's Hardware for exterior Site signage and Accessible Interior signage

2.02 PRODUCT REQUIREMENTS

- a. All signs shall be single-faced and shall be unframed, for flush mounting. Type style shall be Helvetica Medium. All signs shall have photo-graphic or digital image. Except for Photo-Graphic/Digital Image Series and Exterior accessible site signage all other signs shall be of color selected by Architect from standard manufacturers color palette.
- b. All signs shall meet the following requirements:
 - 1. Contain at least 60% renewable paper resources
 - 2. Contain 3 to 5% pre-consumer recycled content
 - 3. Suppliers must implement SFI standards
 - 4. Certified GREENGUARD® Indoor Air Quality
 - 5. Low emitting and non-toxic materials
 - 6. Contain No-urea-formaldehyde resins
 - 7' No glues or chemical bonding agents
- c. Signs shall be NEMA Class A fire rated "self-extinguishing"
- d. Raised And Braille Characters And Pictorial Symbol Signage: Letters and numerals shall be raised 1/32 in., uppercase, Sans Serif or simple Serif type and shall be accompanied with Grade 2 Braille. Raised characters shall be at least 5/8 in. high but no higher than 2 in. Pictograms shall be accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram shall be 6-in. minimum in height.
- e. Finish and Contrast: characters and their background shall have a non-glare finish. Characters shall contrast with either light characters on dark background of dark characters on a light background. 11B-703.5.1

- f. Character Proportions: characters shall be selected from fonts where the width of the uppercase letter 'O' is 60 percent minimum and 110 percent maximum of the height of the uppercase letter 'I'. 11B-703.2.4.

All letters measured must be uppercase. After choosing a typestyle to test, begin by printing the letters **I**, **X**, and **O** at 1 inch high. Place the template's 1:1 square over the **X** or **O**, whichever is narrower. If the character is not wider than 1 inch, nor narrower than the 3:5 rectangle, the proportions are correct. Use the 1:5 rectangle to determine if the stroke of the **I** is too broad, and the 1:10 rectangle to see if it is too narrow. If all the tests are passed, the typestyle is compliant with proportion code.

- g. Braille shall be contracted (grade 2). Braille dots shall have a domed or rounded shape. Dot base diameter shall be 0.059 (1.5mm) to 0.063 (1.6mm). Distance between two dots in the same cell shall be 0.100 (2.5mm). Distance between corresponding dots in adjacent cells shall be 0.300 (7.6mm). Dot height of 0.025 (0.6mm) to 0.037 (0.9mm). Distance between corresponding dots from one cell directly below is 0.395 (10mm) to 0.400 (10.2mm). Table 11B-703.3.1 braille shall be positioned below the corresponding text in a horizontal format, flush left or centered. If text is multi-lined, braille shall be placed below. The entire text. Braille shall be separated 3/8 inch (9.5mm) minimum and 1/2 inch (12.7mm) maximum from any other tactile characters and 7/8 inch (9.5mm) minimum from raised borders and decorative elements. 11B-703.3.2.

Recommend Rounded or domed California Braille dots, each distinct and separate. Dots with straight sides and flat tops are not readable for many Braille users.

PART 3 EXECUTION

3.01 INSTALLATION

- a. Identification devices herein specified shall be installed under the Carpentry Section, in accordance with the drawings and as directed by the Architect. Tactile sign mounting height shall be located 48 inches (1219mm) minimum above the finish floor measured from the baseline of the lowest braille cells and 60 inches (1524mm) maximum above the finish floor, measured from the baseline of the highest line of raised characters. 11B-703.4.1.
- b. Mount all single faced signs on wall surfaces by applying a contact adhesive, as manufactured by Weldwood, or an approved equal, to both the sign back and mounting surface, in accordance with adhesive manufacturer's recommendations.

3.02 SCHEDULE (All exterior doors to have painted graphics and additional raised lettered and braille sign.) See also Section 09 91 00. (Site Accessibility and Restroom Accessibility signage to be Specialized Builders Hardware (SBH) or equal) **Provide additional raised lettered and Braille signs adjacent to all doors in accordance with the requirements of the American Disability Act (ADA).**

- a. Site:
 - Van Access (R1820 HVP)
 - Accessible Parking-Non-Van (R99R12)
 - Parking Entrance (R99R24)
 - Directional Arrow w/HC Symbol (RFH123)

- b. Buildings:
- Accessible Symbol for Glass Application #162) 6"x6" decal
 - Restrooms -
 - Girls/Women's HC (SBH12G/W)
 - Boys/Men's HC (SBH12B/M)
 - Unisex (SBH12U)
 - Classrooms
 - Exit _____

END OF SECTION
05/06/2014

SOLID PLASTIC TOILET AND SHOWER STALLS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, material, equipment and appliances required to complete all the toilet and shower partition work shown on the drawings and specified hereunder. Delivery to the building is considered part of this contract.

1.02 WORK INCLUDED

- a. Provide and install all solid plastic toilet stalls and screens.
- b. Provide and install all anchors and fittings for installation of all solid plastic toilet stalls, screens and shower compartments.

1.03 RELATED WORK

- a. Wood backing for anchorage of toilet stalls, baffles and compartments is specified in Section 06 10 00.

1.04 REFERENCES

- a. ASTM International (ASTM):
 - 1. A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - 2. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- b. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.05 SUBSTITUTIONS

See DIV. 00 Section 10 Article 19, and DIV. 01 Section 01 33 00.

1.06 GENERAL REQUIREMENTS

- a. Cooperation: Cooperate with the other trades for a completely anchored and finished job, furnishing and installing anchors, braces, hardware, flanges, etc.
- b. Anchorage: If, for any reason, the proper anchorage is impossible, this Contractor shall report same to the Architect and receive further instructions before proceeding with the work.
- c. Damage: The Contractor shall protect from damage the other trades work and shall repair same where any damage occurs.

- d. Responsibility: The Contractor shall assume the responsibility for proper anchorage of the equipment, and all partitions posts and fittings shall be securely anchored.

1.06 SHOP DRAWINGS

Shop drawings shall be delivered in seven (7) copies for the Architect's approval prior to fabrication, per Div.00 Section 10 Article 14.

1.08 APPROVED PARTITION MANUFACTURER'S

- a. Scranton Products, Inc.
- b. Bobrick
- c. Approved equal

PART 2 PRODUCTS**2.01 MATERIALS**

- a. Materials specified are for Scranton Products, Hiney Hider Series, to set standard of quality.
- b. All Compartments For Toilets: Shall be High Density polyethylene (HDPE) solid 1" thick panels.
- c. Materials: All panels, doors, pilasters, screens and benches shall be fabricated from polymer resins under high pressure forming a single component section that is waterproof, corrosion proof, impact resistant and non-absorbent, which has a self-lubricating surface similar and equal to Santana's `Plasti-Glaze 280' finish which resists marking with pens, pencils, lipsticks and other writing or marking implements. Manufacturers to submit necessary ASTM E-84 test data to comply with applicable fire codes, flame spread Class II.
- d. All Partitions: Shall be 1" thick, with all edges machined to a radius of .250" and all sharp corners removed. All dividing panels and doors shall be 55" high, and mounted 14" above finished floor, shower partitions shall be 76" high. Provide aluminum edging strips at all door and panel bottoms.
- e. All Pilasters: Shall be floor-to-ceiling height or floor mounted overhead braced, as shown on plans, and fastened to 3" high non-corrosive polymer resin shoes by means of theft-proof stainless steel sex bolts, fasten shoe to floor with #14x3-1/2" S.S. screws in plastic rawls.
- f. Hinges: Shall be integral, fabricated from door and pilaster with no exposed metal parts. Door pivots on opposing cams made of nylon 6/6 with reinforced stainless steel pin. ADA accessible stall doors shall have extra-large heavy-duty self-closing hinges.

- g. Doors: Shall be 55" high mounted 14" above floor and shall be furnished with (1) hook/bumper, mount at +48" in ADA accessible stall in addition, ADA accessible stalls shall have (1) "U" Shaped door pull each side and (1) wall stop.
- h. Door Strike and Keeper: Shall be heavy duty 6" plates, fabricated from heavy aluminum extrusion (6463-T5 alloy) with clear anodized finish with wrap-around flange and thru-bolted to pilaster with one-way sex bolts.
- i. Door Latch Housing: Shall be fabricated from heavy aluminum extrusions (6463-T5 alloy) with clear anodized finish, thru-bolted to door with one-way sex bolts. Slide bolt and button shall be heavy aluminum with 'tough-coat black' finish. Hardware shall comply with requirement for the persons with Disabilities Act.
- j. Wall Brackets: Shall be continuous (55" min.) fabricated from high density polymer resin weighing not less than #. 82/lb. Brackets shall be used for all panel to pilaster, pilaster to wall and wall to panel connections. Brackets shall be thru-bolted to panel/pilasters with one-way sex bolts at 12" o.c. Connect bracket to Stud wall with (3) #14 x 3-1/2" stainless steel screws at 12" o.c. staggered. At Masonry Wall attach with 1/4" diameter Hilti Kwik Bolt 3 Stainless Steel 2" minimum Embed. 12" o.c. staggered, per ICC EST 1385.
- k. Door Pulls, Door Stops and Bumper/Hooks: Shall be of Stainless Steel (no Zamac). Door pulls shall be "U" shaped or wire pull both sides of the door. Door hardware shall be mounted t 30" to 44" above finished floor.
- l. Color: Shall be as selected by the Architect from the manufacturer's standard colors (minimum of 9).
- m. ADA accessible Compartment Doors: Shall provide 32" clear access at end entry and 34" clear access at side entry. Doors shall be self-closing. Provide "U" shaped door pull below latch each side.

PART 3 EXECUTION

3.01 INSTALLATION

- a. Erection of partitions, etc. shall be in accordance with the manufacturer's standard recommendations and the following:
- b. All parts shall be erected in a substantial manner, straight, level and plumb.
- c. No evidence of drilling, cutting, or patching shall be visible in the finished work.
- d. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/16".
- e. Finished surfaces shall be cleaned after installation and left free from imperfections.
- f. Approved shop drawings to be submitted through subcontractor and manufacturer showing plans, elevations and details prior to fabrication and installation.

END OF SECTION
03/30/2018

TOILET AND BATH ACCESSORIES

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, material, equipment and appliances required to complete all the work shown on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

Provide and install all toilet and bath accessories, including, but not limited to grab bars, toilet paper dispensers, soap dispensers, paper towel dispensers, electric hot air hand dryers, etc.

1.03 RELATED WORK

Backing for accessories is specified under the Carpentry Section.

1.04 SAMPLES

One (1) sample of each accessory proposed for use shall be submitted to the Architect for approval. Samples may be installed in the work after approval and comparison with other items.

1.05 MANUFACTURERS' SPECIFICATIONS

Contractor shall furnish to Owner not less than three (3) sets of catalogs, manuals and/or advertising literature for each toilet room accessory item installed. These catalogs or manuals shall clearly describe the item, replacement parts, methods of service or repair and shall list acceptable soaps, paper or other materials to be used or dispensed by item.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- a. Bobrick
- b. ASI
- c. Xlerator
- d. Or Approved equal.

2.02 MATERIALS

- a. Materials and finish shall be the best of their several kinds and shall be the manufacturer's standard for the various units except where specified otherwise. Proprietary items herein referred to are for type and style reference only.
- b. The following shall be as manufactured by Bobrick Corp.:

1. Concealed mounted straight Grab bars, B-5806.99 x 36 and 42 as shown drawings.
2. Mirror, B-165 2436
3. Recessed Multi-Roll Toilet Tissue Dispenser, B-4388

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

Contractor shall verify locations and dimensions shown with field conditions and shall be responsible for accuracy and conformity of work with existing conditions, and shall bear all expenses of changes or extras resulting from inaccuracies in his work. Contractor shall avoid damaging the work or finish of other trades and shall repair any damage, or replace damaged items, as directed, at no additional cost to Owner.

3.02 INSTALLATION

- a. Accessories shall be installed after all other adjacent finishes are completed. Only workmen skilled in this category shall install the various items; care shall be exercised to avoid damage to other trades' work. Contractor shall be responsible for damage during performance of this work.
- b. Toilet accessories required to be accessible shall be mounted at heights according to CCR, T-24, Sec. 1118B.

END OF SECTION
12/13/2022

PLUMBING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 – GENERAL**A. DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION****B. SCOPE.**

1. Work Included. Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
 - a. Demolition of all plumbing fixtures, equipment and piping systems indicated or required to be removed or modified.
 - b. A complete remodel of sanitary soil, waste and vent piping including connection existing P.O.C.'s, waste, and drain connections to all fixtures and equipment.
 - c. A complete remodel of hot and cold water piping including connection to existing P.O.C.'s, and connections to fixtures and equipment.
 - d. Condensate drains from air conditioning units.
 - e. Acceptance testing as required under California Building Energy Efficiency Standards, Title 24.

C. CODES AND STANDARDS

1. All work and materials shall conform with current rules and regulations of applicable codes. Nothing in these Drawings or Specifications is to be construed to permit work not conforming to these codes. Should the Drawings or Specifications call for material or methods of construction of a higher quality or standard than required by these codes, the Drawings and Specifications shall govern.
 - a. Applicable codes and standards shall include but are not necessarily limited to:
 - i. California Code Of Regulations:
 1. Title 8, Industrial Relations
 2. Title 17, Public Health
 3. Title 19, Public Safety
 4. Title 21, Public Works
 5. Title 24, Energy Regulations
 - ii. California Building Code.
 - iii. California Mechanical Code
 - iv. California Plumbing Code
 - v. American Society for Testing and Materials (ASTM)
 - vi. American Water Works Association (AWWA)
 - vii. Cast Iron Soil Pipe Institute (CISPI)
 - viii. National Electrical Code (NEC)
 - ix. National Electrical Manufacturers Association (NEMA)
 - x. National Fire Protection Association (NFPA)
 - xi. National Sanitation Foundation (NSF)
 - xii. Occupational Safety and Health Act (OSHA)
 - xiii. Plumbing and Drainage Institute (PDI)
 - xiv. Americans with Disabilities Act. Accessibility Guidelines for Buildings and Facilities. (ADAAG).

D. PERMITS AND FEES

1. The Contractor shall take out all permits and arrange for all tests in connection with such work as required. All charges are to be included in the work. All charges or fees for service connections, meters, etc., shall be included in the work.

E. COORDINATION OF WORK

1. Before starting any work, thoroughly examine all existing and newly completed underlying and adjoining work and conditions upon which the installation of this work is in any way dependent for the workmanship required by the Contract Documents. Report to the Architect and Engineer in writing any and all conditions which might adversely affect this work and limit ability to perform the required workmanship.
2. Layout of materials, equipment and systems is generally diagrammatic unless specifically dimensioned. The actual locations of all materials, piping, ductwork, fixtures, equipment, supports, etc., shall be carefully planned, prior to installation of any work, to avoid all interference's with each other, or with structural, electrical or architectural elements. Verify the proper voltage and phase of all equipment with the electrical plans. All conflicts shall be called to the attention of the Engineer prior to the installation of any work or the ordering of any equipment.
3. Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate the mechanical, electrical, structural, architectural drawings and field conditions that could affect the work to be performed and arrange such work accordingly. Provide the required piping and ductwork offsets, fittings, and accessories to meet such conditions.
4. Spaces provided in the design of the building shall be utilized and the work shall be kept within walls or furring lines established on the drawings. Any discrepancy between Architectural or Mechanical drawings with respect to wall or furring locations and dimensions shall be brought to the Architect's attention for resolution before proceeding with installation.
5. Any work which is done as an addition, expansion, or remodel of an existing system shall be compatible with that system.

F. MANUFACTURER'S RECOMMENDATIONS

1. All material, equipment, and devices, etc., shall be installed in a manner meeting approval of the manufacturer of the particular item. The Contractor shall make himself available of all installation manuals, brochures, and procedures that the manufacturer issues for the equipment and material. Contractor shall be held responsible for all installations contrary to the manufacturer's recommendations. Contractor shall make all necessary changes and revisions to achieve such compliance.

G. GUARANTEE

1. Guarantee shall be in accordance with the General Conditions. These Specifications may extend the period of the guarantee for certain items. Where such extensions are called for, or where items are normally provided with guarantee periods in excess of that called for in the General Conditions, the certificate of guarantee shall be furnished to the Owner.

H. QUIETNESS

1. Piping of all types, ductwork, and equipment shall be arranged and supported so that the vibration is at a minimum and is not transmitted to the building structure.

I. DAMAGES BY LEAKS

1. The Contractor shall be responsible for damages caused by leaks in the temporary or permanent piping or mechanical systems prior to completion of work and during the period of the guarantee.

J. SUBMITTALS

1. Shop Drawings. Within 30 days of contract award, the Contractor shall submit six copies of shop drawings for all materials, equipment, etc., proposed for use on this project. Material or equipment shall not be ordered or installed until written review is processed by the Engineer. Any item omitted from the submittal shall be provided as specified without substitution. All shop drawings must comply with the following:
 - a. Shop drawings are required for all material and equipment items and shall include manufacturer's name and catalog numbers, dimensions, capacities, performance curves, and all other characteristics and accessories as listed in the contract documents. Descriptive literature shall be current manufacturer's brochures and submittal sheets.
 - b. All shop drawings shall be submitted at one time in a three hole binder with title sheet including Project Title, Architect, Engineer, Contractor, table of contents, and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on drawings. Submittals shall bear the stamp of certification by the Contractor as evidence that the Contract Documents (Specifications and Drawings) have been thoroughly checked.
 - c. All capacities, characteristics, and accessories called for in the specifications or on the drawings shall be high-lighted, circled or underlined on the shop drawings. Data must be complete enough to permit detailed comparison of every significant characteristic which is specified, scheduled or detailed.
2. Review. Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the responsibility of the Contractor to provide all materials, equipment and installation in accordance with the drawings and specifications. The Contractor shall agree that shop drawing submittals processed by the Engineer are not Change Orders; that the purpose of shop drawing submittals by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept, that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use.
 - a. If deviations, discrepancies or conflicts between shop drawings and design drawings and specifications are discovered either prior to or after shop drawing submittals are processed by the Engineer, the design drawings and specifications shall control and shall be followed. Submittals for products and equipment offered as an alternate to that specified will require, if accepted by the Engineer, resubmission of the Title 24 Energy Compliance Calculations if the specified product or equipment was included within the scope of the approved calculations on file with the reviewing authority. The cost of preparing resubmission will be the responsibility of the Contractor.

K. OPENINGS, CUTTING AND PATCHING

1. The locations and dimensions for openings through walls, floors, ceilings, foundations, footings, etc. required to accomplish the work under this Specification Division shall be provided under this Division. Except as noted below, the actual openings and the required cutting and patching shall be provided by other Divisions. Coring through existing concrete or masonry walls, floors or asphaltic concrete required to accomplish the work under this Specification Division shall be provided under this Division. Restoration of all surfaces shall be provided by other Divisions.

Cutting or coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Architect and Engineer.

L. DEMOLITION

1. Existing equipment, ducts, piping, valves, fittings, devices, etc., requiring removal shall be removed and delivered to the Owner at a location on the job site to be determined by the Owner. Those items determined by the Owner to be of no value shall become the property of the Contractor and shall be removed from the job site by the Contractor at the Contractor's expense.
2. Existing piping, ducts, and services, etc., requiring capping or plugging shall be capped or plugged below floors, behind walls, above ceilings or above roof unless otherwise noted.

M. EXCAVATION AND BACKFILLING

1. Excavation and backfilling for work to be done under this Specification Section shall be done under this Section. All underground lines outside buildings shall be 2'-0" minimum backfill cover unless a greater depth of cover is recommended by the pipe manufacturer for the particular application. Width at top of pipe shall be 16" plus the outside width of pipe. Provide all shoring where required by site conditions.
2. Backfill
 - a. 6" Below, Around, and to 12" Above Pipe. Material shall be sand. Place Carefully around and on top of pipe, taking care not to disturb piping, consolidate with vibrator.
 - b. One Foot Above Pipe to Grade. Material shall be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to review by Engineer.
3. Compaction. Compact to density of 95% within building and under walkways, driveways, traffic areas, paved areas, etc. and to 90% elsewhere. Demonstrate proper compaction by testing at 8" above top of pipe. Perform test at every 100' of trench. If a test fails, the compaction shall be re-worked in both directions back to test points that passed, before re-testing.
4. Electrical conduit shall not be run in excavations provided for mechanical systems.
5. Excavation and backfilling in a public right-of-way shall be done in strict accordance with the agency having jurisdiction.

N. HANGERS AND SUPPORTS.

1. Provide all hangers, bracing, and supports for the proper installation of equipment and materials under this Section of the Specification.
2. Any structural element required to properly hang or support piping, ducts, or equipment, etc., provided under this Specification Section and not shown on the Architectural or Structural Drawings shall be provided under this Specification Section.
3. Hangers for ducts less than six sq. ft. in cross sectional area shall have hangers per SMACNA Duct Construction Standards, (current) Edition.
4. All plumbing piping shall be supported and seismically braced in compliance with HCAI (OSHPD) Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Industries Seismic Restraint System". or other OSHPD pre-approved system. Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.

O. FLASHING

1. Whenever any part of the Plumbing System(s) must penetrate the roof or outside wall, the openings shall be flashed and counter-flashed absolutely water tight with minimum 22 gauge galvanized sheet metal, prime coated. Flashing aprons shall extend not less than eight inches (8") from the pipe or supporting member in all directions unless detailed otherwise. All penetrations shall be flashed following the procedures of the National Roofing Contractor's Association

P. PAINTING

1. Paint all black iron supports, hangers, anchors, etc., and all uninsulated black iron pipe work installed in weather exposed locations with one coat of rust resisting primer.

Q. CONTINUITY OF SERVICES

1. All existing services and systems shall be maintained except for short intervals when connections are to be made. The contractor shall be responsible for any interruptions of services and shall repair damage done to any existing service caused by the work.
2. If utilities not indicated on the drawings are uncovered during excavation, the Contractor shall notify the architect immediately for further instructions.

R. DEFINITIONS

1. Provide. The term "provide" as used in these specifications or on the Drawing shall mean furnish and install.
2. Piping. The term "piping" as used in these Specifications or on the Drawings shall mean all pipe, fittings, nipples, valves, unions, hangers, and thermal insulation, etc., as may be required for a complete and functional system.
3. Wiring. The term "wiring" shall include the provision of all necessary products which are required for a complete installation and shall include products such as conduit, electrical boxes, connections, transformers, relays and switches.

S. PAINTING

1. Paint all black iron supports, hangers, anchors, etc., and all uninsulated black iron pipe work installed in weather exposed locations with one coat of rust resisting primer.

T. ACCESS DOORS AND PANELS

1. Provide access doors as required where equipment, piping, valves, ductwork, etc. are not otherwise accessible. Access doors shall match the wall or ceiling finish and fire rating as indicated on the Architectural drawings or as required to match wall construction. 16-gauge steel frame and 14-gauge steel panel with paintable finish, except in ceramic tile, where panel shall be 16-gauge stainless steel with satin finish. Continuous hinge. Screwdriver latch. Deliver panels to the Prime Contractor for installation. Provide Zurn Z-1460-4 for square doors and Z-1460-5 for rectangular doors, Karp, or equivalent. Unless otherwise noted, the minimum sizes shall be as follows:

a. 1 valve up to 1-1/2"	12"x12"
b. 1 valve up to 3"	16"x16"
c. Fire damper, VAV box, coil	16"x16"

U. SYSTEM IDENTIFICATION

1. Above Grade Piping. Provide markers on piping which is either exposed or concealed in accessible spaces. For piping systems, other than drain and vent lines, indicate the fluid conveyed or its abbreviation, by stenciled marking or decals, and include arrows to indicated

direction of flow. Locate markers at end of lines, near major branches and other interruptions including equipment in the line, where lines pass through floors, walls or ceilings or otherwise pass into inaccessible spaces, and at 50' maximum intervals along exposed portions of lines. Marking of short branches and repetitive branches of equipment connections are not required. Decals pasted, glued, or adhered to piping or insulation shall be Seton "Setmark", or equivalent. Decals or stencils shall be applied after the painting of all piping systems is complete and after preliminary acceptance of piping system. Decals and stencils shall comply with ANSI and OSHA specifications with respect to marker size, color, and legend.

V. PROJECT CLOSE-OUT

1. Record Drawings
 - a. Provide in accordance with general conditions of the specifications.
2. Operation and Maintenance Manual for Mechanical Systems
 - a. Provide three (3) copies of Operation and Maintenance Manuals to the Engineer for review and acceptance. Provide the Owner's designated representative with one copy of the approved O & M manual. Bind Operation and Maintenance Manuals for each Mechanical System (Plumbing, Air Conditioning, etc.) in a hard-backed binder. Cover of each binder shall have the following lettering:

OPERATION
AND
MAINTENANCE
MANUAL
(project site name)
(project site address)
BAKERSFIELD CITY SCHOOL DISTRICT
BAKERSFIELD, CALIFORNIA

Provide a transmittal letter at the beginning of the manual on the Contractor's letterhead. Letter shall be signed by a contractor principal (Owner or Corporate Officer) and shall be countersigned by the Owner's designated representative and shall indicate the date when the mechanical systems were shown and explained in detail to the Owner's designated representative. (The Engineers office shall be notified 48 hours minimum prior to the owner-contractor meeting.)

Provide a master index at the beginning of Manual showing items included. Use plastic tab indexes for the sections of the Manual.

Section 1, General. Provide:

Name of Architect, Mechanical Engineer, Contractor and Mechanical Sub-Contractor.

A complete list of installed equipment with project mark number, indicating name of vendor, address and phone number.

A sub-section with manufacturer's descriptive literature for each item of installed equipment with model, capacities, and all other pertinent information highlighted.

Section 2, Operating instructions. Provide:

General description of each separate system and sub-system.

Step by step procedure to follow in putting each piece of mechanical equipment into operation. Start-up sheets must be signed by the owner of the installing contractor certifying that the start-up has been completed per manufacturer's written instruction.

Schematic as-built control diagrams for each separate system. Diagrams shall bear the date of the acceptance of the project. Include all temperature control panels and their respective functions.

Section 3, Maintenance Instructions. Provide:

Summary list of mechanical equipment used indicating name, model, serial number, and nameplate date of each item together with number and name associated with each system item.

Manufacturer's maintenance instructions for each piece of mechanical equipment installed in project. Instructions shall include name of vendor, installation instructions, parts numbers and lists, operation instructions of equipment and maintenance and lubrication instructions.

Section 4, Warranties. Provide:

A copy of each manufacturer's warranty statement, completely filled out and indicating date forwarded to the respective manufacturer.

PART 2 MATERIALS

A. PIPING

1. Domestic Cold Water
 - a. Inside Building, Above Grade or Slab
 - i. Type "L" hard drawn copper tubing with wrought copper solder joint fittings, NIBCO, ANACONDA, or acceptable equivalent. Joints shall be made with 95.5 solder, such as Silavoy Streamline 122, Silvabrite 100 or acceptable "lead free" equivalent. Pipe to be reamed to full bore, de-burred, and joint area cleaned with a Trisodiumphosphate solution prior to joining.
 - ii. Where allowed under local and state building codes: Pro-Press pipe joining system for copper piping.
 - b. Outside Building, Below Grade, Slab, and Paved Areas.
 - i. Schedule 40 galvanized steel with galvanized malleable iron banded 150 lb. fittings. Pipe shall be protected as specified elsewhere in this section.
 - ii. Polyvinylchloride (PVC) pressure rated Schedule 40, ASTM D 2241, with rubber rings, ASTM D 1869. Piping shall be equivalent to Johns-Manville "Ring-Tite" and shall be installed in strict compliance with Manufacturer's Installation Guide. Where sizes shown are smaller than those available with "Ring-Tite" pipe, use schedule 80 PVC glued pipe and fittings. Piping option only where local codes allow its use.
 - iii. Type "K" hard drawn. All else per copper specification above.
2. Domestic Hot Water.
 - a. Inside Building, Above grade or slab

- i. Same as Cold Water Piping - Inside Building.
- 3. Soil Waste and Vent Piping
 - a. Inside Building and Within 5 Feet of Building Wall
 - i. Coated standard weight cast iron pipe and fittings, CISPI Standard 301 and ASTM A-888. Joints shall be ABL "No-Hub" stainless steel band, mechanically assembled (no welds), conforming to ASTM C564.
 - ii. Vent piping and waste piping above floor 2-1/2" diameter maximum may be standard weight galvanized steel pipe.
 - b. Outside Building
 - i. Johns-Manville ring-tite, or equivalent, polyvinylchloride (PVC) gravity pipe, where permitted by local codes, complying with ASTM 03034-SDR 35 with joints using flexible elastomeric seals meeting requirements of ASTM D-3212.
- 4. Condensate Drains
 - a. Type "L" hard drawn copper tubing with wrought copper solder joint fittings. All changes in direction of condensate drain shall be accomplished with plugged tees. Drains shall be extended as indicated on drawings or to nearest acceptable fixture or vent if not indicated.
- 5. Exposed Pipe at Fixtures
 - a. Chrome plated red brass pipe, iron pipe size, with threaded cast bronze chromium plated couplings and fittings. Any pipe required to extend from finish wall into exposed view within Toilet Rooms shall be chrome plated.
- 6. Piping Protective Wrap
 - a. All galvanized or black steel piping buried below grade shall be factory coated with Scotchkote 101 Epoxy Resin as manufactured by 3M Company, or "X-tru-Coat" as manufactured by Pipe Line Service Corp. Field joints shall be wrapped by Scotchrap #50 or coated with Scotchkote 302 as recommended by manufacturer. In lieu of above, pipe may be machine-wrapped with Scotchrap #51. 50% lapped with joints per above.
 - b. Provide a continuous test of all pipe covering, including field joints, prior to backfilling. This test shall be made using a "Holiday Detector" as manufactured by Tinker and Rascor Co., or approved equal. Test at an electrical voltage of 10,000 volts D.C.. Any wrap holiday found shall be patched and retested. This test shall be done in the presence of the owner's inspector

B. Valves

- 1. General
 - a. Manufacturer's model numbers are listed to complete description. Equivalent models of Crane, Grinnell, Nibco, or Stockham are acceptable. Use ball valves for 1-1/2" and smaller domestic hot and cold water, and gate valves for 2" and larger size.
- 2. Gate Valve
 - a. 2" and Smaller. All bronze, Malleable iron hand wheel, Rising stem, Union bonnet, Wedge disc, 200 psi WOG, Stockham B-105.
 - b. 2-1/2" and Larger. Iron body, bronze mounted, Non-rising stem, Wedge disc, 200 psi WOG, Flanged or AWWA hub end as applicable. Stockham G-612. Underground valves shall have square operating nut. Provide one operating "T" handle for underground valves.
- 3. Check Valves
 - a. 2" and Smaller. All bronze swing check, regrinding. 200 psi WOG. Stockham B-319.
 - b. 2-1/2" and Larger. Swing check, iron body, brass mounted seats, Class 125. Stockham G-931.
- 4. Ball Valve.
 - a. Bronze body, cap, stem, disk and ball. Screwed connection. Lever handle TFE seat. O-ring seals. 600 psi WOG. Consolidated Brass "Apollo", Grinnell,

C. Insulation

- 1. General
 - a. All insulation shall comply with the requirements per the California Building energy Efficiency standards, Title 24. Refer to Table 120.3-A, Pipe Insulation Thickness
 - b. All insulation shall be provided in accordance with the "National Insulation Contractors Association" manuals. Insulation shall be applied by a contractor holding a valid California C-2 License.

- c. All insulation jackets and lapsal adhesives shall be tested as a composite product in accordance with UBC Standard No. 42-1 and shall have a flame spread of not more than 25 and a smoke developed rating of not more than 50.
 - d. All domestic hot water piping, fittings and accessories shall be insulated. All circulating piping shall be insulated. Cold water piping in ventilated attic shall be insulated.
- 2. Interior Piping, Fittings and Valves
 - a. Shall be insulated with 1" thick Fiberglass ASJ/SSL U.L. rated pipe insulation through 1" diameter pipe, 1-1/2" thick for 1-1/4" diameter pipe and above. Fittings shall be hard molded plastic flush. Do not insulate flanges or valves unless water temperature exceeds 140°F or the piping is exposed to weather.
- 3. Piping Exposed to Weather or View
 - a. All piping and fittings exposed to weather shall have, in addition to the above-described insulation, aluminum jacketing. 0.016" thickness for straight pipe. 0.024" thickness for fittings. Integral moisture barrier. Provide pre-fabricated aluminum strapping and seals by same manufacturer, "Childers" or equal. Secure in place with factory supplied straps. Install all joints to prevent water entry. All joints shall be sealed with outdoor mastic. Benjamin Foster 65-07 or equal.
 - b. For Miscellaneous fittings for which aluminum jackets are not available or where proximity of fittings precludes a neat-appearing installation, the Contractor may cover the insulation with stretchable glass fabric and at least two coats of outdoor mastic.
 - c. Additional Finish for Exposed Piping and Equipment: All piping and equipment exposed to view but protected from the weather such as in equipment rooms shall be given an additional finish of PVC jackets.
- 4. Hot Water Supply/Drain Piping and Handicap Fixtures "Handi Lav-Guard" insulating kits by Truebro, Inc., or "Trap Wrap" as manufactured by Brocar Industries. Pre-formed insulation and materials to cover hot water, cold water, and drain piping. Must conform to ADA and California codes. Pressure sensitive expanded poly foam tape will not be accepted.

D. Cleanouts

- 1. Style shall be ZURN as follows (equivalent models of Smith are acceptable):
 - a. For vinyl tile use #ZN-1400-6
 - b. For carpeted areas use #ZN-1400-14
 - c. For terrazzo areas use #ZN-1400-10
 - d. For ceramic tile or finished concrete use #ZN-1420-2
 - e. Grade cleanouts (Non-Traffic areas) use #ZN-1400-25
 - f. Grade cleanouts (Traffic areas) use #ZN-146-15W/Z-1450-8
 - g. For wall cleanouts use #ZN-1460-8
- 2. Cleanout Box.
 - a. Precast reinforced concrete. Cast iron lid marked for service.

E. Fixtures and Trim

- 1. General
 - a. Provide Rough-in for and install all plumbing fixtures shown on drawings. All trim not concealed shall be brass with polished chrome plate finish unless noted otherwise. Waste shall be chrome plated 17 gauge P-trap shall have clean-out and escutcheon at tailpiece. All enameled fixtures to be acid resisting. Standard color is white unless otherwise noted.
 - b. All drinking water faucet products shall be certified to NSF Standard 61 section 9 Drinking Water Components. The brass casting shall contain no more than two tenths of one percent lead by dry weight.
 - c. Other brass components which contact water within the faucet shall be from brass which contains no more than three percent lead by dry weight. All faucets exempt from NSF Standard 61 Section 9 shall meet the same lead content criteria.
- 2. Supplies

- a. Standard compression stop, straight pattern, loose key, chromium plated with stuffing box.
 - b. All exposed fixture supplies to lavatories, sink-sand water closets shall be Brass-Craft "Speedway" flexible supplies with metal compression ring connection at all stops or fittings as designated by part number, and shall have a rigid metal to metal connection to fixture valves. For lavatories & sinks use STR 1715A and for tank-type water closets use STR 1712DL.
3. Air Chambers
- a. Zurn Z-1700 "Shoktrol" complete with shut-off valve on branch to air chamber and screwdriver stop stainless steel access panel. Provide where noted on drawings and upstream at every quick-closing manual, solenoid or flush valve. Install per manufacturers instructions locating chamber between the last two fixtures on a 20' or shorter header, or use (2) chambers (calculated for the total fixture unit count) for headers over 20' in length with locations in the middle and between the last two fixtures on the header.

F. Backflow Preventers

- 1. General
 - a. Backflow preventers shall be provided on building domestic water service as may be required by the local utility and shall also be provided in all branch lines serving any new or existing boiler, cooling tower, evap. condenser or other device requiring chemical water treatment.
- 2. Reduced Pressure Type: Two spring loaded "Y" pattern check valves, differential relief valve mechanism, inlet and outlet shut-off valves, and four test clocks. Approved by AWWA. Febco, Beeco, or equivalent.
- 3. Double Check Type: Two spring loaded "Y" pattern check valves, inlet and outlet shut-off valves, and four test clocks. Approved by AWWA. Febco, Beeco, or equivalent.
- 4. Pressure Type Vacuum Breaker: Spring loaded check valve assembly, air inlet port and poppet, inlet and outlet shut-off valves, and two test cocks. Febco, Beeco or equivalent.
- 5. Domestic Water Heater Expansion Tank: Provide expansion tank on cold water supply to any water heater if backflow prevention is required at site water connection. "Amtrol" ST series sized per manufacturer's recommendations.

G. Strainers

- 1. Threaded strainers are to be of the gasketed capped cover extra heavy iron body type - Similar to Mueller Fig. #11. Provide gate valve and pipe nipple with 3/4" hose connection on each strainer for blow-off.

H. Floor, Ceiling, and Wall Plates

- 1. Beaton and Cadwell No. 10, steel flange with locking device and polished chromium plated finish. Provide plates on any finished surface through which pipe passes.

I. Insulating Fitting

- 1. Epco dielectric unions with Epconite insulating gasket selected for applicable duty. Provide wherever pipes of different metals are joined.

J. Pipe Markers

- 1. One inch (1") high minimum, stenciled letters, located every 6'-0". Markers shall indicate piping service such as domestic cold water supply, etc., and shall have directional flow arrow at each location of stenciled letters. Decals pasted, glued, or adhered to piping or insulation are not acceptable unless decal wraps entirely around pipe or insulation such as Seton "Set mark", or

equivalent. Decals shall be applied after painting of all piping systems is complete and after preliminary acceptance of piping system. Decals shall comply with ANSI and OSHA specifications with respect to marker size, color, and legend

K. Union

1. 2" and smaller - AAR malleable iron, bronze to iron ground seat. 30 psi. Size 2-1/2" and larger - Grooved pipe, synthetic gasket, malleable iron housing. Victaulic Style 77, Type "E" gasket, Grinnell.

L. Pipe Hangers and Supports

1. General
 - a. All plumbing piping shall be supported and seismically braced in compliance with the OSHPD Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Industries Seismic Restraint System". Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.
2. Steel pipe and Cast Iron Soil Pipe
 - a. 1/2" through 4" pipe. Provide B-line B3690 J-style hanger, with standard electro-plated finish.
 - b. 5" and larger pipe. B-line B3100 Clevis-Style pipe hanger with standard electro-plated finish.
3. Copper Tubing
 - a. Provide B-line B3690F felt-lined hanger for copper tubing with standard electro-plated finish.
4. Insulated Pipe & Tubing
 - a. Provide B-line B3380 thru B3384 360° calcium silicate shield. The hanger and shield shall be fitted to the outside of the pipe insulation.
5. Cast Iron Pressure Piping
 - a. Provide B-line B3102 Clevis-Type hangers sized for water works piping.
6. Hanger Rod Sizing
 - a. Hanger rods shall be roll threaded mild steel with electro-galvanized finish and shall meet or exceed the following table:

Piping or Tubing Size	Hanger Rod Size
1/2" through 2"	3/8"
2-1/2" through 5"	1/2"
6" through 10"	5/8"

7. Hanger Spacing
 - a. Provide at least one hanger per branch and independently support all line-mounted equipment. Provide a hanger within 12" of elbow at riser or drop. Spacing of hangers along the run of the pipe shall not exceed the following table:

Pipe or Tubing Size	Steel Pipe	Copper Tube	CI Pipe
1/2" through 3/4"	7'-0"	5'-0"	5'-0"
1" through 1-1/4"	7'-0"	6'-0"	5'-0"
1-1/2" through larger	10'-0"	10'-0"	5'-0"

8. Trapeze Hangers
 - a. Trapeze hangers shall be fabricated from galvanized channel. Stress on the installed channel shall not exceed 25,000 psi. Deflection on the installed channel shall not be greater than 1/240th of the span length. For load calculations, all piping to be assumed to be water-filled unless handling a heavier liquid. Hanger rods for trapeze

hangers shall be limited to 9,000 psi stress based on the area at the root of the threads. Minimum hanger rod size shall be 3/8"

M. Flashings

1. Vent flashing shall be 4 lb. seamless lead, 16" sq. flange, length sufficient to be turned down 2" into vent. Oatey. Provide 24"x24" 4 lb. lead flashing at each roof drain. Flashing for other piping through roof shall be prefabricated galvanized steel roof-jacks with 16" sq. flange. Provide storm collar and seal water tight with mastic

N. Yard Boxes and Covers

1. One piece precast concrete with cast iron cover labeled "Sewer", "Gas", "Water", etc., as required. Provide traffic weight cover in traffic areas. Provide 6" minimum length "Thinwall" series 2000 6" diameter pipe extension to valves installed deeper than boxes. Install in workman like manner. Multiple boxes located on same centerline parallel to building exterior wall. Provide 6" concrete apron in non-paved areas.

PART 3 EQUIPMENT

A. General Requirements

1. Capacity. Capacities and efficiencies shall be in accordance with schedules shown on drawings. Scheduled numbers are to be considered minimum.
2. Dimensions. Equipment must conform to space requirements and limitations indicated on drawings and as required for operation and maintenance. Equipment that does not readily conform to space conditions is unacceptable. Prepare and submit layout drawings for all proposed equipment substitutes showing actual job conditions, required clearances for proper operation, maintenance, etc.

PART 4 INSTALLATION

A. Equipment Connections

1. Water and drain connections shall be provided for each piece of equipment as required. Provide shut- off valve or fixture stop for each water supply to each piece of equipment whether or not equipment is furnished in this Specification Section.
2. Provide a backflow preventer at each connection to equipment as required by code whether or not equipment is provided in this specification section.
3. Provide a regulating valve at drinking fountain supplies. Valve, supply piping, and electrical connector shall be installed so as not to be visible.
4. Ratings
 - a. Gas. Natural gas burning equipment shall be furnished with 100% safety gas shut-off, intermittent pilot ignition, and be approved by AGA.
 - b. Electrical. Equipment shall be in accordance with NEMA standards and U.L. listed where applicable standards have been established.
5. Piping.
 - a. Each item or assembly of items shall be furnished completely piped for connection to services. Control valves and devices shall be furnished, installed, and wired except where noted by others on drawings

B. Fixtures

1. Piping beyond finished wall at each fixture shall be chrome plated.

2. All piping supporting flush valves, hose bibbs, etc., shall be securely fastened to the building structure at each device to prevent movement of piping. All supplies to individual and/or adjacent fixtures shall be at same height and on center line of waste insofar as possible. Fixture height shall be as indicated on architectural drawings
3. Wall hung fixtures shall have space between fixture and wall surface caulked with white silicone caulk.
4. Rough-in and connection for trim and other fixtures supplied by others shall be included in this specification section.
5. Where aerators are scheduled for the various fixtures, provide Chicago "Lam-A-Flo" Laminar flow controls.
6. Floor Drains or Floor Sinks shall be placed parallel to room surfaces, set level, flush with floor and adjusted to proper height to drain. Cover openings during construction to keep all foreign matter out of drain line.

C. Piping

1. Constantly coordinate work with that of other trades so as to prevent any interference with this installation.
2. Install cleanouts at ends of sewer lines, at changes of direction greater than 45 degrees, and at not greater than 100 foot intervals. Locate interior cleanouts in accessible locations and bring flush to finished surface.
3. Vents shall terminate not less than 6" above the roof nor less than 12" from any vertical surface nor within 10' of any outside air intake. Install horizontal vent lines at 1/4" per foot pitch. Offset vents 2' minimum from gutters, parapets, ridges and roof flashing.
4. Condensate Drain Piping shall be installed with constant pitch of 1/8" per foot minimum. Provide tee with clean-out plug at all changes of direction. Provide a trap at each air handling unit to prevent air leakage. Connections to equipment mounted on vibration isolators shall be made with flexible connections.
5. Freeze Protection
 - a. All piping two inch and smaller located outside building and above ground and where exposed to freezing conditions shall be neatly wrapped with refrigerant insulated tape for freeze protection.
6. Sterilization of Piping
 - a. Disinfect all domestic hot and cold water piping systems in accordance with 2013 CPC 609.9, "Standard for Disinfecting Water Mains". Disinfecting process shall be performed by contractor and witnessed by a representative of the Engineer. During procedure signs shall be posted at each water outlet stating, "Chlorinating - Do not drink". After disinfecting, water samples shall be collected and sent to an independent lab for bacteriological analysis. Certificate of Bacteriological Purity shall be obtained from lab and delivered to the Owner through the Engineer.
7. Tests and Adjustments
 - a. Sanitary Sewer. All ends of the sanitary sewer system shall be capped and lines filled with water to the top of the highest vent, 10' above grade minimum. This test shall be made before any fixtures are installed. Test shall be maintained until all joints have been inspected, but no less than 2 hours. Grade tests will be allowed on "ring-tite" PVC pipe.
 - b. Condensate Drain. Similar to Sanitary Sewer.
 - c. Domestic Hot and Cold Water Piping: Maintain 100 psig water pressure for 4 hours.

END OF SECTION

10/11/2022

HEATING, VENTILATING & AIR CONDITIONING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 – GENERAL

A. DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

B. SCOPE.

1. Work Included. Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
 - a. Demolition as indicated on drawings and / or as required based on field conditions.
 - b. Air distribution systems.
 - c. All equipment as shown or noted on the drawings or as specified.
 - d. System energy balance.
 - e. HVAC controls based on Pelican wireless. See plans for details.
 - f. Start-up and commissioning of systems.
 - g. Acceptance testing in accordance with California Energy Regulations.

C. CODES AND STANDARDS

1. All work and materials shall conform with current rules and regulations of applicable codes. Nothing in these Drawings or Specifications is to be construed to permit work not conforming to these codes. Should the Drawings or Specifications call for material or methods of construction of a higher quality or standard than required by these codes, the Drawings and Specifications shall govern.
 - a. Applicable codes and standards shall include but are not necessarily limited to:
 - i. California Code Of Regulations:
 1. Title 8, Industrial Relations
 2. Title 17, Public Health
 3. Title 19, Public Safety

- 4. Title 21, Public Works
- 5. Title 24, Energy Regulations

- ii. California Building Code.
- iii. California Mechanical Code
- iv. California Plumbing Code
- v. Local Codes and Ordinances
- vi. Air Moving and Conditioning Association (AMCA)
- vii. American National Standards Institute (ANSI)
- viii. Air Conditioning and Refrigeration Institute (ARI)
- ix. American Society of Heating, Refrigerating, and Air Conditioning Engineers
- x. American Society of Mechanical Engineers (ASME)
- xi. American Society for Testing and Materials (ASTM)
- xii. American Water Works Association (AWWA)
- xiii. National Electrical Code (NEC)
- xiv. National Electrical Manufacturers Association (NEMA)
- xv. National Fire Protection Association (NFPA)
- xvi. Occupational Safety and Health Act (OSHA)
- xvii. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- xviii. Americans with Disabilities Act. Accessibility Guidelines for Buildings and Facilities. (ADAAG).

D. PERMITS AND FEES

- 1. The Contractor shall take out all permits and arrange for all tests in connection with such work as required. All charges are to be included in the work. All charges or fees for service connections, meters, etc., shall be included in the work.

E. COORDINATION OF WORK

1. Before starting any work, thoroughly examine all existing and newly completed underlying and adjoining work and conditions upon which the installation of this work is in any way dependent for the workmanship required by the Contract Documents. Report to the Architect and Engineer in writing any and all conditions which might adversely affect this work and limit ability to perform the required workmanship.
2. Layout of materials, equipment and systems is generally diagrammatic unless specifically dimensioned. The actual locations of all materials, piping, ductwork, fixtures, equipment, supports, etc., shall be carefully planned, prior to installation of any work, to avoid all interference's with each other, or with structural, electrical or architectural elements. Verify the proper voltage and phase of all equipment with the electrical plans. All conflicts shall be called to the attention of the Engineer prior to the installation of any work or the ordering of any equipment.
3. Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate the mechanical, electrical, structural, architectural drawings and field conditions that could affect the work to be performed and arrange such work accordingly. Provide the required piping and ductwork offsets, fittings, and accessories to meet such conditions.
4. Spaces provided in the design of the building shall be utilized and the work shall be kept within walls or furring lines established on the drawings. Any discrepancy between Architectural or Mechanical drawings with respect to wall or furring locations and dimensions shall be brought to the Architect's attention for resolution before proceeding with installation.
5. Any work which is done as an addition, expansion, or remodel of an existing system shall be compatible with that system.

F. MANUFACTURER'S RECOMMENDATIONS

1. All material, equipment, and devices, etc., shall be installed in a manner meeting approval of the manufacturer of the particular item. The Contractor shall make himself available of all installation manuals, brochures, and procedures that the manufacturer issues for the equipment and material. Contractor shall be held responsible for all installations contrary to the manufacturer's recommendations. Contractor shall make all necessary changes and revisions to achieve such compliance

G. GUARANTEE

1. Guarantee shall be in accordance with the General Conditions. These Specifications may extend the period of the guarantee for certain items. Where such extensions are called for, or where items are normally provided with guarantee periods in excess of

that called for in the General Conditions, the certificate of guarantee shall be furnished to the Owner.

H. QUIETNESS

1. Piping of all types, ductwork, and equipment shall be arranged and supported so that the vibration is at a minimum and is not transmitted to the building structure.

I. DAMAGES BY LEAKS

1. The Contractor shall be responsible for damages caused by leaks in the temporary or permanent piping or mechanical systems prior to completion of work and during the period of the guarantee.

J. SUBMITTALS

1. Shop Drawings. Within 30 days of contract award, the Contractor shall submit six copies of shop drawings for all materials, equipment, etc., proposed for use on this project. Material or equipment shall not be ordered or installed until written review is processed by the Engineer. Any item omitted from the submittal shall be provided as specified without substitution. All shop drawings must comply with the following:
 - a. Shop drawings are required for all material and equipment items and shall include manufacturer's name and catalog numbers, dimensions, capacities, performance curves, and all other characteristics and accessories as listed in the contract documents. Descriptive literature shall be current manufacturer's brochures and submittal sheets.
 - b. All shop drawings shall be submitted at one time in a three hole binder with title sheet including Project Title, Architect, Engineer, Contractor, table of contents, and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on drawings. Submittals shall bear the stamp of certification by the Contractor as evidence that the Contract Documents (Specifications and Drawings) have been thoroughly checked.
 - c. All capacities, characteristics, and accessories called for in the specifications or on the drawings shall be high-lighted, circled or underlined on the shop drawings. Data must be complete enough to permit detailed comparison of every significant characteristic which is specified, scheduled or detailed.
2. Review. Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the

responsibility of the Contractor to provide all materials, equipment and installation in accordance with the drawings and specifications. The Contractor shall agree that shop drawing submittals processed by the Engineer are not Change Orders; that the purpose of shop drawing submittals by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept, that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use.

- a. If deviations, discrepancies or conflicts between shop drawings and design drawings and specifications are discovered either prior to or after shop drawing submittals are processed by the Engineer, the design drawings and specifications shall control and shall be followed. Submittals for products and equipment offered as an alternate to that specified will require, if accepted by the Engineer, resubmission of the Title 24 Energy Compliance Calculations if the specified product or equipment was included within the scope of the approved calculations on file with the reviewing authority. The cost of preparing resubmission will be the responsibility of the Contractor.

K. OPENINGS, CUTTING AND PATCHING

1. The locations and dimensions for openings through walls, floors, ceilings, foundations, footings, etc. required to accomplish the work under this Specification Division shall be provided under this Division. Except as noted below, the actual openings and the required cutting and patching shall be provided by other Divisions. Coring through existing concrete or masonry walls, floors or asphaltic concrete required to accomplish the work under this Specification Division shall be provided under this Division. Restoration of all surfaces shall be provided by other Divisions. Cutting or coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Architect and Engineer.

L. DEMOLITION

1. Existing equipment, ducts, piping, valves, fittings, devices, etc., requiring removal shall be removed and delivered to the Owner at a location on the job site to be determined by the Owner. Those items determined by the Owner to be of no value shall become the property of the Contractor and shall be removed from the job site by the Contractor at the Contractor's expense.
2. Existing piping, ducts, and services, etc., requiring capping or plugging shall be capped or plugged below floors, behind walls, above ceilings or above roof unless otherwise noted.

M. HANGERS AND SUPPORTS.

1. Provide all hangers, bracing, and supports for the proper installation of equipment and materials under this Section of the Specification.
2. Any structural element required to properly hang or support piping, ducts, or equipment, etc., provided under this Specification Section and not shown on the Architectural or Structural Drawings shall be provided under this Specification Section.
3. All ductwork shall be supported and seismically braced in compliance with OSHPD Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Seismic Restraint System" or other OSHPD pre-approved system. Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.

N. CONTINUITY OF SERVICES

1. All existing services and systems shall be maintained except for short intervals when connections are to be made. The contractor shall be responsible for any interruptions of services and shall repair damage done to any existing service caused by the work.
2. If utilities not indicated on the drawings are uncovered during excavation, the Contractor shall notify the architect immediately for further instructions.

O. ELECTRICAL CONNECTIONS

1. Provide under Specification Division 15000 all required control conduit, wiring, controls and control panels as indicated on the drawings or as may be required for system operation.
2. No control device shall be mounted with rigid connections on vibration isolated mechanical equipment. No field furnished control device shall be mounted on any piece of equipment so that it interferes with physical access of air or water flow, or covers any portions of nameplates or access doors.
3. Electrical Coordination
 - a. Prior to commencing construction arrange a conference with the electrical and mechanical trades as well as equipment suppliers and verify types, sizes, locations, voltage requirements, controls and diagrams of all equipment furnished by them. In writing, inform the Architect that all phases of coordination of this equipment have been covered and if there are any unusual conditions or problems they shall be enumerated at this time.

P. FLASHING

1. Whenever any part of the Mechanical System(s) must penetrate the roof or outside wall, the openings shall be flashed and counter-flashed absolutely water tight with minimum 22 gauge galvanized sheet metal, prime coated. Flashing aprons shall extend not less than eight inches (8") from the duct, pipe, or supporting member in all directions unless detailed otherwise. All penetrations shall be flashed following the procedures of the National Roofing Contractor's Association

Q. PAINTING

1. Paint all black iron supports, hangers, anchors, etc., and all uninsulated black iron pipe work installed in weather exposed locations with one coat of rust resisting primer.

R. SYSTEM IDENTIFICATION

1. Equipment. All equipment shall be identified with a plastic laminated engraved nameplate which bears the unit number marked as indicated on the drawings (e.g. HP-1) Provide 1/2" high lettering - white on black background. Nameplates shall be permanently secured to the unit.

S. DEFINITIONS

1. Provide. The term "provide" as used in these specifications or on the Drawing shall mean furnish and install.
2. Piping. The term "piping" as used in these Specifications or on the Drawings shall mean all pipe, fittings, nipples, valves, unions, hangers, and thermal insulation, etc., as may be required for a complete and functional system.
3. Ductwork. The terms "duct" or "ductwork" as used in these Specifications or on the drawings shall mean all ducts, fittings, joints, dampers, hangers, and thermal insulation, etc., and other devices as may be required to make a complete and functional system.
4. Wiring. The term "wiring" shall include the provision of all necessary products which are required for a complete installation and shall include products such as conduit, electrical boxes, connections, transformers, relays and switches.

T. PROJECT CLOSE-OUT

1. Record Drawings
 - a. Provide in accordance with general conditions of the specifications.

2. Operation and Maintenance Manual for Mechanical Systems

- a. Provide three (3) copies of Operation and Maintenance Manuals to the Engineer for review and acceptance. Provide the Owner's designated representative with one copy of the approved O & M manual. Bind Operation and Maintenance Manuals for each Mechanical System (Plumbing, Air Conditioning, etc.) in a hard-backed binder. Cover of each binder shall have the following lettering:

OPERATION
AND
MAINTENANCE
MANUAL
(project site name)
(project site address)
BAKERSFIELD CITY SCHOOL DISTRICT
BAKERSFIELD, CALIFORNIA

Provide a transmittal letter at the beginning of the manual on the Contractor's letterhead. Letter shall be signed by a contractor principal (Owner or Corporate Officer) and shall be countersigned by the Owner's designated representative and shall indicate the date when the mechanical systems were shown and explained in detail to the Owner's designated representative. (The Engineers office shall be notified 48 hours minimum prior to the owner-contractor meeting.)

Provide a master index at the beginning of Manual showing items included. Use plastic tab indexes for the sections of the Manual.

Section 1, General. Provide:

Name of Architect, Mechanical Engineer, Contractor and Mechanical Sub-Contractor.

A complete list of installed equipment with project mark number, indicating name of vendor, address and phone number.

A sub-section with manufacturer's descriptive literature for each item of installed equipment with model, capacities, and all other pertinent information highlighted.

Section 2, Operating instructions. Provide:

General description of each separate system and sub-system.

Step by step procedure to follow in putting each piece of mechanical equipment into operation. Start-up sheets must be signed by the owner of the installing contractor certifying that the start-up has been completed per manufacturer's written instruction.

Schematic as-built control diagrams for each separate system. Diagrams shall bear the date of the acceptance of the project. Include all temperature control panels and their respective functions.

Section 3, Maintenance Instructions. Provide:

Summary list of mechanical equipment used indicating name, model, serial number, and nameplate date of each item together with number and name associated with each system item.

Manufacturer's maintenance instructions for each piece of mechanical equipment installed in project. Instructions shall include name of vendor, installation instructions, parts numbers and lists, operation instructions of equipment and maintenance and lubrication instructions.

Section 4, Air Conditioning System Balance and Test Run Reports. Provide:

One-half size reproduction of air conditioning plans annotated to match tabulated measurements.

Tabulated and summarized measurements.

Section 5, Warranties. Provide:

A copy of each manufacturer's warranty statement, completely filled out and indicating date forwarded to the respective manufacturer.

PART 2 - MATERIALS.

A. Ductwork.

1. General.

- a. Construct ductwork to meet all functional criteria defined in section VII, of the SMACNA "HVAC Duct Construction Standards Metal and Flexible". This shall subsequently be referred to as the SMACNA manual.

- b. Interior ducts shall be constructed with G-60 or better galvanized steel (ASTM 527) LFQ, chem treat. Exterior ductwork or any duct exposed to high humidity conditions (i.e. dishwasher exhaust) shall be G-90 or better.
 - c. Support, access doors not part of ducts, bar or angle reinforcing damper rods and items made of uncoated mild steel shall be painted with two coats of two coats primer or provide galvanized equivalent.
2. Rectangular Ducts.
- a. Construct ductwork and supports to meet all functional criteria defined in section VII, of the SMACNA "HVAC Duct Construction Standards Metal and Flexible" 2005 Edition. Hanger spacing shall not exceed 8'.
3. Ells. Rectangular ells of ninety degrees shall be mitered and fitted with AERO/DYNE, "HEP" or equivalent, adjustable turning vane of airfoil contour design. Side rails shall be installed so that vane at heel of elbow shall fit snugly without air passing on the back side. Spacing of vanes according to manufacturers recommendations.
4. Round Ducts.
- a. Galvanized.
 - i. Spiral lockseam with standing rib duct. For round ducts, 8" diameter or less, provide Noll or Young and company snap-lock galvanized steel.
 - ii. Round elbows shall be pleated or welded gore (5 piece ells). Non-welded gore elbows for use with snap lock ducts shall be taped at gore intersections.
5. Duct Joints.
- a. Rectangular. All ducts shall utilize "Ductmate 25/35" factory fabricated duct joint connectors with #440 gasket tape. Flanged interior gaskets shall be Ductmate #440 or Butyl Rubber Gasket which meets Mil-C 18969B, Type II Class B, and TTS-S-001657 must also pass UL-723. The material must not contain any vehicle that will support fungal or bacterial growth. Formed on flanges shall not be accepted for any duct exceeding 42" in width or any duct subjected to greater than 2" W.G..
 - b. Round. All round ducts shall utilize male-female slip joints with minimum three (3) sheet metal screws. 0-20" ducts shall utilize sealing compound applied continuously around joint before assembling and after fastening. Wrap joints with 3" wide duct tape. 21" – 72" ducts, use 3-piece, gasketed, flanged joints

consisting of two internal flanges (with integral mastic sealant), and one external closure band. Ductmate Spiralmate or equal.

6. Sealing.

- a. Interior to Building - Hardcast fiber tape and liquid adhesive. DT-5300 or DT-540 tape. FTA-20 adhesive. Ductmate PROseal.
- b. Exterior to Building - For joints exposed to weather, sealant shall be G.E. silicone. For joints not exposed to weather, sealant shall be Eco-Duct Seal 44-60, or United Sheet Metal.
- c. Exposed Ducts. All joints shall use Hardcast Galva-Grip or equivalent. Joint shall be finished clean from outward appearance.

7. Flexible Insulated Ducts.

- a. Shall be J.P. Lamborn Company Type AMF or Thermoflex M-KE acoustical low pressure duct. Duct shall be listed and labeled UL-181 Air Duct; meet NFPA-HUD minimum standards and comply with UMC 6. Duct factory R-value 4.2 minimum. In un-conditioned spaces, R-8 minimum.
- b. Hangers shall consist of minimum 3" wide 28 gauge galvanized steel and shall be spaced a maximum of 36" on center. Flexible duct shall be installed in compliance with the manufacturer's latest installation instructions. No kinks or sharp bends allowed. Turning radius shall be a minimum of 1.5 times diameter of duct. A copy of which shall be at the site during and after installation. Provide a minimum of at least one hanger per duct section.
- c. Connections to round ducts or collars shall be made with galvanized or stainless steel worm clamps or "Panduit" adjustable clamps listed by UL-181.
- d. Unless indicated otherwise on the drawings, flexible duct shall be limited to the final 5 foot portion of the duct system connecting to the supply diffuser or return grille. Flex duct shall be limited to factory cut pieces with factory applied end connections.

8. Fire Dampers.

- a. Fire damper assembly shall bear the U.L. 555 Label and the California State Fire Marshall listing number. Provide duct access door to fire damper as required by job conditions in compliance with Title 24, California Mechanical Code. Fire dampers shall be installed in all rated walls and ceilings penetrated by ducts, grilles and diffusers. Fire damper shall have rating equivalent to construction. Dampers shall be installed in strict compliance with manufacturer's installation instructions.

9. Fire/Smoke Dampers.

- a. Damper Assembly shall bear the U.L. 555S Label and State Fire Marshall listing number. Provide access door to smoke damper as required by job conditions in compliance with Title 24, California Mechanical Code. Means of disconnect shall be provided between detector and damper(s), where detector is included as factory mounted and wired. Dampers shall meet most current standard for UL testing. UL555 and UL555S. Dampers shall be suitable for a dynamic system. See details on plans for leakage and velocity requirements. If not listed on plans, provide leakage class I and velocity level at 3,000 FPM.

10. Volume Dampers.

- a. Branch Duct Volume Damper - Volume control damper (VCD) in square or rectangular ducts shall be as follows: Opposed blade, 6" maximum blade width, 16-gauge blade, 48" maximum length, nylon or oil impregnated bronze bearings, 1/2" diameter pin shaft, 16-gauge channel frame, actuating rod out of air stream. VCD in round duct shall be as follows: Damper blade full height of branch and 1" less than branch width. All branch dampers shall have regulator with spring loaded shaft nut and serrated self-locking die cast core. Ventlok 640. Provide remote ceiling operator with chrome plated or painted cover where shown on drawings or where damper control is otherwise inaccessible.

11. Back-draft Dampers.

- a. Unless otherwise noted on drawings: .025 aluminum counter-balanced blades with felt strip on mating edges, and machined brass mounted in six gauge steel channel frame, Pacific Model PRO 1100AI or equal. Normally closed back-draft dampers are required at all roof exhaust fans and all outside air intakes.

12. Duct Fire Caulking.

- a. All ductwork passing through rated assemblies that do not have a fire or fire/smoke damper shall be installed with a U.L. listed fire caulking assembly. Exact details of U.L. listed assembly shall be followed. Provide inspector of record and project engineer submittal showing U.L. listed fire caulking detail that the contractor intends to use for each condition. In lieu of fire caulking, at contractors option, provide fire damper installed in accordance with U.L. listing

13. Filters.

- a. Pre-Filters.
 - i. Minimum of MERV 13 filter, consisting of a nominal 2" thick, pleated type, panel filter, CSFM listed. Initial resistance at 500 feet per minute

face velocity shall not exceed 0.30" w.g. Provide one complete change of all filters after air balance is completed and prior to final acceptance

B. Piping.**1. Refrigerant Piping.**

- a. General. Copper Type "L", hard drawn, ASTM B88 with wrought copper fittings, silver alloy brazed 1100°F., joints, Sil-Fos or equal. Size 3/8" O.D. and smaller to be refrigerant tube ASTM B 280. All elbows to have long radius.

C. INSULATION.

- 1. All insulation shall be in strict compliance with California Building Energy Efficiency Standards, 2019 Edition, Title 24.
- 2. Refer to table 120.3-A for pipe insulation thickness required. This shall be a minimum. If construction documents call for a higher rating, the higher rating shall apply.
- 3. Insulation shall have a flame spread of not more than 25 and a smoke developed rating of not more than 50.
- 4. Ducts.
 - a. General. All supply, return, exhaust ducts and plenums shall be insulated externally and/or lined internally as specified herein or as indicated on the drawings. Ducts in directly or indirectly conditioned spaces shall be insulated to a minimum level of R4.2. Ductwork in unconditioned spaces such as an attic where the roof insulation is at the ceiling level or where located outdoors shall have an insulation level of R8 minimum.
 - b. Ducts in Attics. All supply and return ducts shall be insulated externally with 2" thick fiberglass 3/4# density. Where rectangular ducts are lined internally, they shall be wrapped on the exterior with 1" thick fiberglass, 3/4# minimum density.
 - c. Exposed Ducts Within Conditioned Spaces. Shall not require external insulation unless noted on the drawings.
 - d. Ducts Exposed to Weather. All supply and return ducts shall be lined internally with 2" thick Manville "Permacote Linacoustic" glass fiber and thermosetting resin duct liner, R-8. Provide with antimicrobial edge coating, Johns Manville Superseal Edge Treatment or Superseal HV. Coating edges with adhesive is not acceptable. All field cut edges must be coated prior to delivering duct to job

site. Any lined duct left untreated that has been subjected to dirt and / or dust will be rejected, and will not be accepted for installation. Edges must be treated so that complete coverage is obtained, with no raw edges. Apply as directed by manufacturer's literature.

- e. Interior Duct Surfaces. All supply, return, or exhaust duct connections to air conditioning units or fans shall be internally lined for a minimum distance of ten lineal feet upstream and downstream of fan unless otherwise indicated on the drawings. Interior duct liner where applied for attenuation purposes only shall be 1" thick Manville "Permacote Linacoustic" glass fiber and thermosetting resin duct liner, R-4.2. Provide with antimicrobial edge coating. See paragraph above.
- f. Duct Wrap. Shall be tightly wrapped around ducts to prevent sagging with longitudinal and transverse lap of at least 6". Laps shall be wired or stapled to eliminate gaps. Insulation shall be secured by wrapping with 18 gauge galvanized wire 12 o.c. adhesive. Insulation shall be applied with density identification exposed.
- g. Duct Liner Shall be adhered to clean metal with minimum 100% coverage of adhesive such as 3M Adhesive #38, additionally secured with approved mechanical clips or welded pins per SMACNA standards. Provide with antimicrobial edge coating. Apply per paragraph 2 d) above. Coating edges with adhesive is not acceptable.

5. Piping

- a. Refrigerant. Cover piping with foamed plastic insulation. Longitudinal and end seams shall be thoroughly cemented with adhesive in accordance with manufacturer's recommendations. Cover all fittings, unions, valves and connections. Piping exposed to weather shall be covered with at least two coats of protective finish. Piping exposed to weather shall be Aluma-Clad with .016" jacket.

PART 3- EQUIPMENT.

A. General Requirements

- 1. Start-up. All equipment shall be started and tested in strict accordance with the manufacturer's written instructions. Provide the inspector of record factory start-up literature for each mechanical item. Demonstrate to inspector that strict compliance to the start-up procedure has been completed for each item. Start-up sheets must be completed and turned in with the O&M manuals. Start-up sheets must be signed by the owner of the installing contractor certifying that the start-up has been completed per manufacturer's written instruction.

2. Acceptance Testing. Complete acceptance testing of all systems and equipment as required under the Building Energy Efficiency Standards, 2013 Edition, Title 24. Submit all completed and signed forms to the building department or the Division of the State Architect, where applicable.
3. Capacity. Capacities shall be in accordance with schedules shown on drawings. Capacities are to be considered minimum.
4. Dimensions. Equipment must conform to space requirements and limitations as indicated on drawings and as required for operation and maintenance. Where architectural screening is indicated, equipment shall not extend above or beyond screening. Equipment is not acceptable that does not readily conform with the space conditions. Prepare and submit layout drawings for all proposed equipment (different than scheduled units) showing actual job conditions, required clearances for proper operation, maintenance, etc.
5. Ratings.
 - a. Gas. Natural gas burning equipment shall be furnished with 100% safety gas shut-off, intermittent pilot ignition, and be approved by AGA.
 - b. Electrical. Electrical equipment shall be in accordance with NEMA Standards and UL listed where applicable standards have been established.
6. Piping. Each item or assembly of items shall be furnished completely piped for connection to services. control valves and devices shall be provided. Equipment requiring domestic water for none-potable use shall be provided with backflow preventer acceptable for intended use by local governing authorities.
7. Electrical.
 - a. General. Each item or assembly of items shall be furnished completely wired to individual terminal blocks for connection to single branch electrical circuit. All electrical accessories and controls required by equipment shall be provided. Provide terminal blocks for controls and interlocks not included in equipment package.
 - b. Wiring. Conductors, conduit, and wiring shall be in accordance with Electrical Specifications. Individual items within assembly shall be separately protected with dead front, fused disconnect, fuse block, or circuit breaker for each underground conductor. Switches, contacts and other devices shall be in undergrounded conductors.
 - c. Motors. Shall be rated, constructed and applied in accordance with NEMA and ANSI Standards without using service factor. Single-phase motor shall be of type to suit application. Three- phase motors shall be of type to suit application. Three-phase motors shall be open drip proof, NEMA B design on pumps and fans, NEMA C on reciprocating equipment, sealed ball bearing,

three-phase indication. Insulation shall be double dip and bake with Class F thermal polyester non-hygroscopic epoxy base insulating materials. Design shall limit starting inrush current and running current to values shown on drawings. Motors exposed to weather shall be open drip-proof approved by manufacturer for this type of service. All motors 1 horsepower and larger shall be the high efficiency type with efficiency and power factor equal or exceeding Century E-Plus.

8. Fan Selection.

- a. Fan Curves. Performance curves shall be submitted for all units of 3000 CFM or greater. Operating point for forward curved fans shall be from point of maximum efficiency toward increased CFM limited by horsepower scheduled. Operating point for backward inclined fans shall be selected near point of maximum efficiency. Curves shall plot CFM verses static pressure with constant brake horsepower, RPM and efficiency lines.
- b. Static Pressure. Unless otherwise noted, pressure scheduled as external static pressure (ESP) includes all ductwork and accessory losses external to the unit housing. Unless otherwise noted, pressure scheduled as total static pressure includes all ductwork, filter, coil, cabinet, damper and other accessory losses. Unless otherwise noted, pressure scheduled as duct static pressure includes all supply and return ductwork and accessory losses external to the unit housing and plenum (as applicable). The allowance for filter losses is 0.3" WC, unless otherwise noted. Submit itemized static pressure losses for all components.

9. Screens. All duct or louver openings to the outside shall be covered with 1/4" galvanized screen.

PART 4 - INSTALLATION

A. Ductwork.

1. Installation shall conform with NFPA 90A and SMACNA Low Pressure Duct Construction Standards 2005 Edition. Provide mounting and supporting of Ductwork and accessories including, but not limited to, structural supports, hangers, vibration isolators, stands, clamps and brackets, access doors, and dampers. Install ductwork accessories as indicated in accordance with the manufacturer's printed instruction. Allow clearance for inspection, repair, replacement, and service. Ductwork and accessories shall be installed in a manner to prevent vibration and rattling.
2. Deflectors. Provide in rectangular elbows, duct mounted supply outlets, take-off or extension collars to supply outlets, and tap-in branch take-off connections. 45 degree take-off is an acceptable alternative for low velocity systems (below 1,500 FPM).

3. Grilles. Each air inlet and outlet shall be flush with finished surface of wall or ceiling and shall be securely attached thereto. Provide plaster grounds at locations of all wall and hard surfaced ceiling grilles.
4. Branch Take-Offs. All branch ducts from main supply air and to return air trunk duct shall be provided with splitter blade full height of branch take-off and 1" less than branch width. Regulators to be Young or equal. Dampers located in inaccessible areas shall have extended shafts with concealed regulator in adjacent ceiling or wall.
5. Dampers. Install volume control damper and damper regulator on all branch ducts.
6. Flexible Glass Fiber Duct. The use of flexible duct is limited to the last 5 feet of each branch duct (i.e. one 5 foot section of flexible duct may be used to connect the grille to the sheet metal branch duct). No joints permitted in 5' length. Joints shall be installed with metal bands and fiber tape and adhesive. Minimum turn radius shall be in accordance with SMACNA Standards (turn radius of duct centerline not less than 1.5 times the duct diameter).
7. All [ducts] and [mechanical / plumbing piping] shall be supported and seismically braced in compliance with OSHPD Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Seismic Restraint System" or other OSHPD pre-approved system. Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.

B. Insulation.

1. See materials section of this specification for installation requirements.

C. Equipment Installation.

1. It shall be the responsibility of the equipment installer to ensure that no work done under other specification sections shall in any way block or otherwise hinder the equipment. All equipment shall be securely anchored in place.

D. System Air and Water Balance.

1. General.
 - a. The contractor shall employ the services of an independent system balancing company registered by AABC, NBC, or NEBB. The balancing contractors shall be limited to one of the following:

- i. Air Control Services 515 E. 19th St., Bakersfield, CA 93305 (661) 327-8755
 - ii. Air Control Balancing 1959 N. Gateway #103, Fresno, Ca. 93727 (559) 454-8000
 - iii. American Air Balance 4721 E. Hunter, Anaheim, Ca. 92807 (714) 693-3700
 - iv. Los Angeles Air Balance Co. 1848 W. 11 St., Upland, Ca. 91786 (909) 931-1114
 - v. RS Analysis 111 Natoma Street, Folsom, Ca. 95630 (916) 351-9842
 - vi. National Air Balance 4171 Business Center Drive, Fremont, Ca. 94538 (510) 623-7000
- b. Submit within thirty (30) days after receipt of contract, submittal data forms of the selected balance company for the testing and balancing of the air conditioning, heating, and ventilation systems.
- c. After development of the balancing procedure to be followed for each respective system, a representative of the system balancing company shall periodically visit the jobsite, particularly before any insulation is applied to ducts or piping, and confirm the suitability of the ducts, piping, accessories, hardware, and access panels installed for balancing. Any noted deficiencies shall be reported to the Contractor in writing with a copy to the Engineer. Noted deficiencies shall be corrected at this time by the Contractor.
- d. Final system testing and balance shall not begin until the system has been completed and is in full working order. The Contractor shall put all heating, ventilating, and air conditioning systems and equipment into full operation and shall continue the operation each working day during the balancing procedure. The balancing company shall be responsible for all adjustments to the heating, cooling and ventilating equipment necessary for the system to operate as specified. Upon completion conduct a running test under substantial load conditions demonstrating to the satisfaction of the Owner's representative that all equipment and controls are operating as intended and have been properly adjusted for these conditions.
- e. The system balance company shall include an extended warranty of one hundred eighty (180) days after completion and acceptance of test and balance work, during which time the Engineer at his discretion may request a recheck, or resetting of any outlet, fan, etc., as listed in report. The system balance company shall provide technicians to assist the Engineer in any re-test required during this period. Seasonal re-balance during the first year of operation is part of the scope of this specification.

- f. The flow quantities shown on the drawings are not to be considered absolute. If changes in flow quantities are required to attain comfort conditions in any area, the balancing company shall make the required changes at no extra cost.

2. Procedure.

- a. The testing and balancing of the systems, including all equipment, ducts, piping, and accessories shall be done in strict compliance with the latest edition of the Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems as published by National Environmental Balancing Bureau or equivalent AABC standard.

3. Acceptance of Tests.

- a. In the event any tests or inspections prove unsatisfactory, such shall be made a matter of record. Acceptance of the system shall be postponed until all defects or improper adjustments have been corrected and the work is again inspected and tests satisfactorily repeated.

4. Data to be Furnished.

- a. At completion of running tests two (2) complete sets of data listed below for all items of equipment shall be furnished for incorporation in Owner's Equipment Manual for the project:
- b. Manufacturer's equipment outline drawings.
- c. Manufacturer's performance curves for fans, pumps, and flow control devices and capacity tables for equipment.
- d. Pertinent running test data; such as system test points, test point data, horsepower, RPM, FLA, etc., including final instrument set points and adjustments as left.

E. Temperature Controls:

1. General.

- a. A complete system of automatic temperature control shall be provided. Complete system shall consist of the existing plus that which is necessary for proper function and operation
- b. All conduit and wiring shall be installed in strict compliance with spec division 26, electrical.

SECTION 23 00 00

- a. Sequence of Operation. Refer to temperature control diagram on the drawings. With initial submittal and on record drawings include narrative of system operation describing start-up, automatic operation, and shut-down.
2. Electrical Wiring. All electrical wiring and conduit in connection with the drawings shall be provided under Specification Division 23. Any wiring not shown on the drawings but required for proper operation of the automatic temperature control system shall be performed under this Section.

END OF SECTION

10/12/2022

ELECTRICAL SCOPE & GENERAL REQUIREMENTS**PART I - GENERAL****1.01 GENERAL REQUIREMENTS**

- A. All work under Section 26 01 00, Electrical Scope and General Requirements Specifications, are subject to the General, Supplementary, Special Conditions and other Division I Specification Sections preceding this section. This Contractor will be responsible for and govern by all requirements. Drawings indicate the general arrangement of the electrical layout and work included. The Contractor will follow Drawings in laying-out and checking of Drawings of other trades to verify locations and spaces in which work will be installed.

1.02 SCOPE

- A. This portion of the work includes furnishing of all labor and materials necessary for a complete wiring system to outlets and all equipment shown on the Drawings or covered by this section of the Specifications. In general, the work includes the following:
1. Power service and distribution system as shown, complete with switchboards, Panelboards, feeders and motor control centers.
 2. Fire alarm including conductors, cable and equipment for a complete working system. The system shall be terminated, tested and calibrated by a factory authorized installer. This same installer shall terminate and test any peripheral equipment required for the operation of the system.
 3. Complete system of branch circuit wiring and equipment including all wiring devices and plates on all outlets.
 4. A new lighting fixture system complete with lamps as shown on Plans including all appurtenances as required.
 5. Raceways, wiring, fused disconnect switches, etc., for equipment covered by other sections of these Specifications.
 6. All hangers, anchors, sleeves, chases and supports for fixtures, electrical equipment and materials including earthquake bracing.
 7. All excavating, backfill, concrete pads and bases as required for electrical work.
 8. All disconnection and removal of existing electrical facilities not to be reused.

9. Include payment of all required insurances, electrical permits, fees and taxes unless specifically shown "BY OTHERS".

1.03 SITE VISITATIONS

- A. The Contractor will carefully examine the site and existing buildings, compare the Drawings with the existing electrical installations and thoroughly familiarize himself with all existing conditions within the scope of this work. By the act of submitting a bid, the Contractor will be deemed to have made such examination, accepted such conditions and to have made allowance in preparing his figure.

1.04 RULES AND REGULATIONS

- A. All work and materials shall be in full accordance with the latest rules and regulations of the following:
 1. California Electrical Code, 2019 Edition
 2. California Building, Mechanical and Plumbing Codes
 3. California Code of Regulations
 4. California State Fire Marshal Rules
- B. Before the Final Certificate of Payment will be issued, the Contractor shall deliver to the Owner all Certificates, Permits, Record Drawings and Instructions/Parts Manuals.
- C. Nothing in these Plans and Specifications is to be construed to permit work not conforming to these codes.

1.05 MATERIALS AND SUBSTITUTIONS

- A. All equipment and materials shall be new and UL (Underwriters Laboratories) approved and of the best quality. When specific trade names are used in connection with materials they are mentioned as standards but, this implies no right upon the part of the Contractor to substitute other materials or methods without prior approval.
- B. When approval is given for use of equipment differing from that shown on the Drawings regarding foundations, space of piping, duct work, wiring, insulation, etc., changes required to accommodate such differences shall be accomplished at no cost to the Owner.
- C. This Contractor shall order equipment in a timely manner to prevent any delays in the construction schedule and he shall bear any penalty by vendors to meet schedules.
- D. Submittals:
 1. Shop Drawings and Product Data: Within ten days after an award of this contract, but prior to manufacture or installation of any equipment, prepare complete Shop Drawings and Brochures for materials/equipment

as required by each section of the Specification. Submit eight complete sets for review.

2. Prior to submission of the Shop Drawings and Project Data review and certify that they meet the Contract Documents and conform to existing field conditions. Field verify installation methods, voltage requirements and coordinate with other trades.
3. Verify all dimensional information to ensure proper clearance installation of equipment. Check all materials and equipment after arrival on the jobsite and verify compliance with the Contract Documents. A minimum period of two weeks, exclusive of transmittal time, will be required each time Shop Drawings and/or Brochures are submitted or resubmitted for review. This time shall be considered by the Contractor when scheduling a submittal date.
4. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein or deviations from the Contract Documents requirements. It shall be clearly understood that noting of some errors, but overlooking others, does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
5. Certifications shall be written or in the form of rubber stamp impressions as follows:

I hereby certify that these Shop Drawings and/or Brochures have been checked prior to submittal, and that it complies in all respects with the requirements of the Contract Drawings, Specifications and existing field conditions for this project.

(Name of Contractor)

Signed _____

Title _____ Date _____

6. Observe the following rules when submitting the Shop Drawings or Brochures:
 - a) Each Shop Drawing shall indicate in the lower right-hand corner and each brochure shall indicate on the front cover the following:
 - 1) Title of the sheet or brochure
 - 2) Name and location of the building
 - 3) Names of the Architect
 - 4) Name of the Electrical Engineer

- 5) Name of Contractor
 - 6) Subcontractor's Manufacturer, Supplier and Vendor
 - 7) Date of submittal
 - 8) Date of correction and revision.
 - 9) Unless the above information is included, the submittal will be returned for resubmittal.
- b) Shop Drawings shall be done in legible scale and shall contain sufficient plans, elevations, sections and isometrics clearly describing the equipment or apparatus and the Engineer/ Draftsmen skilled in this type of work. Shop Drawings shall be drawn to at least 1/4" = 1'-0" scale.
7. The manufacturers shall publish brochures to be submitted which contain complete and detailed engineering and dimensional information. Brochures submitted shall contain only information relevant to the particular equipment or materials to be furnished. The Contractor shall not submit catalogs that describe several different items in addition to those items to be used unless all irrelevant information is marked out or unless each manufacturer is identified and submitted separately.

1.06 GENERAL COORDINATION

- A. The Drawings indicate diagrammatically the desired location or arrangement of conduit runs, outlets, equipment, etc., and are to be followed as closely as possible. It shall be the Contractor's responsibility to verify and coordinate the location of all outlets and raceways with other trades.

1.07 CUTTING, PATCHING AND MATCHING

- A. This Contractor shall do all cutting required for the proper installation of his work and shall repair any damage done by himself or his workmen. The Contractor shall coordinate with that of other parties.
- B. Wherever possible, work shall be done in a concealed and neat workmanlike manner requiring the least amount of cutting of studs, plates and woodwork. Such cutting or notching is allowed only after consultation with and by permission of the Engineer.
- C. All patching shall be of the same materials, workmanship and finish as existing and shall accurately match all surrounding work. All work shall be done under the Architect's instructions and when required by the trade that did the original work.

1.08 INTERPRETATION OF Drawings AND Specification

- A. The Engineer's decision will be final on interpretation of the Drawings and Specifications. Whenever the words "AS MAY BE DIRECTED", "SUITABLE" or "APPROVED EQUAL" or other words of similar intent and meaning are used

inferring that judgment is to be exercised, it is understood that it is the judgment of the Engineer referred to.

1.09 EXCAVATION

- A. All excavating and backfill required for the proper installation of electrical work whether or not shown on the Drawings or as specified. This shall be done per the general excavation portion of the Specifications.

1.010 CLEANING OF EQUIPMENT, MATERIALS AND PREMISES

- A. All electrical equipment shall be thoroughly cleaned of dirt, rust, cement, plaster, etc., and all cracks and corners scraped out clean. Surfaces to be painted shall be carefully cleaned of grease and oil spots and left smooth and clean and in proper condition to receive paint finish.

1.011 RECORD Drawings

- A. At the beginning of the project, one full-sized print of each applicable Drawing will be issued to the Contractor for use in preparing Record Drawings. "RECORD" conditions shall be recorded on the prints as the project progresses. Upon completion of the work, the Contractor shall forward it to the Architects' Office after first securing the Inspector's verification by signature.

1.012 EARTHQUAKE RESTRAINT

- A. All electrical equipment shall have a means to prohibit excessive motion during an earthquake. Equipment that vibrates during normal operation shall have isolators with mechanical stops. All transformers are considered to vibrate during operation.
- B. All electrical equipment and connections shall be designed to resist lateral seismic forces equal to value shown on Drawings of equipment weight with allowable working code capacity increased by 1/3 or 1.5 times the same value for the weight yield capacity. Connections shall be the same except the 1/3 increase will not be allowed.

1.013 IDENTIFICATION

- A. Conductors:
 - 1. All power and signal conductors shall be identified in accordance with the following schedule:
 - a) 120/208 Volts, 3-phase, 4-wire Wye: Red-Black-Blue, Neutral White

- b) 120/240 Volts, 3-phase, 4-wire Delta: Black-Blue for single-phase, Orange for 3-phase stinger, Neutral White
 - c) 480/277 Volts, 3-phase, 4-wire Wye: Yellow-Brown-Purple-, Neutral Grey Bond or grounding conductor (GWG): Green
 - d) Special system conductors shall be color coded and labeled
- 2. Brady Labels shall be used to identify terminals and destination of feeders, branch circuits, signal and control circuits, etc., at all terminations and junction boxes and shall be coordinated with the nameplates in all boxes and equipment.
 - 3. All terminals in the switchboards, panels, relays, switches, devices, starter terminals, etc., shall have Brady Labels for identification to identify both ends of all wiring. Wires #8 and smaller to be terminated on terminal strips squared-type 9080K with white marking strip and screw lugs for wire size.
- B. Nameplates: The Contractor shall furnish and install 1" x 3" x 3/32" thick laminated black Bakelite nameplates with a white core, unless specifically shown as red with a white core, engraved to produce white letters on black background for all items of electrical equipment including 2-pole and 3-pole circuit breakers, panelboards, starters, relays, time switches and disconnect switches. They shall screw them in place.
 - C. Panels: Panels having single-pole circuit breakers shall be provided with typed schedules mounted in welded metal holders behind plastic.
 - D. Devices: All devices shall have their branch circuit identified on the back side of device plate with a permanent type black marker, i.e., CT A-21.

1.014 MECHANICAL AND OTHER SPECIAL EQUIPMENT

- A. Mechanical Coordination: PRIOR to commencing construction, this Contractor shall arrange a conference with the Mechanical/Plumbing Contractors and equipment suppliers to verify type, sizes, locations, requirements, controls and diagrams of all equipment furnished by them. In writing, he shall inform the Electrical Engineer that all phases of coordination of this equipment have been covered. If any unusual conditions or problems, they are to be enumerated them at this time.
- B. Mechanical Wiring: All electrical line voltage wiring, fused disconnects and conduits shall be furnished and installed by this Contractor unless otherwise shown.
- C. Miscellaneous Equipment: Contractor shall be responsible for electrical hook-up and connection to all electrical equipment whether furnished by this Contractor or others. This includes all special mechanical equipment and equipment furnished by the Mechanical Contractor.

1.015 GUARANTEE

- A. This Contractor agrees to replace or repair to the satisfaction of the Owner, any part of the installation that may fail due to defective material and/or workmanship, or failure to follow Plans and Specifications for one year after final acceptance. He shall further obtain from the manufacturers of special equipment (i.e., control systems) their respective guarantees and service manuals and deliver to Owner.

PART II - PRODUCTS

2.01 RACEWAYS

- A. Unless specifically shown otherwise, this Contractor shall furnish and install a complete steel conduit system for all wiring, including control and signal wiring.
- B. All conduits shall be rigid threaded hot dipped galvanized type.
- C. All steel conduits installed underground shall have a minimum coverage of 1'-6" below finished grade and shall have a 4" concrete envelope. Joints shall be sealed with conductive pipe compound T & B Kopr-Shield before making up. Conduits installed below grade shall be wrapped with Minnesota Mining Company Scotch Wrap #51 using half-lap for double thickness. Conduit surfaces shall be clean and dry before wrapping.
- D. Seal-type flexible conduit shall be used in lengths not greater than 18" at motors and other machinery to prevent the transmission of vibration. All flexible conduits shall have a copper bond wire either integral or pulled in. Flexible conduit shall be supported at both ends and every 24".
- E. All conduit fittings, locknuts, couplings, elbows, etc., shall be hot dipped galvanized finish with plastic bushings. No competitive type fittings shall be used.
- F. Non-Metallic Conduit:
 - 1. Rigid non-metallic PVC, UL Labeled conduit with factory ells and fittings approved for the purpose may be used under the following conditions:
 - a. Where the voltage is 600 Volts or less:
 - 1) All conduits in earth under buildings or protected by permanent paving may be Schedule 40 PVC.
 - 2) Any conduit running through planters or unprotected in earth shall be encased in 3" of concrete. All raceways above grade shall be steel.

- 3) All non-metallic runs shall have a bond wire for the interconnection of all conducting portions per Table 250-94 of the California Electric Code (CEC).
 - 4) Use factory elbows. PVC shall not be bent in the field.
 - 5) Electrical metallic tubing fittings shall be steel plastic bushed or set screw type. No competitive type fittings will be accepted.
- G. Surface raceways and fastenings shall be two piece steel type complete with all fittings of the same manufacturer factory finished in gray. Surface plug-in strips shall be two circuit type with NEMA grounded receptacles every 12" with wiring space provide.

2.02 CONDUCTORS

- A. All conductors shall be delivered to the site in their original unbroken packages plainly marked or tagged as follows: UL Labels, size, kind and insulation of wire, name of the manufacturing company and trade name of the wire.
- B. All conductors to be a minimum of 98% conductivity soft drawn copper, minimum #12 AWG unless shown otherwise. Conductors #8 and larger shall be stranded type "THWN" 600 Volt insulation. Conductors #10 and smaller shall be solid copper "THHN".
- C. All branch circuits, fixture wiring joints, splices and taps for conductors #10 and smaller to be made with "SCOTCHLOCK" connectors.
- D. Two bolt type solderless connectors or T & B "color keyed "compression lugs shall be used on #8 and larger conductors.

2.03 WIRING DEVICES

- A. Furnish and install wiring devices and plates as shown on the Drawings and described in these Specifications. Where more than one wiring device is mounted in the same location, such devices shall be mounted in a multi-gang plate. Single-gang combination interchangeable devices shall not be used. Wiring devices shall be Specification grade or better.
- B. Convenience outlets shall consist of a Specification grade duplex receptacle mounted in an outlet box in the wall flush with the finished plaster or surface rated 20 AMPS, 125 Volts, 3-wire, back, and side wired.
- C. Exterior outlets in moist or damp locations shall have proper flush or "FS" type cast surface boxes with adaptors, gaskets, and proper type cast device covers.

- D. Local switches shall be quiet toggle-type, totally enclosed, AC rated, 20 AMPS, 120/277 Volt.
- E. Device plates shall be provided for all devices with the number of gangs and openings necessary. They shall be satin brushed stainless steel in toilets and kitchens with plastic to match devices in other finished areas.
- F. All telephone outlets shall have proper cover plates to match above.
- G. Switch plates for all outlets not in sight of a switch shall be labeled with filled etched letters showing locations of the outlet controlled.
- H. Pilot lights shall be of the type with an indicating neon lamp in the handle.

2.04 OUTLET BOXES

- A. Outlet boxes for concealed work shall be one piece pressed steel knock out type with zinc or cadmium coating. Boxes shall not be smaller than 4" square nominal size unless otherwise indicated. Provide extension rings, plaster rings and covers necessary for flush finish.
- B. Bar hangers shall be used to support outlet boxes in stud or furred partitions and ceilings. Attachment screws, devices, etc., shall be of the proper type to secure boxes to metal studs. Use expansion shields to concrete and masonry.
- C. Provide approved knock-out seals on all unused open knock-out holes. Where used for lighting fixtures outlet boxes shall be equipped with fixture studs.
- D. Outlet boxes installed in concrete slabs shall be two-piece concrete boxes not less than 4" nominal size with a minimum depth of 2-1/2".
- E. Surface boxes of cast metal threaded hub-type with suitable gasketed covers shall be used for exposed conduit runs less than 5' above a finished floor or where waterproof boxes are required.

2.05 PULL BOXES AND WIREWAYS

- A. Pull and junction boxes shall be installed as shown to ease the pulling of wire and to comply with NEC requirements.
- B. Wireways to be constructed in accordance with UL 870 for wireways, auxiliary gutters, and associated fittings. Every component including lengths, connectors, and fittings shall be UL listed.

2.06 TERMINAL CABINETS AND CLOSETS

- A. Cabinets and fronts shall be in accordance with NEMA Standard Publication No. PB1-1971 and UL Standards No. 67. Fronts shall include doors and have flush

brushed stainless steel cylinder tumbler-type locks with catches and spring loaded door pulls. The flush lock shall not protrude beyond the front of the door. All locks shall be keyed like the panelboard locks. Fronts shall have adjustable indicating trim clamps completely concealed when the doors are closed. Doors shall be mounted by completely concealed steel hinges. Fronts shall not be removable with the door in the locked position. A frame and card with a clear plastic covering shall be provided on the inside of the door. Fronts shall be of code gauge full finished steel with rust inhibiting primer and bake enamel finish.

2.07 PANELBOARDS

- A. Furnish panelboards shown on Plans and described herein. All cans shall be a minimum of 20" wide and 5.75" deep unless otherwise shown. They shall be totally flat or equal with flush keyed locks.
- B. Panelboards shall be UL listed.
- C. Breakers for switching lights shall be rated for switching duty.
- D. Fronts shall be sheet steel painted standard gray over a rust inhibitor. They shall be equipped with a door, flush hinges, flush proper cylinder tumbler lock; metal circuit card holder and quarter turn adjustable trim clamps.
- E. The panel shall consist of reinforced galvanized sheet steel frame with copper bus bars and circuit breakers properly supported to prevent vibration breakage in handling. All terminals shall be solderless type suitable for specified conductors of size indication. Bus bars shall be sequence phased.
- F. Branch circuit breakers shall be "bolt-on" and fully interchangeable without disturbing adjacent units. All 2 and 3-pole breakers shall have common trips with a minimum IC of 10,000 AIC.
- G. All breakers applying fluorescent or HID fixtures shall have padlock handle lock-off devices.
- H. All spaces shall have hardware.
- I. Provide separate blocks for neutrals and grounds as required.

2.08 DISCONNECTING DEVICES

- A. Disconnecting devices shall be provided as shown or as required by CEC. Switches shall be motor rated and in proper NEMA enclosure.
 - 1. Motors 1/3 HP and less: Switches shall be of the toggle-type quick make and break rated 2 HP, 250 Volts AC with the number of poles required

provided with flush mounting wall plates or in suitable surface mounting NEMA enclosures.

- a) Motors 1/2 HP and larger: Disconnecting switches shall be Type HD fused 3-pole, 600 Volts in proper NEMA enclosures with proper size FRN fuses. Provide three spare fuses of each type to the Owner.
- B. Circuit breakers utilized as disconnecting devices shall comply with the requirements stated in other articles of this section and NEC.

2.09 CONCRETE PAD, PULL BOXES AND MANHOLES

- A. At the Contractor's option, he shall provide cast-in-place or precast structures.
- B. Where applicable, concrete structures shall be submitted to the serving utility for their approval prior to installation.
- C. Cast-in-place concrete shall be per the Concrete Section of the Specifications.
- D. Provide 8" concrete pads under all exterior switchboards, transformers, etc.

PART III - EXECUTION

3.01 INSTALLATION

- A. The layout and installation of electrical work shall be coordinated with the overall construction schedule to prevent delay in completion of the project.
- B. Dimensions and information regarding accurate locations of equipment and structural limitations and finish shall be verified with other sections.
- C. The Drawings do not show all the offsets, bends, special fittings or junction pull boxes necessary to meet job conditions and shall be provided as required.
- D. Electrical equipment, outlets, junction and pull boxes shall be installed in accessible locations, avoiding obstructions, preserving headroom and keeping openings and passageways clear.
- E. Minor adjustments in the locations of equipment shall be made where necessary providing such adjustments do not adversely affect function of the equipment. Major adjustments for the location of equipment shall be previously approved and detailed on the Record Drawings.

3.02 STRUCTURAL FITTINGS

- A. Furnish and install the necessary sleeves, inserts, hangers, anchor bolts and related structural items. Install at the proper time.

3.03 NOISE CONTROL

- A. Outlet boxes at opposite sides of partitions shall not be placed back-to-back nor, shall through boxes be employed except where specifically permitted on the Drawings by note to minimize transmission of noise between occupied spaces.
- B. Contactors, starters and similar noise producing devices shall not be placed on walls that are common to occupied spaces unless specifically called for on the Drawings. Where such devices must be mounted on walls common to occupied spaces, they shall be shock mounted or isolated in such a manner to effectively prevent the transmission of their inherent noise to the occupied space.
- C. Ballasts, contactors, starters and like equipment that are noticeably noisier than other similar equipment on the project will be deemed defective and shall be replaced at Engineer's request.

3.04 RACEWAYS AND FITTINGS

- A. Surface raceways shall be coordinated with cabinet work. It shall be installed plumb and square with adjacent surfaces.
- B. Conduits installed underground shall have a minimum depth of 24" below a finished grade. Joints shall be sealed with T & B "Kopr Shield" conductive joint compound before making up. Steel conduit runs installed in earth shall be spirally wrapped with 20 Mil vinyl plastic using half-lap for double thickness.
- C. Conduit surfaces shall be clean and dry before wrapping. All conduit fittings shall be steel with insulated throats. Bushings shall be the nylon type.
- D. All conduits installed underground shall have a minimum 4" concrete envelope except under buildings or in building floors.
- E. Provide a tagged 1/6" stranded nylon pull rope. Leave 28" of free coiled end in all empty conduits with identification tags on both ends.
- F. Minimum size of any conduit for lighting, power and signal shall be 3/4" conduit unless shown otherwise.
- G. Furnish and install "seal-offs" in all conduit runs through areas of different temperature.
- H. Where applicable, wiring methods shall be in accordance with requirements for installation in damp and/or hazardous areas.
- I. All concealed conduits shall be installed in as direct a line as possible between outlets. EMT approved for dry locations with steel plastic bushed set screw fittings.

No more than four quarter bends or their equivalent will be allowed between outlets. Feeder conduits shall follow arrangements shown on plans unless a change is authorized. Branch circuit conduits shall in general follow arrangement as shown as far as structural conditions permit. All exposed runs shall parallel buildings, walls or partitions and be supported on Kindorf Hangers to meet Title 24, Part 6, CAC.

- J. In general, all conduits shall be sloping to drain. Bends that place a trap in a conduit shall be avoided. Provide drip fitting as required. Dux-Seal high ends of all underground raceways.
- K. All conduit runs shall be mechanically and electrically continuous from outlet to outlet. Conduit size or type shall not be changed between outlets.
- L. Chrome escutcheon plates shall be used on all conduit penetrating walls, floors or ceilings.
- M. Expansion joints shall be provided at building expansion joints or as required due to length of run or difference in temperatures.
- N. Flexible steel conduits shall be used for short runs not over 24" from motors or other vibrating equipment to junction boxes. Where specifically approved by the Engineer, flexible steel conduit may be used when conditions make the use of other conduit impracticable. Fittings shall be of the screwed wedge type. All flex shall have green copper bond wire. Flex conduits shall be independently suspended.
- O. All fittings that are exposed or in damp areas shall have sealing glands and proper gaskets. Fittings in hazardous areas shall be of the type approved for the particular hazard.
- P. Provide two 1" conduit stub-outs of all panels and terminal cabinets above a hung ceiling or as otherwise shown.
- Q. Roof Penetrations: Where raceways penetrate roofing or similar structural area, provide 26 galvanized iron roof jacks sized to fit tightly to a raceway for a weather-tight seal and with flange extending a minimum of 9" under roofing on all sides. Completely seal openings between inside diameters of roof flashing and outside diameters if penetrating raceways. Coordinate with work required under Roofing Section of the Specifications.
- R. Fire Penetration Seals: Seal all penetrations for work of this section through fire rated floors, walls and ceilings to prevent the spread of smoke, fire, toxic gas or water through the penetration either before, during or after the fire. The fire rating of the penetration seal shall be at least that of the floor, wall or ceiling into which it is installed so that the original fire rating of the floor or wall is maintained as required by Article 300-21 of the California Electrical Code (CEC).

- S. Where applicable, provide OZ Type CFSF/I and CAFSF/I fire seal fittings for conduit and cable penetrations through concrete and masonry walls, floors, slabs and similar structures. Where applicable, provide 3M fire barrier sealing penetration system and/or Thomas & Bett Flame Safe Fire Stop System and/or ChaseFoam fire stop system including wall wrap, partitions, caps and other accessories as required. All manufacturers' instructions and recommendations for installation of sealing fittings and barrier sealing systems.

3.05 CONDUCTORS AND CONNECTORS

- A. All branch circuits and fixture wiring joints, splices and taps for conductors #10 and smaller shall be made with 3M "Scotchlocks" or approved equal.
- B. Circuit and signal terminations to single-screw or push-on terminals shall be done with insulated "Sta-Kons" or approved equal terminals.
- C. Bolt-type solderless connectors shall be torqued with a torque wrench according to the manufacturer's recommendations then retightened after 24-48 hours before taping. Owners' inspector shall be informed of this procedure during the waiting period and shall witness the act of retightening.
- D. Feeders, etc.: Connectors and lugs for terminating stranded conductors #8 and larger shall be machine crimp compression type.
- E. All splices shall be taped with Scotch #88 plastic electrical tape with "Scotch Fill" where necessary for a smooth joint. For other than normal temperatures or conditions Scotch #27 or #2520 shall be used. All connections and splices shall be electrically perfect and in strict accordance with all code requirements.
- F. No splices shall be made below grade in a manhole or pull hole without the Engineer's written approval, and then shall be encapsulated with 3M potting kits per 3M Specifications.
- G. Wire in panels, cabinets, pull boxes and wiring gutters shall be squared, labeled and neatly grouped with "Ty-Raps" and fanned out to the terminals.
- H. Wiring Devices: Wiring devices shall be securely fastened to the outlet box. Where the outlet box covers are back from the finished walls, device shall be built out with washers so that it is rigidly held in place to the box. Provide metal extenders in flammable construction per CEC.
 - 1. All device screw slots shall be left in a vertical orientation.

3.06 OUTLET BOXES

- A. Outlet boxes for concealed work shall be one steel knock-out type with zinc coating. Boxes shall not be smaller than 4" square nominal size unless otherwise

indicated. Provide extension rings, plaster rings and covers necessary for flush finish.

- B. Bar hangers shall be used to support outlet boxes in stud or furred partitions and ceilings. Attachment screws, devices, etc., shall be of the proper type to secure boxes to metal studs complemented by expansion shields to concrete and masonry.
- C. Provide approved knock-out seals on all unused open knock out holes. Where used for lighting fixtures, outlet boxes shall be equipped with fixture studs.
- D. Surface boxes of the cast metal threaded hub-type with suitable gasketed covers shall be used for exposed conduit runs less than 5' above a finished floor or where waterproof boxes are required.

3.07 JUNCTION AND PULL BOXES AND WIREWAYS

- A. Boxes shall be installed square and plumb. An engraved nameplate shall be installed indicating the function of each box on the exterior in unfinished areas and on the interior in finished areas.
- B. Install wireways with strip-type connectors with self-retained mounting screws. Use hangers with two-piece hook-together features to permit preassembling of wireway and hanger bottom plate before hanging on a preinstalled upper bracket.

3.08 TERMINAL CABINETS AND CLOSETS

- A. Install level and identify per schedule.
- B. All conductors shall be squared, labeled and "Ty-Rapped".
- C. Location:
 - 1. Unless otherwise indicated on the Drawings, install all panels with the top of the trip 6'-0" above the finished floor.
 - 2. Space permitting, surface mount panels where they are not visible to the public.
 - 3. Panels to have protective cover over any electrical panel with overhead water piping. Cover to be 18" by width of a panel.
- D. Directory: Mount a typewritten directory behind glass or plastic in a metal holder welded to the inside of each panel door showing circuit numbers and complete description of all outlets (one each circuit).

3.09 PRECAST CONCRETE PULL BOXES AND MANHOLES

- A. Contractor shall provide a minimum of 3-6" of sand base material suitable to receive the manhole. The base material shall be impacted and graded level at proper elevation to receive the manhole in relation to the conduit grade or ground cover requirements as designated in the Plans. Sealants used between the joints of the manhole are at the Contractor's discretion unless otherwise specified. If grout is used it should consist of two-parts plaster sand to one-part cement with sufficient water added to make the grout flow under its own weight.
- B. The grout should be poured into a water soaked groove and filled to the top of the groove unless a double amount is to be used as a further precaution against leakage. In this case the mastic sealant should be placed on the two shoulders of the groove. The next section of manhole should be placed while the foaming action is in process. Contractor shall verify grades with the Architect and shall set holes and boxes level at proper grades.
- C. All conduits penetrating the pull box shall have seals to prevent water from entering the raceway.

3.010 DISCONNECT DEVICES

- A. Disconnect devices shall be identified as to location of the device controlled.

3.011 SUPPORTS AND ANCHORS

- A. Provide inserts, anchors, supports, rods, brackets and miscellaneous items to adequately support and secure the electrical systems and equipment.
- B. Secure hangers, brackets, conduit straps, supports and electrical equipment to surfaces by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard preset inserts on concrete or masonry; machine screws or bolts on metal surfaces; wood screws on wood construction. Wood or fiber plugs or concrete nails are not acceptable.
- C. Power driven or velocity driven inserts may be not used unless specifically approved by the engineer, and where their use does not affect finished appearance of work.
- D. They may not be used in prestressed slabs, beams, purlins, precast members or in tension.
- E. Seismic Requirements: Provide vertical and lateral supporting equipment to resist application of seismic forces per CAC.

END OF SECTION

LOW VOLTAGE GENERAL PURPOSE TRANSFORMERS**PART 1 GENERAL**

1.01 The requirements of the Contract, Division 01 , and Division 26 apply to work in this Section.

1.02 SECTION INCLUDES

- A. This specification covers single-phase and three-phase general-purpose individually mounted dry-type transformers, 600V maximum, for general power and lighting applications.

1.03 REFERENCES

- A. The equipment in this specification are designed and manufactured according to latest revision of the following standards (unless otherwise noted).
 1. ANSI/IEEE C57.96, Distribution and Power Transformers, Guide for Loading Dry-Type appendix to ANSI C57.12 standards
 2. ANSI/IEEE C89.2 - Dry Type Transformers for General Applications
 3. ANSI/NFPA 70, National Electrical Code
 4. IEEE C57.12.01, General Requirements for Dry-Type Distribution and Power Transformers Including Those with Solid Cast and / or Resin-Encapsulated Windings
 5. IEEE C57.12.91, Test Code for Dry-Type Distribution and Power Transformers
 6. NEMA ST 20, Dry Type Transformers for General Applications
 7. UL 506, Specialty Transformers
 8. NEMA- TP-1-2002

1.04 SYSTEM DESCRIPTION

- A. Power transformers shall be 2 winding dry type for general power and lighting applications. Transformers rated 1000 KVA or below shall be UL listed and bear required Listing Mark.

1.05 SUBMITTALS

- A. Manufacturer shall provide copies of following documents to owner for review and evaluation in accordance with general requirements of Division 01 and Division 26 :
 1. Product data on specified product documenting the following:
 - a. Dimensions
 - b. Weight
 - c. KVA
 - d. Voltage
 - e. % Impedance
 - f. Taps
 - g. Insulation Class
 - h. Sound Level

2. Installation Instructions

1.06 PROJECT RECORD DOCUMENTS

- A. Maintain an up-to-date set of Contract documents. Note any and all revisions and deviations that are made during the course of the project.
- B. Provide final as-built drawings and information for items listed in Paragraph 1.06. All changes made during the manufacturing process shall be incorporated.

1.07 OPERATION AND MAINTENANCE DATA

- A. Manufacturer shall provide copies of installation, operation and maintenance procedures to owner in accordance with general requirements of Division 01 and Division 26.
- B. Submit operation and maintenance data based on factory and field testing, operation and maintenance of specified product.

1.08 QUALITY ASSURANCE (QUALIFICATIONS)

- A. The manufacturer of the transformer as indicated by the label on the transformer shall be the manufacturer of the major components within the transformer.
- B. The manufacturers listed within this specification have been selected for use on this project. All others need to be pre-approved by the engineer before submitting.
- C. The manufacturer shall provide Seismic tested equipment as follows: (verify below)
 - 1. The equipment and major components shall be certified to the seismic requirements of IBC-2003 and IEEE-693-1997. Guidelines for the installation consistent with these requirements shall be provided by the transformer manufacturer and be based upon testing of representative equipment. The equipment shall be qualified to an equipment importance factor, I_p , level of 1.5.
 - 2. For $z/h > 0$, S_s shall be 150% minimum and S_d s shall be 1.0g minimum for 3-phase convection and/or fan cooled transformers. For encapsulated transformers, S_s shall be 300% minimum and S_d s shall be 2.0g minimum.
 - 3. For $z/h=0$, S_s shall be 240% minimum and S_d s shall be 1.6g minimum for dry-type transformers. For encapsulated transformers, S_s shall be 300% minimum and S_d s shall be 2.0g minimum.
 - 4. Mounting recommendations shall be provided by the manufacturer based upon approved shake table tests used to verify the seismic design of the equipment.
 - 5. The equipment manufacturer shall certify that the equipment can withstand and will be functional following a seismic event, including both vertical and lateral required response spectra as specified in above codes.
 - 6. The equipment manufacturer shall document the requirements necessary for proper seismic mounting of the equipment. Seismic qualification shall be considered achieved when the capability of the equipment, meets or exceeds the specified response spectra.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products in accordance with the manufactures recommendations.
- B. Dry type transformers shall be located in well-ventilated areas, free from excess humidity, dust and dirt and away from hazardous materials. Indoor locations shall be protected to prevent moisture from entering enclosure.

- C. Equipment shall be shipped with edge and top protection that is adequate to protect the transformer enclosure from common dents and scratches.

1.10 PROJECT CONDITIONS (SITE ENVIRONMENTAL CONDITIONS)

- A. Follow (standards) service conditions before, during and after transformer installation.

1.11 WARRANTY

- A. Manufacturer warrants equipment to be free from defects in materials and workmanship for 1 year from date of installation or 18 months from date of purchase, whichever occurs first.

PRODUCTS

1.12 MANUFACTURER

- A. General Electric Company products have been used as the basis for design. Other manufactures' products of equivalent quality, dimensions and operating features may be acceptable, at the approved by the engineer.

1.13 GENERAL REQUIREMENTS

- A. Dry type general purpose transformers shall be rated as indicated in the drawings.
- B. Transformers supplied to this specification shall be able to operate continuously at 100 percent nameplate rating at ambient temperature not exceeding 40 degrees C. Maximum temperature at top of enclosure shall not exceed 50 degree C rise above 40 degree C ambient.
- C. Transformer shall have self-cooled sound levels equal to or lower then those established by ANSI/IEEE:

<u>KVA</u>	<u>Sound Levels (dB)</u>
0-9	40
10 – 50	45
51 – 150	50
151 – 300	55
301 – 500	60

Measured per ANSI C89.2-1986

- D. Transformer shall be sound tested in the factory prior to shipment. A record of the sound testing shall be retained by the manufacturer.
- E. Transformers shall meet the energy efficiency requirements of NEMA-TP-1-2002.
- F. Transformers shall use properly classified UL approved temperature ratings. Temperature rise ratings shall be in accordance with UL 506. Insulation ratings shall be as indicated in drawings.
- G. Transformer shall carry the fully-rated load continuously when the surrounding air does not exceed 30C/86F average, 40C/140F maximum and adjacent structures do not prohibit the free movement of cooling air.
- H. Transformers 5 KVA and above shall be able to meet ANSI/IEEE C57.96 daily overload requirements listed in drawings. Transformers loaded in accordance with this paragraph shall be capable of long service life under thermal conditions specified. There shall be no need for derating.

I. Enclosures shall meet UL 506 requirements for the following characteristics:

1. Ventilation Openings;
2. Corrosion Resistance;
3. Cable Bending Space;
4. Surface Temperature Rise;
5. Wiring Compartment Temperature Rise;
6. Terminations.

J. Transformer Construction

1. Transformer core shall be constructed of high grade, non-aging silicon steel with high magnetic permeability and low hysteresis and eddy current losses. Magnetic flux densities shall be kept well below core saturation point. Transformer core shall be clamped using insulated bolts through the core laminations to provide consistent pressure throughout the core length. Completed core and coil shall be bolted to enclosure base and isolated from base by rubber vibration-absorbing mounts.
2. Transformer core shall be visibly grounded to enclosure.
3. Enclosure shall be constructed of heavy gauge steel.
4. Coils shall be copper unless otherwise noted.

1.14 ACCESSORIES

A. For 150 degree C. rise models:

1. Wall mounting brackets;
2. Weathershield kits.

1.15 LOAD TAPS

A. Transformers shall have following high voltage load tap arrangements unless noted otherwise in plans:

1. Through 2 KVA - no taps;
2. Through 23 KVA - no taps;
3. 3 through 25 KVA - [no taps] [2, 5 percent taps, both below nominal voltage] [4, 2-1/2 percent taps, 2 above, 2 below nominal voltage];
4. Through 500 KVA - 6, 2-1/2 percent taps, 2 above, 4 below nominal voltage;
5. 750 KVA - 4, 3.1 percent taps, 2 above, 2 below nominal voltage;
6. 1000 KVA - 2, 3.6 percent taps, 1 above, 1 below nominal voltage.

1.16 TESTING

A. Transformers furnished to this specification shall receive the following production tests:

1. Applied Potential;
2. Induced Potential;

3. No Load Losses;
4. Voltage Ratio;
5. Polarity;
6. Continuity

B. Manufacturer shall perform the following additional tests on units identical to the design type being supplied to this specification. Manufacturer shall provide on request test data sheets to prove performance of these tests.

1. Sound Levels
2. Temperature Rise Tests
3. Full-Load Losses
4. Regulation
5. Impedance

1.17 FINISH

A. Finish shall consist of degreasing, phosphate cleaning, and an electrodeposit ANSI 61 gray enamel paint.

PART 2 EXECUTION

2.01 EXAMINATION

- A. Verify that dry type transformers are ready to install.
- B. Verify field measurements are as instructed by manufacturer.
- C. Electrical Contractor to verify that required utilities are available.

2.02 LOCATION

- A. Electrical Contractor to verify proper location for the unit.
- B. The transformer shall be installed in a location where the sides with ventilated openings are a minimum distance of six inches from noncombustible structures or equipment to ensure adequate air circulation.

2.03 INSTALLATION

- A. Install per manufacturer's instructions.
- B. Install required safety labels.

2.04 FIELD QUALITY CONTROL

- A. Inspect installed dry type transformers for anchoring, alignment, grounding and physical damage.
- B. Check tightness of all accessible mechanical and electrical connections with calibrated torque wrench. Minimum acceptable values are specified in manufacturer's instructions.

2.05 CLEANING

- A. Repaint scratched or marred exterior surfaces to match original finish.

END OF SECTION

FIRE ALARM SYSTEM**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. The general provisions of the Contract, including General and Supplementary, Special Conditions and General Requirements, apply to the work specified in this Section.

1.02 FIRE ALARM SYSTEM IN GENERAL

- A. Contractor shall install and furnish a complete and operational fire evacuation and fully automatic detection system, as well as a signal conductor and raceway system as required in accordance with Title 24, Part 2, Section 907.2.3 and conform to Title 24, Part 3, Article 760. The system shall be monitored by an approved supervising station. The system shall include the following:
 - 1. All equipment, conduit, wire and labor necessary to provide for a complete and operational system as specified herein and shown on the drawings.
 - 2. Contractor shall submit fire alarm system shop drawings to the Engineer for approval **PRIOR** to installation.
- B. All materials, wiring and equipment shall be furnished and installed in strict compliance with the preceding sections and all applicable requirements of:
 - 1. Local fire authority having jurisdiction
 - 2. California Electrical Code (CEC), 2019 Edition
 - 3. National Fire Protection Association Standard 72.
 - 4. Manufacturer of the fire alarm system
 - 5. Underwriters' Laboratories, Inc.
 - 6. California State Fire Marshal
 - 7. California Fire Code, latest Edition

1.03 FIRE ALARM SYSTEM MANUFACTURER REQUIREMENTS

- A. The manufacturer of the fire control system shall submit as part of his construction submittals:
1. Factory component technical detail showing full compliance with function as specified.
 2. Factory calculations for all power requirements for specified system, including standby power, all certified in writing by the manufacturer's engineer in charge of the project.
 3. Manufacturer's certification that it maintains an office within 50 miles of the project, and that it maintains sufficient spare parts and personnel at that location to ensure the Owner of a continually maintained and serviced system.
 4. List of factory personnel responsible for jobsite installation and supervision of the system who shall be available as required by the Contractor, Engineer, Architect or Owner.
 5. **WRITTEN CERTIFICATION** that all component parts to be used in this system are of his manufacturer, or are California State Fire Marshal listed and to be used for the purposes intended.
 6. At the completion of the manufacturer's installation of the system to the contractor's wire backbox and appurtenances, he shall:
 - a) Provide the Engineer with five (5) copies of his final system report which shall be on the manufacturer's standard forms provided by him and contain the following information:
 - 1) Serial numbers and location of all major components.
 - 2) Testing information verifying all annunciation devices and signaling function are as specified and required.
 - 3) Provide the Engineer their copies of his factory logo's Record Drawings of the system, including final labeling, color coding and locations for all devices in the system.
 - 4) Manufacturer's final tests shall be in the presence of the Engineer and Owner, or his representatives, as well as the authorities having jurisdiction.

1.04 OPERATING INSTRUCTION, WARRANTY AND SERVICE

- A. The manufacturer shall provide a qualified representative to instruct the Owner, or his representative, in the operation of the system.
- B. This contractor and the manufacturer shall warranty the systems for a period of one (1) year from the date of acceptance by the Owner. Emergency repair and/or replacement of manufacturer provided equipment for the system shall be accomplished by this contractor, at **NO** additional cost to the Owner as long as such repair and/or replacement occurs during the warranty period, and is directly or indirectly caused by faulty workmanship or defect of material installed. Upon completion of the installation of the Fire Protective Signaling equipment, a satisfactory test of the entire system shall be made in the presence of the enforcing agency.

1.05 FIRE ALARM SYSTEM OPERATION

- A. Activation of any alarm initiating device shall:
 - 1. Activate fire alarm audible and visible devices.
 - 2. Transmit the alarm condition to an approved remote receiving station.
 - 3. Report alarm condition and zone on LCD displays of the main fire alarm control panel and remote annunciators.

END OF SECTION 28 31 11

EARTHWORK

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this section shall include the furnishing of all labor, materials and equipment required to complete the clearing and grubbing, excavation, backfilling and compacted fill work as indicated on the drawings and as specified herein.

1.02 WORK INCLUDED (But not limited to the following items)

- a. Clearing and removal from site of all vegetation, rubbish and material (concrete, glass, wood, etc.) from previous use of the property not indicated on the drawings to remain.
- b. Excavating soil under buildings for compacted fill, if required.
- c. Preparing of area upon which fill is to be placed and placing of compacted fill.
- d. Furnish imported fill material, if required.
- e. Excavating for all footings, floor slabs, walks, walls, curbs, pits, etc.
- f. Proper bracing and shoring of all excavation where necessary to prevent caving.
- g. Backfilling foundations, placing and compacting fill for slabs and as required for area grading.
- h. Subgrading and preparation of subgrade for asphaltic concrete surfacing.
- i. Applying water to obtain compaction required in fills.
- j. Final finish grading.
- k. Top soil fill in areas indicated.
- l. Cleaning of site of all material excavated and not used and disposing of away from site.

1.03 RELATED WORK

- a. Excavating, trenching and backfilling for the plumbing, electrical or mechanical trades which is specified under the section to which it applies.
- b. Vapor barrier under concrete floor slabs is specified in Section 03 10 00.

1.04 OWNER'S REPRESENTATIVE

- a. The earthwork operations will be under the direct inspection of the Geotechnical Engineer of Record for this Project, who shall be registered by the State as a Professional Engineer and who will be employed by the Owner. Refer to Section 01402, Tests and Inspections.
- b. The Geotechnical Engineer shall be the Owner's representative in control of all earthwork. The Geotechnical Engineer will approve or disapprove fill materials; will make appropriate tests and pass or reject compacted fill and will designate for removal any unsuitable materials, which may remain at the bottom of the excavated area after the limits of excavation indicated by the drawings have been reached.
- c. The contractor shall comply with the instructions of the Geotechnical Engineer as to the aspects of the work described above and shall cooperate with the Geotechnical Engineer in his performance of these duties.

1.05 GEOTECHNICAL REPORT

- a. Unless otherwise noted, the recommendations found in the soils report for site preparation shall be followed but shall not be considered a part of this section. It shall be incumbent upon this contractor to review the soils report on file in the Architect's office. No additional monies will be allowed for any costs incurred due to negligence of the contractor in not reviewing the soils report.

1.06 PROTECTION

- a. Protection of Property: Care shall be taken to prevent damage to adjoining property and this contractor shall make good any damage resulting from this operation.
- b. Maintain protections and barricades as required. Cooperate with other trades requiring access.
- c. Survey work furnished by the owner, such as horizontal and vertical control survey monuments, bench marks, etc., shall be carefully maintained. Said work, if disturbed or destroyed, shall be replaced by the contractor's surveyor at the contractor's expense.
- d. Loads of material moving to or from the site shall be trimmed to prevent droppings along the street.

1.07 UNDERGROUND PIPES, CONDUITS AND UTILITIES

- a. Observe applicable regulations in work affecting underground utilities. Protect active utilities from damage and remove or relocate only as indicated or specified. Remove and plug or cap inactive or abandoned utilities encountered in

excavating or grading. In absence of specific requirements, plug or cap at least 5 feet outside building walls.

- b. Excavating or trenching for new pipe, conduit or utility lines within five feet of building lines and under exterior walks, drives or pavement is subject to provisions of these specifications with respect to protection from moisture, backfilling and grading.
- c. Lines Containing Liquid: Check for leaks and certify to owner. Run such lines at least 5 feet outside building lines wherever possible.
- d. Notify utility companies and owner for all utilities to be cut off, modified or relocated. Maintain active utilities and protect same. No utilities shall be cut off without first obtaining permission from the Owner.

1.08 DRAWINGS AND SPECIFICATIONS

Cuts and Fills: The grades shown on the drawings do not necessarily indicate a balance of cut and fill. Any excess earth not needed for filling shall be removed from the site. Any earth required for filling shall be furnished by the contractor and shall meet the requirements under materials section for earth fill.

1.09 INSPECTION OF SITE

The contractor shall accept the site as he finds it at the time of submitting his bid for this work and no allowances will be made for any error or negligence resulting from his failure to inspect the site prior to submitting his bid proposal.

1.10 LAWS AND ORDINANCES

All excavating, bracing, barricading, backfilling, etc., shall be done in accordance with all applicable laws and/or ordinances.

1.11 ASTM STANDARD SPECIFICATIONS

Where reference is made to ASTM Standard Specifications, the latest issue of such specifications shall apply, except where other specific issue dates are identified in the Soils Report, T24, Part 2, or the applicable C.B.C. Standard.

1.12 SURFACE WATER

Surface water shall be controlled by grading as necessary to prevent erosion, damming or ponding in the bottom of structural excavations.

1.13 ALLOWABLE TOLERANCES

Maximum variation from indicated grades shall be 1/10 of one foot.

PART 2 PRODUCTS**2.01 MATERIALS**

- a. Earth for filling and backfilling shall be acceptable to the Architect and Geotechnical Engineer and shall be free from all objectionable material and shall be a clean, granular material suitable for compaction. Must be tested and approved by the Soils Engineer.
- b. Top Soil: A fertile, friable, loamy soil, free from toxic amounts of acids and alkalis, capable of sustaining healthy plant life. To be approved by Architect.
- c. Imported soils shall consist of essentially granular, silty sands with low expansion potential and free of grasses, weeds, debris, rocks larger than 4" in maximum dimension and soluble sulfates in excess of 200 parts per million. Import fill shall contain sufficient silt and clay binders to render them stable in footing trenches and capable of maintaining specified elevation tolerances during paving operations.
- d. Imported soils to be used as engineered fill should also meet the following gradation and quality criteria:

(1) Maximum Percent Passing #200 Sieve	50
(2) Maximum Liquid Limit	40
(3) Maximum Plasticity Index	14
(4) Minimum R-Value	50
(a) Pavement Areas Only	
(5) Maximum Expansion Index	20
(a) Per 2010 CBC Standard 18-2	
(b)	
- e. Only soils passing DTSC standards shall be allowed.
- f. Pea Gravel- to be used for drainage course material (backfill) and decorative finishes shall be screened gravel that consists of clean, washed, small round stones which will be retained by a No.4 (4.75mm) sieve and will pass a 3/8"(9.5mm) sieve.

PART 3 EXECUTION**3.01 SITE CLEARING**

Clear the building site of all vegetation and rubbish, including all brush, grass, weeds, trees, roots, concrete slabs and footings, A.C. paving, tin cans, glass, wood, brick and large rocks (1-1/2" or larger), etc. Strip the entire property and easements down to bare earth. All vegetation and rubbish cleared and stripped from the site shall be removed from the site and legally disposed of.

3.02 PREPARATION OF AREA UPON WHICH FILL IS TO BE PLACED

- a. **Clearing and grubbing-** should consist of stripping grasses; removing existing structures, foundations, slabs, and miscellaneous concrete; removing buried utility lines; locating and removing or disposing of abandoned septic tanks and seepage pits (dry well) if any are encountered during site clearing and grubbing operations.
- b. **Stripping-** Prior to soil compaction, existing ground surfaces should be stripped of surface vegetation. A stripping depth of one inch should be adequate. In no instances should stripped material be used in engineered fill or blended with and compacted in original ground.
- c. **Slabs and Pavements-** Shall be completely removed. Asphaltic concrete fragments may be used in fill provided they are broken down to a maximum dimension of two inches and adequately disbursed within a friable soil matrix. Soil-AC mixtures should not be used above the elevation bottom of the lowest structure footing.
- d. **Foundations-** Existing at the time of grading should be completely removed.
- e. **Basements and septic tanks-** located in proposed structure areas should be completely removed. Basements or septic tanks situated outside the structure areas may be removed or disposed of by breaking the walls down to not less than two feet below finished grade; breaking the bottom out to provide drainage, and back-filling and compacting the resulting cavity using a sand slurry or by placing and compacting acceptable soils engineered fill. If a sand slurry is used, no compaction tests will be required.
- f. **Seepage pits-** in proposed structure areas should be removed to a minimum depth of five feet below finished grade or two feet below existing ground, whichever is lower. If a portion of the pit liner is to be abandoned in place, the void should be backfilled with sand slurry. In no instances should liners be left in place within a depth of two feet below existing ground.
- g. **Backfilling Cavities-** All voids or depressions created by clearing and grubbing operations should be backfilled with either on-site soils or acceptable imported fill materials. Materials used to backfill cavities should be placed and compacted in accordance with Paragraph 3.06.
- h. After the area to be filled is cleared, it shall be plowed or scarified to the depth of at least twelve (12) inches, and until the surface is free of ruts or uneven features which will tend to prevent uniform compaction. It shall then be compacted to a depth of at least twelve (12) inches in accordance with specifications for compacting fill material in Paragraph 3.03.

3.03 PLACING, SPREADING AND COMPACTING FILL MATERIAL

- a. The fill material shall be placed in layers which, when compacted, shall not exceed six inches (6"). Each layer shall be spread evenly and shall be thoroughly mixed

during the spreading to insure uniformity of material in each layer. When the moisture content of the fill material is below that specified by the Engineer, water shall be added until the moisture content is as specified. When the moisture content of the fill material is above that specified by the Engineer, the fill material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.

- b. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to not less than ninety percent (90%) of maximum dry density in accordance with ASTM D 1557-12, Method A, shall be by self-propelled multiple-wheel pneumatic tired rollers or other approved types of rollers. Rollers shall be of such design that they will be able to compact the fill to the specified density. Rolling shall be accomplished while the fill material is at the specified moisture content. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to insure that the desired density has been obtained.
- c. Field density tests shall be taken as directed by the Engineer and when these tests indicate that the density of any layer of fill or portion thereof is below the required ninety percent (90%) density, that particular layer or portion shall be reworked until the required density has been obtained.
- d. The fill shall be brought to within 0.1' plus or minus of the finished grades and the surface shall be bladed to a smooth and uniform surface.
- e. **Placing on Slope:** Where the slope of the sub-grade surface on which fill is to be placed is 10:1 or steeper, bench the sub-grade in flat benches or at least ten feet (10'-0") in width prior to filling thereon. Prepare and compact each bench in accordance with the specifications for site preparations. Benching, preparation and compaction of the benched sub-grade may be done simultaneously with the filling operation; and the material excavated in benching may be mixed and compacted with new fill unless deemed unsuitable by the Soils Engineer. All fill materials shall be subject to the approval of the Engineer as excavated and placed.

3.04 PREPARATION OF FLOOR SLAB SUBGRADE IN CUT AREAS

Subgrade for concrete floor slabs in cut areas shall be prepared as in 3.02 above. The compacted subgrade shall be bladed to a smooth and uniform surface.

3.05 EXCAVATIONS

- a. The bottom of all excavations shall be smooth, level and firm and at the depth called for on the drawings. Any excavation made deeper than indicated on the drawings shall not be backfilled but filled with concrete by the concrete contractor. Concrete mix shall be of the same mix as specified for footings.
- b. All excavations shall be kept free of standing water by pumping, draining or any means necessary to this end.

- c. Sides of footings may be formed by neat excavations if banks will stand without caving. If caving results, footing excavations shall be made to a line not less than 18" beyond each face of the footing to permit installation and removal of forms. Faces of footings abutting a property line shall be formed in all cases.
- d. The contractor shall bear all costs for additional work on account of overexcavation.

3.06 BACKFILLING

- a. After forms are stripped and concrete surfaces approved, the space between the earth banks and the concrete shall be filled with clean earth. The backfill material shall be placed in layers, which, when compacted, shall not exceed six (6) inches in depth. It shall be moistened with water to bring it to the optimum moisture content and thoroughly compacted by means of mechanical compactors to indicated grades and to a density equal to that of the soil at the bottom of the footings, but not less than 90% of the maximum dry density in accordance with ASTM D 1557-78T, Method A.
- b. The backfill may be compacted by means of flooding (ponding) and jetting if the backfill and foundation material is granular (sandy) and free draining after compaction. This method shall be used only if approved ahead of time by the Structural Engineer. This method shall *not* be used under areas that will receive concrete slabs or A.C. paving. The backfill shall be placed in layers not over three (3) feet deep. Flooding shall not be used to compact the top foot below finish grade - use two 6" moistened layers as called for above. It may be necessary to use vibratory or other compaction equipment along with the flooding to obtain the required 90% compaction.

3.07 TOP SOIL

Place 12" of specified material in planters and planted areas; 6" of same in lawn or turf areas.

3.08 GRADING

After fill and backfill work has been completed, the areas outside of the building shall be finish graded to the indicated grades. Finish grades of lawn areas in general: 1" below walk grades; planted areas: 2" below walk grades; in planters: 6" below tops of planter walls. The areas inside of the building to receive slabs or other construction work shall be fine finish graded to the required grades. All grading shall be left even and free of all debris, shall be to the grades indicated on the drawings and shall be raked clean just prior to the owner's acceptance of the completed building.

3.09 DISPOSAL AND CLEANUP

- a. Rubbish, Debris, Rocks, Trees, etc.: Hauled away from site promptly and legally disposed of.
- b. Topsoil Strippings: Legally dispose of off site.
- c. Excess earth resulting from cutting and excavation to be legally disposed of off the site or hauled to an area as designated and stockpiled.
- d. Dust and Noise Abatement: During entire period of construction and during loading, keep area and material being loaded sprinkled to reduce dust in air and annoyance to premises and neighborhood. Exercise all reasonable means to abate undue noise.
- e. Clean up site, remove all debris and leave premises in clean and orderly condition.

3.10 CERTIFICATION OF GRADES

- a. The contractor and the soils engineer shall, at the conclusion of the grading work, certify to the Architect that the grading has been performed in accordance with the specifications and is satisfactory for its intended use.
- b. Building Pad Certifications - The Contractor shall arrange for and hire a licensed Land Surveyor or Civil Engineer with authority to practice Land Surveying registered in the State of California to verify the depth and extents of all building over excavations. In addition, the Surveyor or Civil Engineer shall record final elevations of building pads and pavement subgrade. These elevations shall be signed and sealed by the Surveyor or Civil Engineer, labeled "As Graded Elevations", and transmitted to the Architect before work commences on the building foundations.

3.11 Excess Water Control

- a. Do not place, spread, or roll any fill material during unfavorable weather conditions. Do not resume operations until moisture content and fill density are satisfactory to the Engineer.
- b. Provide berms or channels to prevent flooding of subgrade.
- c. Where soils have been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and re-compact as specified for Filling below.
- d. Provide and maintain, at all times during construction, ample means and devices with which to promptly remove and dispose of all water from every source entering the excavations or other parts of the work. Dewater by means which will ensure dry excavations and the preservation of the final lines and grades of bottoms of excavations.
- e. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil

material. Apply water in manner to prevent free water appearing on surface during or subsequent to compaction operations.

- f. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
- g. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

END OF SECTION

10/14/2022

TERMITE CONTROL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this section shall include the furnishing of all labor, materials and equipment required to complete the "preconstruction" soils treatment under and adjacent to structures to provide a uniform toxic barrier in all routes of termite entry.

1.02 PROTECTION

Allow no disturbance of treated soil between application of poison and pouring of concrete.

1.03 GUARANTEE

- a. Furnish to Owner a written five (5) year warranty against subterranean termites.
- b. Warranty shall cover against invasion or propagation of subterranean termites, damage to building or building contents caused by termites; repairs to building or building content so caused.
- c. Areas of infestation appearing within the warranty period shall be retreated at no additional cost to the Owner.
- d. Areas of damage of building or building contents shall be repaired at no additional cost to the Owner for both material and labor to a maximum cost of \$5,000.00 per each building location.
- e. Make an inspection of the Work once each year at no additional cost to the Owner for a total period of 5 years following date of Notice of Completion for the purpose of detecting termite infestation.
- f. If termite infestation is found during that 5 year period, retreat according to prevailing practices of the trade within 10 days after such infestation is discovered.
- g. Owner reserves the right to renew warranty for an additional 5 years. Contractor shall provide the Owner with a proposal prior to beginning work for the cost of the additional 5 year warranty for the Owners review and comments.

PART 2 PRODUCTS

2.01 MATERIALS

Apply one of the following chemicals as a water emulsion at concentrations and volume specified. If impervious soils make a reduction in volume of solution necessary, increase percentage of toxicant used in proportion to insure same amount of insecticide be used per linear or square foot.

Demon TC, as manufactured by Zeneca
Premise

Dominion

Equal as approved by Architect. See Div. 00, Section 10, Article 19.

PART 3 EXECUTION

3.01 APPLICATION

- a. Apply in strict conformance with the manufacturer's recommendations.
- b. All termite control must be performed by a state licensed structural pest control company.

3.02 APPLICATION RATES

- a. Surface Preparation:
 - 1. Remove foreign matter which could decrease effectiveness of treatment on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placement of compacted fill under slabs, if recommended by toxicant manufacturer.
- b. Apply in accordance with manufacturer's recommendation.
- c. Apply under all building pads, footings and areas within 2'-0" of buildings.
 - 1. Allow not less than 12 hours for drying after application before beginning concrete placement or other construction activities.
- d. Apply to substrate immediately prior to the installation of the membrane vapor barrier to avoid losses due to evaporation.
 - 1. When substrate is crushed rock fill applied below membrane vapor barrier, apply additional treatment to soil prior to installation of fill.
- e. Footing trenches shall be treated not more than 24 hours prior to concrete pour.
- f. Treat critical locations such as utility footing penetrations and expansion joints with linear treatment at the manufacturer's recommended rate.
 - 1. Treat inside of utility trenches for a minimum of 48" beyond the building pad.
- g. Reapply soil treatment solution to areas disturbed by subsequent excavation or other construction activities following application.
- h. Take precautions to protect adjoining property and areas designated for planting.
- i. Application Rates shall be as follows unless otherwise specified or approved by the Architect:
 - 1. One gallon per 10 sq. ft. as overall treatment under slab and attached porches.
 - 2. 4 gallons per 10 lin. ft. along inside and outside of exterior foundation walls, and around utility services and other features, that will penetrate slab.
 - 3. 2 gallons per 10 lin. ft. in voids of unit masonry foundation walls or piers.

END OF SECTION
10/3/2013

VEGETATION CONTROL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include the furnishing of all labor, materials and equipment required to complete the sterilization to prevent seed germination and plant growth, under paving, sidewalks and other areas indicated on the drawings.

1.02 PROTECTION

Take necessary precautions to protect adjoining property and areas designated for planting on building site.

1.03 Certification

No products shall be sprayed or spread unless the applicator has been licensed and certified by the State of California to disperse product specified in this section or approved by the State of California for the intended use.

PART 2 PRODUCTS

2.01 Materials:

- a. Contractor shall submit State of California approved product for weed eradication

PART 3 EXECUTION

- 3.01 Apply in accordance with the manufacturer's recommendation, state and federal guidelines.

END OF SECTION
05/15/2008

CONCRETE PAVING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 WORK INCLUDED

- a. Site concrete paving, including sidewalks, fire lane.
- b. Curbs, gutters.

1.02 RELATED SECTIONS

- a. Site grading
- b. Asphalt concrete paving
- c. Landscaping
- d. Reinforcing steel
- e. Sewerage and drainage (storm sewer)

1.03 QUALITY ASSURANCE

- a. Comply with the latest publications for materials and operations of the following:
 - 1. The American Society for Testing and Materials (ASTM).
 - 2. American National Standards Institute (ANSI).
 - 3. The American Concrete Institute (ACI).
 - 4. The American Welding Society (AWS).
 - 5. Portland Cement Associations (PCA).
 - 6. State Building Codes.
 - 7. State of California, Department of Transportation (CALTRANS) Standard Specifications, latest edition.
- b. Certify in writing that Contractor has not less than five years experience in the field of providing specified finishes.
- c. Perform work specified herein under the personal and constant supervision of a competent construction superintendent experienced in this class of work.
- d. Provide slump tests for checking consistency of concrete mixture shall be made in accordance with ASTM C-143.
- e. Pay for any and all re-inspection, re-testing, re-design required due to the failure of concrete to meet requirements.

- f. For additional reference information, consult Portland Cement Association booklet; Cement Mason's Guide to Building Concrete Walks, Drives, Patios, and Steps.
- g. All concrete work: True to lines and grade as indicated on the drawings. Be responsible for proper drainage, without birdbaths, on all concrete paving surfaces. Bring discrepancies or omissions on drawings, or conditions on the site, which prevents proper drainage to the attention of the Architect in writing for corrections before work proceeds.
- h. All Construction: Conform to current applicable codes and ordinances.
- i. Coordinate placement of embedded items to avoid block-outs and cutting in finished work.

1.04 SUBMITTALS

- a. Submit manufacturer's certification that materials meet specification requirements.
- b. Submit concrete mix design.

1.05 PACKAGING, DELIVERY, STORAGE AND HANDLING

- a. Deliver packaged materials in manufacturer's original, unopened containers bearing manufacturer's name and brand.
- b. Protect materials delivered against inclusion of foreign matter.
- c. Store materials in dry location and protect against water.

1.06 JOB CONDITIONS

- a. Inspection:
 - 1. Examine areas for conditions under which work is to be performed. Report in writing to Architect all conditions contrary to those shown on the drawing or specified herein and all other conditions that will affect satisfactory execution of work such as improperly constructed substrates or adjoining work. Do not proceed with work until unsatisfactory conditions have been corrected.
 - 2. Start of work constitutes acceptance of the conditions under which work is to be performed. After such acceptance, be responsible for correcting all unsatisfactory and defective work resulting from such unsatisfactory condition at own expense.
- b. Do not start work until temperature is at least 50 degrees F and rising, or if rain is predicted within eight hours.
- c. Owner will select a qualified testing laboratory to take samples for testing during the course of the work as considered necessary. Cost of such test will be paid for by Owner. Cooperate in making tests and be responsible for notifying the designated laboratory in sufficient time to allow taking of sample at time of placement.

- d. If test shows that concrete is below specified strength, remove all such concrete, as directed by Architect. Pay for removal of low strength concrete and its replacement with concrete of proper specified strength and testing.

PART 2 PRODUCTS

2.01 MATERIALS

- a. Cement: Shall conform to ASTM C-150, Type II, low alkali.
- b. Concrete: Shall be 2500 psi, Class B, 5.25 sack mix unless otherwise indicated; conforming to Section 90 of the State Standard Specifications.
- c. Aggregate: Shall be 1 inch maximum, conforming to ASTM C-33.
- d. Water/cement ratio: Shall not exceed 7.6 gals. /sack cement.
- e. Reinforcing: Shall conform to ASTM A-615, Grade 40, deformed bars, or smooth dowels. Smooth Dowels shall be use at expansion joints.
- f. Curing Compound: Shall conform to AASHTO Des. M148, Type 2, Class A, white pigmented, except the loss of water in the water retention test should not exceed 0.04 grams per square centimeter of surface.
- g. Preformed Joint Filler: Shall conform to ASTM D-1751 or ASTM D-994, 1/2 inch thick unless otherwise indicated.
- h. Water: Shall be clean and free from deleterious acids, alkali, oil, and organic matter, and shall be potable.
- i. Slump: Maximum slump shall be 4", conforming to ASTM C-143.
- j. Form Release: Shall be a 100% chemically reactive release agent conforming to Corps of Engineers CEGS-03300, Section 10.8. Form oil, diesel oil or kerosene not allowed.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

- a. Subgrade for the curb, gutter, fire-lane, valley-gutters, concrete paving, and sidewalks: Grade to plus or minus 0.1 feet. Compact all subgrade on which concrete is to be placed to a depth of 6 inches to a relative compaction of 90 percent prior to placing of any concrete.
- b. Protect the subgrade from damage after the preparation has been completed. This contractor shall be responsible for all additional fine grading as required.
- c. Test the completed subgrade for grade and cross section by means of a template supported on side forms. Wet the subgrade and forms thoroughly, immediately in advance of placing concrete.

3.02 FORMS

- a. Forms: Shall be smooth on the side placed next to the concrete, with a true smooth upper edge, and rigid enough to withstand the pressure of fresh concrete without distortion.
- b. All forms shall be thoroughly cleaned and coated with form release to prevent the concrete from adhering to them. Depth of face forms for concrete curbs, equal to the full face height of the curb.
- c. Carefully set forms to alignment and grade; conform to the required dimensions. Hold forms rigidly in place by stakes. Brace at 12" o.c. at plywood (5/8" min.) forms and 24" o.c. at 2x forms. Use clamps spreaders and braces where required to insure rigidity in the forms.
- d. Do not remove the form on the front of curbs in less than one hour nor more than six hours after the concrete has been placed. In no event shall forms be removed while the concrete is sufficiently plastic to slump. Do not remove side forms for gutters and sidewalks in less than 12 hours after the finishing has been completed.

3.03 CURB AND GUTTER CONSTRUCTION

- a. Expansion joints 1/2 inch wide shall be constructed in curbs and gutters at 30-foot intervals, at each side of structures and at the ends of curb returns. Expansion joints shall be filled with pre-molded joint filler conforming to the provisions in State Standard Specifications, Section 51-01.12C, "Premolded Expansion Joint Fillers". Expansion joint filler shall be shaped to the cross section of the curb and gutter. Reinforcing Dowels shall be smooth. Contraction joints shall be constructed at 10-foot maximum spacing. Cut contraction joints minimum 1-1/4 inch deep with a jointing tool after surface has been finished. Joints shall be constructed at right angles to the curb lines. Concrete shall be placed and compacted in forms without segregation.
- b. Prior to the removal of the forms, the surface shall be finished true to grade by means of a straightedge float, not less than 10 feet in length, operated longitudinally over the surface of the concrete. Form clamps shall be so constructed as not to interfere with the operation of this float.
- c. Immediately after removing the front curb forms, the face of the curb shall be troweled smooth to the flow line of the integral curb and gutter, and then finished with a steel trowel. The top shall be finished and the front and back edges rounded as shown on the plans.
- d. After the face of the curb has been troweled smooth, apply a final fine brush finish with brush strokes parallel to the line of the curb. Give gutters a broom finish with strokes parallel to the line of the gutter.
- e. Top and face of the finished curb: Shall be of uniform width, free from humps, sags, or other irregularities. When a straightedge 10 feet long is laid on the top of face of the curb or on the surface of gutters, the surface shall not vary more than 0.01 foot from the edge of the straightedge, except at grade changes or curves.
- f. Depress curbs to provide entrances for driveways and wheelchair ramps. The entrances shall be of the dimensions shown on the plans.

- g. Clean, at own expense, all discolored concrete. The concrete may be cleaned by abrasive blast cleaning or other methods approved by the Architect.
- h. Make repairs by removing and replacing the entire unit between scoring lines or joints.

3.04 VALLEY GUTTER, CONCRETE PAVING MOW STRIPS AND SIDEWALKS

- a. Fresh concrete shall be struck off and compacted until a layer of mortar has been brought to the surface. The surface shall be finished to grade and cross-section with a float, troweled smooth and finished with a broom. The float shall not be less than 10 feet in length and not less than 6 inches in width. Brooming shall be transverse to the line of traffic and, if water is necessary, it shall be applied to the surface immediately in advance of brooming. Test all valley gutters to prove conformance with Article 3.03 e.
- b. Expansion joints 1/2 inch wide shall be constructed at all turns and opposite expansion joints in adjacent curb. Where curb is not adjacent, expansion joints shall be constructed at intervals of 30 feet. Expansion joints shall be filled with pre-molded joint filler conforming to the provisions in Section 51-1.12c, "Premolded Expansion Joint Fillers". Contraction joints shall be constructed at 10-foot maximum spacing. Cut contraction joints minimum 1-1/4 inch deep with a jointing tool after surface has been finished.
- c. Where concrete borders are to be placed around or adjacent to manholes, drop inlets, or other miscellaneous structures in gutter depressions, island paving, or driveway areas, such structures shall be constructed to final grade before the borders are constructed.

3.05 CONCRETE FINISHES

Broom Finish: Texture with medium broom finish to produce a uniform, non-skid (broom) finish on all surfaces with less than a 6% slope. Texture shall be a heavy broom finish on all surfaces with greater than 6% slope.

3.06 CONCRETE CURING

- a. Spray the entire surface of the concrete uniformly with a white pigmented curing compound. Should the film of compound be damaged from any cause before the expiration of 72 hours, repair the damaged portions immediately with additional compound.
- b. Surface so newly placed concrete to be cured by the pigmented curing compound shall be kept moist or wet until the curing compound is applied and the curing compound shall not be applied until all patching or surfacing finishing has been completed.
- c. The curing compound shall be delivered to the work in ready-mixed form. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. The compound shall not be diluted or altered in any manner.
- d. Curing compound that has become chilled to such an extent that it is too viscous for satisfactory application shall be warmed to a temperature not exceeding 100 degrees F.

- e. Apply the curing compound to the exposed surface at a uniform rate of one gallon per 150 square feet of area.

3.07 CLEAN UP

- a. Upon completion of other work in buildings, all concrete paving surfaces shall be swept clean and all mortar and stains removed therefrom.
- b. The Contractor shall remove from the premises all surplus material, equipment, and debris as a result of work in this Section.

END OF SECTION
10/24/2013

CHAIN LINK FENCES AND GATES

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, material, equipment and appliances and required to complete the fencing indicated on the drawings and specified herein.

1.02 WORK INCLUDED

- a. All chain link fencing, posts, headrails, braces, fittings, fabric, hardware and gates.
- b. Excavation and concrete footings for chain link fence work.
- c. Privacy slats for fences and gates.

1.03 RELATED WORK

Concrete design and concrete mow strips - see Section 03 10 00.

1.04 GENERAL REQUIREMENTS

- a. **Workmanship:** Only skilled workmen experienced in their respective trades and work shall be employed. All work shall be performed in a first-class workmanlike manner and shall be subject to the approval of the Architect.
- b. **Measurements:** The contractor shall take measurements of the building site and verify the dimensions indicated on the drawings.
- c. **Completeness:** The contractor shall furnish and install all appurtenances required to give a complete and satisfactory fence.
- d. **Responsibility:** The contractor shall be responsible for properly locating the fence within the property lines.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- a. MASTER-HALCO
- b. USA Industries, (801) 972-5124
- c. **Substitutions:** See Div.00, Section 10, Article 19, whenever any material is specified by name and/or number thereof, such specifications shall be deemed to be used for the purpose of facilitating a description of the materials and establishing quality, and shall be deemed and construed to be followed by the words "or approved equal". No substitution will be permitted which has not been submitted for prior approval by the Architect. All materials shall be new and the

best of their class and kind and free of visible defects. Sufficient descriptive literature and/or samples must be furnished for any materials submitted as "equal" substitutes. All materials shall be guaranteed for a period of one (1) year against material defects and workmanship.

2.02 MATERIALS

- a. Chain Link Fencing: Shall be 6'-0" high typically or as indicated on drawings.
 - (1) Fabric shall be "Galv-After" chain link wire heavily zinc coated (galvanized) by the hot-dip process AFTER WEAVING full heights as shown on plans. Fabric shall be made of No. 9 gauge class one (1) coated wire with 2" mesh and 1.202/ft. zinc coating.
 - (2) Tensile Strength Test: The wire pickets of which this fabric is made is to stand a tensile strength test of 70,000 pounds per square inch based on the cross sectional area of the galvanized wire.
 - (3) Galvanizing Test: Chain link fabric to comply with ASTM A239.
- b. Posts shall conform to Table 1. Length of posts shall be compatible with the specified fence height, or shall be as detailed. The term "Terminal posts" shall apply to end, corner, and pull posts. The term "Line posts" is defined as the vertical posts installed between terminal posts. The term "Gate posts" shall apply to the post supporting the weight of the gate.

TABLE 1

Post Type	Fabric Heights	Size	Weight (lb./l.f.)
Terminal	6 ft. or less	2.875" o.d.	5.79
	6'-1" to 12'-0"	4" o.d.	9.11
	Over 12'-0"	6.625" o.d.	18.97
Line	12'-0" or less	2.375" o.d.	3.65
	Over 12'-0"	2.875" o.d.	5.79
	Gate Leaf Widths	Post Size	
Gate	6'-0" or less	2.875" o.d.	5.79
	6'-1" to 13'-0"	4" o.d.	9.11
	13'-1" to 18'-0"	6.625" o.d.	18.97
	18'-1" to 23'-0"	8.625" o.d.	28.55
Sliding Gate	Varies	Same as terminal post	

- c. Line Posts: Shall be hot-dip galvanized, Class I steel pipe, Grades A and B, 1.2 oz. zinc-coated, Schedule 40, per ASTM A-120. See Table 1 for pipe diameter and weights for applicable heights.
- d. End, Corner, Pull and Gate Posts: Shall be hot-dip galvanized, Class I steel pipe, Grades A and B, 1.2 oz. zinc-coated, Schedule 40, per ASTM A-120. See Table 1

for pipe diameter and weights for applicable heights. Install corner posts at the beginning and at all ends of all radii.

- e. Depth and Setting of Posts: All posts shall be set three feet (3') min. in concrete footings. Concrete base shall be 39" deep x 10" diameter for line posts and 39" deep x 14" diameter for end/gate posts, unless otherwise noted. The cement shall extend three inches (3") below bottom of all posts.
- f. Top Rail and Bracing: Shall be hot-dip galvanized pipe (1.66") o.d., weight 2.27 pounds per linear foot. Attach fabric to top rail with 13 ga. annealed galvanized wire, double wrapped at 12" o.c.
- g. Post Tops: Shall be hot-dip galvanized. All posts fitted with heavy ornamental tops.
- h. Fittings: Shall be heavy weight malleable wrought iron or heavy weight pressed steel and shall be hot-dip galvanized. Fabric shall be fastened to end corner and gate posts with 1/4" x 3/4" stretcher bars and not less than 1/8" x 3/4" wide stretch bar bands at one foot (1'-0") center to center.
- i. Fabric Attachment: Fabric shall be fastened to line posts with 9 ga. annealed galvanized wire, single wrapped approximately at eighteen inch (18") centers minimum 5 per post.
- j. Gates: Gate frames to be made of hot-dip galvanized pipe (1.90") o.d., weight 2.72 pounds per linear foot. Gate corners shall be welded. Fabric to be same as in fence. Gates to be complete with heavy weight malleable iron hinges and catches. Single gate to have a fork latch with padlock attachment, double gates shall have drop-bar with gate holdbacks.
- k. Rolling Gates: Supply 6" round wheels with two (2) (1.66") o.d. rail track on the side of the fence.
- l. Concrete: See Section 03 10 00.
- m. Latches: Shall be fork-latch type and attachments for padlock locking on all gates.
- n. Finish: All materials entering into the construction of this fence shall be heavily hot dip galvanized.
- o. Tension Wire: Shall be 7 ga. coil spring class III steel wire, 1.2 oz. zinc coated attached to fabric with 9 ga. hog rings at 24" o.c.
- p. Privacy slats:
 - (1) All slats shall be manufactured from a combination of color pigments, quality high density virgin polyethylene and ultraviolet inhibitors.
 - (2) Color, provide minimum 6 color choices. Color to be selected by Architect.
 - (3) Provide 25 years limited warranty against color fading, breakage of slats and locking channel under normal climatic extremes.
 - (4) Installation of privacy slats per manufacturer instructions.

PART 3 EXECUTION

3.01 EXAMINATION AND VERIFICATION OF DRAWINGS AND SITES

It shall be The Contractor's responsibility to report to the Architect any deviations between the drawings, specifications and the site. Failure to do so prior to the installing of equipment, shall be done at The contractor's expense.

3.02 ORDINANCES AND REGULATIONS

All local, municipal and state laws and rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications and their provisions shall be carried out by the contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations or requirements of same. However, when these specifications and/or drawings call for or describe materials, workmanship or construction of a better quality, higher standard or larger size, specification and/or drawings shall take precedence over the requirements of said rules and regulations.

3.03 INSTALLATION

- a. Headrails and top of fabric shall be level and true to line.
- b. Posts shall be spaced not over ten foot (10'-0") centers or where shown on plans.
- c. Fencing shall stair-step up or down retaining walls, grades, curbs, etc., in a level, perpendicular and satisfactory fashion.

3.04 CLEAN UP

All excess soil, debris, rubbish, etc., which results from work performed under this section shall be cleaned up and removed from the site. It shall be legally disposed of off site.

END OF SECTION
12/13/2010