CONSTRUCTION DOCUMENTS

DSA APPL #02-122976

ADDENDUM "A"

JACOBSON ES - TK CLASSROOMS

1750 W Kavanagh Ave., Tracy, CA 95376

3595005000

Tracy Unified School District

1875 W. Lowell Ave., Tracy, CA 95376

March 3, 2025

HMC Architects

ADDENDUM "A"

JACOBSON ES - TK CLASSROOMS
Tracy Unified School District
Tracy, California

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122976 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 03/12/2025

DSA Appl #02-122976

March 3, 2025
HMC #3595005000

LICENSED ARCHITECT
JENNIFER PEARSON HUANG
C-35691
REN. 05/31/25
STATE OF CALIFORNIA

HMC ARCHITECTS
Architect

REGISTERED PROFESSIONAL ENGINEER
ANTHONY J. TASSANO
NO. C74696
CIVIL
STATE OF CALIFORNIA

Warren Consulting Engineers
Civil Engineer

REGISTERED PROFESSIONAL ENGINEER
ALEXANDRE M. BATISTA
No.E23735
EXP.12-31-2025
ELECTRICAL
STATE OF CALIFORNIA

Optimized Energy & Facilities Consulting
Electrical Engineer

ADDENDUM "A"

JACOBSON ES - TK CLASSROOMS
TRACY, CALIFORNIA
CONSTRUCTION DOCUMENTS
03 MARCH 2025

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NOT APPLICABLE

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NOT APPLICABLE

DIVISION 25 - INTEGRATED AUTOMATION

NOT APPLICABLE

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NOT APPLICABLE

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NOT APPLICABLE

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NOT APPLICABLE

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NOT APPLICABLE

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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 at Jacobson Elementary School:

(1) Construction and installation of (2) 36'x40' PC Portable TK Classroom buildings.

(2) Construction of concrete foundations for the portable classroom buildings.

(3) Construction of chain link fences and gates between the classroom buildings.

(4) Related civil site concrete and site utilities.

(5) Related electrical site utilities, and building low voltage.

(6) Removal of an existing drinking fountain and replacement with a drinking fountain and bottle filler station.

1.03 CONTRACTS

A. Perform the Work under a single, fixed-price Contract.

1.04 WORK BY OTHERS

A. Construction of 2 - 36'x40' classroom buildings by portable manufacturer

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.

ADDENDUM "A"

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

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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.

ADDENDUM "A"

(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

DOCUMENT 01 26 00

CHANGES IN THE WORK

CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PROVISIONS IN THE AGREEMENT, GENERAL CONDITIONS, AND SPECIAL CONDITIONS, IF USED, RELATED TO CHANGES AND/OR REQUESTS FOR CHANGES.

END OF DOCUMENT

ADDENDUM "A"

DOCUMENT 01 29 00

APPLICATION FOR PAYMENT AND CONDITIONAL AND UNCONDITIONAL WAIVER AND RELEASE FORMS

CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS IN THE GENERAL CONDITIONS RELATED TO APPLICATIONS FOR PAYMENT AND/OR PAYMENTS.

CONDITIONAL WAIVER AND RELEASE
ON PROGRESS PAYMENT
(CIVIL CODE SECTION 8132)

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: $_____

Check Payable to: _____

Exceptions

This document does not affect any of the following:

(1) Retentions.

(2) Extras for which the claimant has not received payment.

(3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:

Date(s) of waiver and release: _____

Amount(s) of unpaid progress payment(s): $_____

(4) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

UNCONDITIONAL WAIVER AND RELEASE
ON PROGRESS PAYMENT
(CIVIL CODE SECTION 8134)

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has received the following progress payment: $_____

Exceptions

This document does not affect any of the following:

(1) Retentions.

(2) Extras for which the claimant has not received payment.

(3) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

CONDITIONAL WAIVER AND RELEASE
ON FINAL PAYMENT
(CIVIL CODE SECTION 8136)

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check:

Amount of Check: $_____

Check Payable to: _____

Exceptions

This document does not affect any of the following: _____

Disputed claims for extras in the amount of: $_____

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

UNCONDITIONAL WAIVER AND RELEASE
ON FINAL PAYMENT
(CIVIL CODE SECTION 8138)

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for all labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions

This document does not affect any of the following: _____

Disputed claims for extras in the amount of: $_____

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

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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. Contractor 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: Contractor's field office.

C. The Contractor shall notify and invite the following entities ("Invitees"):

(1) District Representative.

(2) Contractor.

(3) Contractor's Project Manager.

(4) 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,

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those exceptions shall be stated in writing to the District within five (5) 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 demolition work phases. Contractor shall invite all Invitees to this meeting, and others whose work may affect or be affected by the quality of the demolition 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

DOCUMENT 01 32 13

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 issuance 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	**05-26-2022**
PHASE 1 DEMOLITION	
PHASE 2 DEMOLITION	
FINAL PROJECT COMPLETION	

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 (¾) 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 fr Windwos, 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 General 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

Contractor to review section 01 3300 as well as this document

DOCUMENT 01 33 00

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.

Contractor to review section 01 3300 as well as this document

(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 within 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.

Contractor to review section 01 3300 as well as this document

(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 $100 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 one reproducible transparency and six (6) opaque reproductions. The District will review and return the reproducible copy and one (1) opaque reproduction to Contractor.

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

Contractor to review section 01 3300 as well as this document

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.

Contractor to review section 01 3300 as well as this document

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. Contract must submit a minimum of six (6) each, to the District. District shall return one (1) to the Contractor, who shall reproduce whatever additional copies it requires for distribution.

B. Contractor shall submit six (6) copies of 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.

Contractor to review section 01 3300 as well as this document

(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 twenty-one (21) days after receipt or within twenty-one (21) days after receipt of all related information necessary for such review, whichever is later.

B. One (1) copy of product or materials data will be returned to Contractor with the review status.

Contractor to review section
01 3300 as well as this
document

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 fourteen (14) days after receipt thereof or within fourteen (14) 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.

END OF DOCUMENT

SUBMITTAL NO.: _____

Tracy Unified School District

Architect's Project # 3595005000

DATE: _____

DSA File/Appl. # XX-XX/XX-XXXXXX

Re-Submittal of Original No.: _____

1. SUBMITTAL TRANSMITTAL

Attention: Affifa Kadhim

HMC Architects

Contractor: Company

Contact: Name

Sub Contractor:

Contact: _____

Please submit only one trade per submittal! **Description of submitted materials:**

Quantity submitted	Specification Section		Description of contents (e.g. product data, shop drawings, samples)
	Section #	Section Title	

Contractor Statement: (read and acknowledge)

This submittal has been reviewed and approved with respect to the means, methods, techniques, and procedures of construction, safety precautions, and program incidentals thereto. This submittal complies with the contract documents and comprises no variations thereto, unless accompanied by a substitution request.

By: _____ **Date**: _____

Name

2. RE-TRANSMITTAL TO CONTRACTOR:

Distribution: Contractor, Owner, Project Inspector, HMC, Other

☐ NO EXCEPTIONS TAKEN ☐ REJECTED ☐ FURNISH AS CORRECTED

☐ SUBMIT SPECIFIED ITEM ☐ REVISE AND RESUBMIT ☐ NO ACTION REQUIRED

Corrections or comments made on the shop drawings during this review do not relieve the Contractor from compliance with requirements of the Drawings and Specifications. This general check is only for the review of conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all the other trades, and performing his work in a safe and satisfactory manner.

HMC ARCHITECTS By: _____ Date: _____

Additional Comments:

See Specification Section 01 3300 for use of this form

Tracy Unified School District

SUBSTITUTION REQUEST NO.: ☐

Architect's Project # 3595005000
DSA File/Appl. # XX-XX/XX-XXXXXX

Date: _____

1. SUBSTITUTION REQUEST

Attention: Affifa Kadhim

HMC Architects

Contractor: Company

Contact: Name

Please submit only one product per request!

Include with a specified product Submittal

Sub Contractor:

Contact: _____

2. PROPOSED SUBSTITUTIONS: The undersigned requests consideration of the following substitution:

Specified Item: _____ **Page No.:** _____ **Paragraph No.:** _____

Proposed Item: _____

3. REASON FOR REQUEST:

4. REQUIREMENTS FOR SUBSTITUTIONS:

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of request; applicable portions of data are clearly identified. Attached data also includes a description of changes to Contract Documents, which proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. The proposed substitution does not affect dimensions shown on drawings and does not require design changes in the Contract Documents.
2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on the work, the schedule or specified warranty requirements.
4. Maintenance and service parts will be readily available for the proposed substitution.

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

_____ _____

Signature - Contractor/Subcontractor Date

5. TRANSMITTAL TO CONTRACTOR:

Distribution: Contractor, Owner, Project Inspector, RGA, Other

☐ **ACCEPTED** ☐ **ACCEPTED AS NOTED** ☐ **REJECTED**

HMC ARCHITECTS By: _____ Date: _____

Comments:

Tracy Unified School District

RFI NO.: ☐

Architect's Project # 3595005000
DSA File/Appl. # XX-XX/XX-XXXXXX

Date: _____

1. REQUEST FOR INFORMATION

Attention: Affifa Kadhim

HMC Architects

From:
Contractor: Company
Contact: Name
Sub Contractor: _____
Contact: _____

Identify related specific references within the Contract Documents and supporting information:

Dwg./Document No.: _____

Building/Site Location: _____

2. Existing Condition (source / reason for the request):

3. Recommended Contractor Action(s) for resolution:

4. Project Inspector Acknowledgment:

Date Reviewed: _____

5. Owner / A/E Resolution(s):

Date of Response: _____ By: _____

Attachments: _____

Extra Work Involved in the Above Described Change? *Yes* ☐ *No* ☐

Distribution: Contractor, Owner, Project Inspector, HMC, Other
See Specification Section 01300 for use of this form

HMC, Other

Tracy Unified School District

E-DATA REQUEST NO.: ____

Architect's Project # 3595005000
DSA File/Appl. # XX-XX/XX-XXXXXX

Date: _____

1. ELECTRONIC DATA REQUEST

Attention: Affifa Kadhim

HMC Architects

From: Contractor: Company
Contact: Name
Sub Contractor:
Contact: _____

2. DATA REQUESTED - Provide list of specific drawings requested (include sheet numbers):

3. REASON FOR REQUEST - Provide clear explanation of why information is desired and for what purpose it will be utilized:

4. ACKNOWLEDGEMENT OF RESPONSIBILITY:

The electronic data files requested are distributed for reference only. Transferring such files can alter, delete or change original information. Accuracy of the data cannot be guaranteed as correct or complete and the Contractor accepts full responsibility for any and all inaccuracies, regardless of cause.

The hard copy documents, including addenda and subsequent written changes to the documents, represent the complete work of the contract and all electronic files should be cross-referenced and verified from that information as electronic files may not contain all contract information. It is the Contractor's responsibility to make any changes or revisions necessary.

This electronic data is furnished without guarantee of compatibility with your hardware or software. It is the Contractor's responsibility to notify the Architect in the event a compatibility problem or disk defect is encountered and a replacement disk is necessary.

This electronic data, in its present form, remains the property of HMC Architects and shall not be used for any other purpose than to provide background information for the project noted above. It is not to be released to any other party without the written consent of HMC Architects.

Accepted by: _____
Signature - Contractor/Subcontractor

Representing: _____
Contractor/Subcontractor Company Name

MEGGER GROUNDING TEST CERTIFICATE

This certifies that a Megger Grounding Test for the **[PROJECT NAME]** for the **Tracy Unified** School District, of **San Joaquin** County, California was conducted on the _____ day of _____ , **2025**, per CCR Title 24, Sections 200 H and J. The undersigned verifies that the resistance to ground was 25 ohms or less, as required, and is found to be acceptable.

Project Name: _____

DSA File No.: _____ DSA Application No.: _____

Address: _____

_____

_____

General Contractor's Signature: _____

Electrical Contractor's Signature: _____

Testing Agency's Signature: _____

District Inspector's Signature: _____

SEPARATE CERTIFICATE IS REQUIRED FOR EACH SITE

p:\sacramento\3595 tracy unified school district\005-000_tk classrooms 2025\08 specifications\06 spec\04 final\tusd front end\01 3300-05_megger grounding.doc

ADDENDUM "A"

CERTIFICATION OF CHLORINATION AND STERILIZATION

This certifies that _____ chlorinated the domestic hot and cold water plumbing lines for the **[PROJECT NAME]**, **Tracy Unified** School District. The lines were first flushed and chlorine was injected in the main water line on _____ , **2025**. A minimum chlorine residual of 50 ppm was measured at each outlet. The lines were tagged, secured and the make-up water was shut off. On _____ , **2025**, (a minimum of 24 hours later) the chlorine residual was retested and found to contain a minimum of 50 ppm. The plumbing lines were then thoroughly flushed with fresh water until the chlorine residual was not greater than 0.2 ppm at all outlets. A Bacteriological Examination report has been provided.

District Inspector Signature: _____

Date _____

Name of Chlorination and Testing Firm: _____

Authorized Representative Signature: _____

Date _____

Name of General Contractor: _____

Authorized Representative Signature: _____

Date _____

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ADDENDUM "A"

CERTIFICATION OF COMPLIANCE FOR BUILDING MATERIALS

This is to certify, in accordance with the Environmental Protection Agency requirements, that the materials and equipment used in the construction of the **[project name]** for the **TRACY UNIFIED SCHOOL DISTRICT** School District of **San Joaquin** County, California, are asbestos free and are, therefore, not subject to monitoring for asbestos contamination.

Project Name: _____

Address: _____

Contractor: _____

Address: _____

Signature: _____

Title: _____

Date: _____

SEPARATE CERTIFICATE IS REQUIRED FOR EACH SITE

ROOFING CERTIFICATION

This is to certify that a representative of the manufacturer has visited the site prior to installation, inspected the surfaces which the roofing is applied and accepted those surfaces.

In addition, a representative of the manufacturer has inspected the materials and methods used, verified they are in accordance with the manufacturer's recommendations, and accepts the final installation.

A guarantee for materials and workmanship is to be provided separately.

Project name: _____

Address: _____

_____

General Contractor: _____

Roofing Contractor: _____

Scope of Work/Roofing Type:_____

Roofing Manufacturer: _____

Manufacturer's Representative: _____

Representative's Signature: _____

Date: _____

A SEPARATE CERTIFICATE IS REQUIRED FOR EACH SITE AND FOR EACH ROOFING TYPE

DOCUMENT 01 35 13.23

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.

ADDENDUM "A"

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

DOCUMENT 01 41 00

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) California Building Standards Administrative Code, Part 1, Title 24, CCR.

(2) California Building Code (CBC), Part 2, Title 24, CCR; (International Building Code volumes 1-2 and California Amendments).

(3) California Electrical Code (CEC), Part 3, Title 24, CCR; (National Electrical Code and California Amendments).

(4) California Mechanical Code (CMC), Part 4, Title 24, CCR; (Uniform Mechanical Code and California Amendments).

(5) California Plumbing Code (CPC), Part 5, Title 24, CCR; (Uniform Plumbing Code and California Amendments).

ADDENDUM "A"

(6) California Fire Code (CFC), Part 9, Title 24, CCR; (International Fire Code and California Amendments).

(7) California Green Building Standards Code (CALGreen), Part 11, Title 24, CCR.

(8) 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

DOCUMENT 01 42 13

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

ADDENDUM "A"

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

DOCUMENT 01 42 16

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

ADDENDUM "A"

DOCUMENT 01 42 19

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 12215Research 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

ADDENDUM "A"

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, MA02169-7471 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

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

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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.

ADDENDUM "A"

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. 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

DOCUMENT 01 45 00

QUALITY CONTROL

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, Uncovering of Work and Non-conforming of Work and Correction of Work;

B. Special Conditions.

1.02 RELATED CODES:

A. The Work is governed by requirements of Title 24, California Code of Regulations ("CCR"), and the Contractor shall keep a copy of these available at the job Site for ready reference during construction.

B. The Division of the State Architect ("DSA") shall be notified at or before the start of construction.

1.03 OBSERVATION AND SUPERVISION:

A. The District and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting Structural Engineer will be in accordance with applicable regulations, including, without limitation, CCR, Part 1, Title 24, Section 4-341.

B. One or more Project Inspector(s) approved by DSA and employed by or in contract with the District, referred to hereinafter as the "Project Inspector", will observe the work in accordance with CCR, Part 1, Title 24, Sections 4-333(b) and 4-342:

(1) The Project Inspector and Special Inspector(s) shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections. The Contractor shall provide facilities and operation of equipment as needed, and access as required and shall provide assistance for sampling or measuring materials.

(2) The Project Inspector will notify the District and Architect and call the attention of the Contractor to any observed failure of Work or material to conform to Contract Documents.

The Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Part 1, Title 24, Section 4-343.

ADDENDUM "A"

The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor's superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by Part 1, Title 24, Section 4-336.

1.04 TESTING AGENCIES:

A. Testing agencies and tests shall be in conformance with the General Documents and the requirements of Part 1, Title 24, Section 4- 335.

B. Testing and inspection in connection with earthwork shall be under the direction of the District's consulting soils engineer, if any, referred to hereinafter as the "Soils Engineer."

C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory." The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the District.

D. Testing laboratory shall be approved by the Architect and the Division of the State Architect.

E. Owner will employ and pay for services of an independent testing labatory to perform specified inspection and testing. Retesting cost for failed test will be Contractors responsibilityand will be back-charged against the contract.

1.05 TESTS AND INSPECTIONS:

A. The Contractor shall be responsible for notifying the District and Project Inspector of all required tests and inspections. Contractor shall notify the District and Project Inspector at least seventy-two hours (72) hours in advance of performing any Work requiring testing or inspection.

B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.

C. The District will pay for first inspections and tests required by the “CCR”, and other inspections or tests that the District and/or the Architect may direct to have made, including the following principal items:

(1) Tests and observations for earthwork and paving.

(2) Tests for concrete mix designs, including tests of trial batches.

(3) Tests and inspections for structural steel work.

(4) Field tests for framing lumber moisture content.

(5) Additional tests directed by the District that establish that materials and installation comply with the Contract Documents.

(6) Tests and observations of welding and expansion anchors.

D. The District may at its discretion, pay and then back charge the Contractor for:

(1) Retests or reinspections, if required, and tests or inspections required due to Contractor error or lack of required identifications of material.

(2) Uncovering of work in accordance with Contract Documents.

(3) Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime portion.

(4) Testing done off Site.

E. Testing and inspection reports and certifications:

(1) If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.

(a) The District;

(b) The Construction Manager, if any;

(c) The Architect;

(d) The Consulting Engineer, if any;

(e) Other engineers on the Project, as appropriate;

(f) The Project Inspector; and

(g) The Contractor.

(2) When the test or inspection is one required by the CCR, a copy of the report shall also be provided to the DSA.

1.06 LABORATORY REPORTS

A. After each inspection and test, promptly submit two copies of laboratory report to Owner, Architect, Contractor and DSA.

B. Include:

(1) Date of issue,

(2) DSA Application and File numbers,

(3) Project title and number,

(4) Name of inspector,

(5) Date and time of sampling or inspection,

(6) Identification of product and Specification Section,

(7) Location in the Project,

(8) Type of inspection or test,

(9) Date of test,

(10) Results of test,

(11) Conformance with Contract Documents.

C. When requested by Architect, provide interpretation of test results.

1.07 LIMITS ON TESTING LABORATORY AUTHORITY

A. Laboratory may not release, revoke, alter or enlarge on requirements of Contract Documents.

B. Laboratory may not approve or accept any portion of the work.

C. Laboratory may not assume any duties of Contractor.

D. Laboratory has no authority to stop the work.

PART 2 - PRODUCTS

2.01 TYPE OF TEST AND INSPECTIONS

A. Testing and inspection shall be in accordance with DSA Form 103 (or current version)

B. Slump Test
ASTM C 143

C. Concrete Tests

Testing agency shall test concrete used in the work per the following paragraphs:

(1) Compressive Strength:

(a) Minimum number of tests required: One (1) set of three (3) cylinders for each 100 cubic yards (Sec. 2604(h) 01) of concrete or major fraction thereof, placed in one (1) day. See Title 24, Section 2605(g).

(b) Two cylinders of each set shall be tested at twenty-eight (28) days. One (1) cylinder shall be held in reserve and tested only when directed by the Architect or District.

(c) Concrete shall test the minimum ultimate compressive strength in twenty-eight 28 days, as specified on the structural drawings.

(d) In the event that the twenty-eight (28) day test falls below the minimum specified strength, the effective concrete in place shall be tested by taking cores in accordance with UBC Standard No. 26-13 and tested as required for cylinders.

(e) In the event that the test on core specimens falls below the minimum specified strength, the concrete will be deemed defective and shall be removed and replaced upon such direction of the Architect, and in a manner acceptable to the Division of the State Architect.

D. Reinforcing, Steel

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

DOCUMENT 01 50 00

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) Contractor will pay for power during the course of the Work. To the extent power is available in the building(s) or on the Site, Contractor may use the District's existing utilities by making prearranged payments to the District for the utilities used by Contractor and all Subcontractors. 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: 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. Water:

(1) Contractor shall pay for water used during the course of the Work. Contractor shall coordinate and pay for installation or use of water meter in compliance with local water agency requirements. To the

ADDENDUM "A"

extent water is then available in the building(s) or on the Site, Contractor may use the District's existing utilities by making prearranged payments to the District for the utilities used 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 California Plumbing Code.

(3) Contractor shall make potable water available for human consumption.

C. Sanitary Facilities:

(1) Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the Inspector or Contractor completes all other work at the Site.

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

D. Fire Protection:

(1) 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.

E. Trash Removal:

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

F. 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.

(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. 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.

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 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

DOCUMENT 01 50 13

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. Qualification Data: For Waste Management Coordinator.

I. 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. 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.

C. 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.

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

DOCUMENT 01 52 13

FIELD OFFICES

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. Requirements for Field Offices and Field Office Trailers.

1.03 SUMMARY:

A. General: Contractor shall provide District's Field Office Trailer and contents, for District's use exclusively, during the term of the Contract.

B. Property: Trailer, furniture, furnishings, equipment, and the like, supplied by the Contractor with the Office Trailer shall remain the property of the Contractor; District property items installed, delivered, and the like by District within the Office Trailer will remain District's property.

C. Modifications: District reserves the right to modify the trailer or contents, or both, as may be deemed proper by District.

D. Condition: Trailer and contents shall be clean, neat, substantially finished, in good, proper, and safe condition for use, operation, and the like; the trailer and contents shall not be required to be new.

E. Installation Timing: Provide safe, fully furnished, functional, proper, complete, and finished trailer properly ready for entire use, within fourteen (14) calendar days of District's notification of the issuance of Notice to Proceed.

1.04 SUBMITTALS:

A. General: Submit submittals to District in quantity, format, type, and the like, as specified herein.

B. Office Trailer Data: One (1) copy of manufacturer's descriptive data, technical descriptions, regulatory compliance, industry standards, installation, removal, and maintenance instructions.

ADDENDUM "A"

C. Equipment Data: Two (2) copies of manufacturer data for each type of equipment, if directed by District.

D. Furniture and Furnishings Data: Two (2) copies of manufacturer data for each type of equipment, if directed by District.

E. Plans: One (1) reproducible copy of appropriately scaled plans of trailer layout. Plans shall include, but not be limited to: lighting; furniture; equipment; telephone and electrical outlets; and the like.

F. Product Samples: One (1) complete and entire unit of each type, if directed by District.

1.05 QUALITY ASSURANCE

A. Standards: In the event that provisions of codes, regulations, safety orders, Contract Documents, referenced manufacturer's specifications, manufacturer's instructions, industry standards, and the like, are in conflict, the more restrictive and higher quality shall govern.

B. Installer: Installer or Installers engaged by Contractor must have a minimum of five (5) years of documented and properly authenticated successful experience of specialization in the installation of the items or systems, or both, specified herein.

C. Manufacturer: Contractor shall obtain products from nationally and industry recognized Manufacturer with five (5) years minimum, of immediately recent, continuous, documented and properly authenticated successful experience of specialization in the manufacture of the product specified herein.

D. State Personnel Training: Provide proper training for maintenance and operations, including emergency procedures, and the like, as directed by District.

E. Units: Shall be sound and free of defects, and shall not include any damage or defect that will impair the safety, installation, performance, or the durability of the entire Office Trailer and appurtenant systems.

1.06 REGULATORY REQUIREMENTS

A. General: Work shall be executed in accordance with applicable Codes, Regulations, Statutes, Enactments, Rulings, Laws, each authority having jurisdiction, and including, but not limited to, Regulatory Requirements specified herein.

B. California Building Standards Code ("CBSC").

C. California Code of Regulations, Title 25, Chapter 3, Sub Chapter 2, Article 3 ("CCR").

D. Coach Insignia: Trailer shall display California Commercial Coach Insignia; such insignia shall be deemed to show that the trailer is in accordance with the Construction and Fire Safety requirements of CCR.

PART 2 – PRODUCTS

2.01 FIELD OFFICE TRAILER

A. General: Provide entire Field Office Trailer of type, function, operation, capacity, size, complete with controls, safety devices, accessories, and the like, for proper and durable installation. Partitions, walls, ceiling, and other interior and exterior surfaces shall be appropriately finished, including, but not limited to, trim, painting, wall base, floor covering, suspended or similar ceiling, and the like; provide systems, components, units, nuts, bolts, screws, anchoring devices, fastening devices, washers, accessories, adhesives, sealants, and other items of type, grade, and class required for the particular use, not identified but required for a complete, weather-tight, appropriately operating, and finished installation.

B. Manufacturers: General Electric Capital Modular Space; The Space Place, Inc.; or equal.

C. Program: Provide a wheel-mounted trailer with stairs, landings, platforms, ramps, and the like, in good, proper, safe, clean, and properly finished condition; with proper heavy duty locks, and other proper and effective security at all doors, windows, and the like. Trailer shall be maintained in good, proper, safe, clean, and properly finished condition during the Contract.

(1) Nominal Trailer Size: Four hundred eighty (480) square feet, minimum.

(2) Stairs, Platform: Properly finished stairs, platforms, and ramps.

(3) Doors: Two (2), three (3) foot wide exterior doors with locksets; finished ramp, steps, and entry platform at each exterior door.

(4) Keys: Submit five (5) keys for each door, window, furniture unit, and the like. There shall be no other key copies or originals available; each key shall be identified for District; and shall be labeled, or tagged

(5) Lighting: Sixty-five (65) foot-candles illumination minimum at any point, at thirty (30) inches above finished floor throughout from fluorescent light source, exclusively, or as directed by District.

(6) Electrical Outlets: One (1) duplex outlet evenly spaced every twelve (12) linear horizontal feet of wall face, and electrical service ready for use.

2.02 FIELD OFFICE TRAILER ITEMS

A. General: Provide the Field Office Trailer with the following arranged into two (2) workstations:

(1) Desks: Two (2) desks: thirty-six (36) inches by sixty (60) inches; steel, laminated plastic top; locking, one (1) or two (2) file drawers single pedestal; steel; provide five (5) keys to District.

(2) Tables: Two (2) tables; thirty-six (36) inches by sixty (60) inches; twenty-nine (29) inches high; steel, laminated plastic top tables; one (1) at each desk.

(3) Chairs: Two (2) chairs: swivel; steel; with seat cushion and arms; one (1) at each desk.

(4) Waste Baskets: Two (2) waste baskets, one at each desk.

B. Furniture and Equipment: Provide in the space located to effect efficient and logical use.

(1) File cabinet: One (1); four (4) drawer; lateral; steel locking.

(2) Plan Table: One (1) plan table: thirty-six (36) inches deep by seventy-two (72) inches wide by forty-two (42) inches high; adjustable; wood or steel; with lockable plan and pencil drawers.

(3) Drafting Stool: One (1) drafting stool; swiveling; steel; padded; adjustable; with footrest and casters.

(4) Bookshelf: One (1) bookshelf: thirty-six (36) inches deep by seventy-two (72) inches wide by forty-two (42) inches high; adjustable; wood or steel; with lockable plan and pencil drawer.

(5) Plan Rack: One (1) wheel mounted plan rack.

(6) Waste Baskets: One (1) large waste basket.

(7) Coat/Hat Hanger: Wall mounted with minimum capacity for four (4) garments and ten (10) hats.

(8) Document Management System: Shall include an integrated high-volume printer, copier, and facsimile machine, including stand, base, and storage cabinet; and shall include the following features:

(a) Type: Laser, dry electrostatic transfer, plain paper, digital, multi-function imaging system.

(b) Network: Ethernet or Token Ring network ready, Plug-and-Play.

(c) Print, send/receive facsimile from any connected workstation.

(d) Resolution: Six hundred (600) dots per inch by six hundred (600) dots per inch, minimum.

(e) Print Speed: Twenty (20) pages per minute, minimum.

(f) Copies: Twenty (20) copies per minute, minimum.

(g) Document Handler: Forty (40) sheet, minimum

(h) Collator: Forty (40) bin, minimum, with stapling.

(i) Duplexing: Capable.

(j) Paper Size: Capable of handling paper sizes to eleven (11) inches by seventeen (17) inches.

(k) Paper Cassettes: One (1) each for eight and one half (8.5) inches by eleven (11) inches, eight and one half (8.5) inches by fourteen (14) inches, and eleven (11) inches by seventeen (17) inches paper sizes; minimum two hundred fifty (250) sheets per cassette.

(l) Reduction/Enlargement: Capable of reduction to twenty-five percent (25%) and enlargement to two hundred percent (200%).

(m) Facsimile Electronic Storage: Capable of storing minimum of fifty (50) speed dial numbers, group faxing and broadcast faxing.

(n) Facsimile Scanning: Capable of scanning into memory a minimum of one hundred (100) pages with maximum scan time of three (3) seconds per page.

(o) Halftone: Sixty-four (64) levels.

(p) Redial: Automatic and Manual.

(9) Maintenance: Contractor shall purchase service agreements for each unit of equipment for the duration of the project plus two (2) months, and shall maintain all equipment in proper working condition. Service agreements shall include provision for replacement of toner cartridges and other items required to effect proper unit use. Service agreements shall also provide for:

(a) Unlimited Service Calls.

(b) Same Day Response.

(c) All parts, labor, preventative maintenance and mileage.

(d) All chemicals, such as toner, fixing agent, and the like.

(e) System training and setup.

(10) Portable Toilets: Two (2); each shall include a urinal; each unit shall be a properly enclosed chemical unit conforming to ANSI Z4.3.

(a) Location: As directed by District.

(b) Maintenance: Maintain each unit and surrounding areas in a clean, hygienic and orderly manner, at all time. Empty, clean,

and sanitize each unit each day at a location and time as directed by District.

(c) Removal: Relocate, or remove from the site, each Portable Toilet. Upon such directive by District, the Contractor shall forthwith relocate or remove each Portable Toilet and submit the affected areas to a condition which existed prior to the installation of each Portable Toilet, within three (3) calendar days, or as directed by District in writing, at no cost to District.

2.03 UTILITY AND SERVICES

A. Telephone Service: Contractor shall provide and interface the entire telephone service, and shall properly and timely pay for telephone service for District's non-long-distance use.

B. Electrical Service: Provide all proper connections and continuously pay for service for the duration of the Work.

2.04 FINISHES

A. General: Manufacturer standard finish system over surfaces properly cleaned, pretreated, and prepared to obtain proper bond; all visible surfaces shall be coated.

B. Finish: Color as selected by District from manufacturer standard palette.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General: Properly prepare area and affected items to receive the Work. Set Work accurately in location, alignment, and elevation; rigidly, securely, and firmly anchor to appropriate structure; install plumb, straight, square, level, true, without racking, rigidly anchored to proper solid blocking, substrate, and the like; provide appropriate type and quantity of reinforcements, fasteners, adhesives, self-adhesive and other tapes; lubricants, coatings, accessories, and the like, as required for a complete, structurally rigid, stable, sound, and appropriately finished installation, in accordance with manufacturer's published instructions, and as indicated. The more restrictive and higher quality requirement shall govern. Moving parts shall be properly secured, without binding, looseness, noise, and the like.

B. Installation: Install in accordance with 25 CCR 3.2.3 and as directed by District; jack up trailer and level both ways; mount on proper concrete piers with all load off wheels; provide required tie down and accessories per Section 4368 of referenced CCR, and as directed by District.

C. Rejected Work: Work, materials, unit, items, systems, and the like, not accepted by District shall be deemed rejected, and shall forthwith be removed and replaced with proper and new Work, materials, unit, items, systems, and the like at no cost to District.

D. Standard: Comply with manufacturer's published instructions, or with instructions as shown or indicated; the more restrictive and higher quality requirement shall govern.

E. Location: As directed by District.

F. Fire Resistance: Construct and install in accordance with UL requirements.

G. Maintenance: Contractor shall maintain trailer and adjacent areas in a safe, clean and hygienic condition throughout the duration of the Work, and as directed by District. Properly repair or replace furniture or other items, as directed by District. Properly remove unsafe, damaged, or broken furniture, or similar items, and replace with safe and proper items. Contractor shall pay cost of all services, repair, and maintenance, or replacement of each item.

H. Janitorial Service: Provide professional janitorial services, including, but not limited to, trash, waste paper baskets, fill paper dispensers; clean and dust all furniture, files, and the like; sweep and mop resilient and similar flooring; and vacuum carpeting and similar flooring.

(1) Frequency: Two (2) times per week, minimum.

I. Removal: Properly remove the Office Trailer and contents from the Site upon completion of the Contract, or as directed by District in writing. Forthwith properly patch and repair affected areas; replace damaged items with new items. Carefully and properly inventory, clean, pack, store, and protect District property; submit District property to District at a date, time and location as directed by District.

END OF DOCUMENT

SECTION 01 57 13.10 – EROSION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Requirements for preparing Storm Water Pollution Prevention Plan.

1.02 SCOPE OF WORK

A. General: Provide all materials, equipment and labor necessary to furnish and install straw wattles or silt fence barriers at locations shown on the Drawings and as required during construction.

B. The Contractor shall as a minimum address:
   1. Cut and fill operations.
   2. Temporary stockpiles.
   3. Vehicle and equipment storage, maintenance and fueling operations.
   4. Concrete, plaster, mortar and paint disposal.
   5. Dust control.
   6. Tracking of dirt, mud on off-site streets.
   7. Pipe flushing.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:

B. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures

1.04 QUALITY ASSURANCE

A. General: Comply with governing codes and regulations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Straw Wattles: New manufactured straw roles in compliance with state requirements for sediment control.

ADDENDUM "A"

B. Silt Fences: New manufactured silt fence in compliance with state requirements for sediment control.

C. Filter Bag: As required by local jurisdiction.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Straw Wattles: Install per the drawings and/or as required.

B. Silt Fences: Install per the Drawings and/or as required. Silt Fences shall not be used around inlets.

C. Filter Bags: Installed as required by manufacturer's requirements.

3.02 MAINTENANCE AND REMOVAL:

A. General: Maintain and repair existing and new erosion control facilities throughout the construction period. Remove silt build up at straw wattles and/or silt fences as needed. Repair damage to earth slopes and banks. Erosion control measures shall be left in place until final paving and landscaping are complete.

B. Monitoring: Provide monitoring of erosion control measures before and after storm events.

C. Cleaning: Keep area clean of debris.

D. Remove erosion control measures prior to placing finish landscaping.

END OF SECTION

ADDENDUM "A"

SECTION 01 66 00

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.

ADDENDUM "A"

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

DOCUMENT 01 73 29

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. 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.

ADDENDUM "A"

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) 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, 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

DOCUMENT 01 76 00

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.

ADDENDUM "A"

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.

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, 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 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 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.

B. 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

DOCUMENT 01 77 00

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. Contractor 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.

ADDENDUM "A"

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 set of Record Drawings to District.

C. Contractor shall submit all required documents to District 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

DOCUMENT 01 78 23

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.

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.

ADDENDUM "A"

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.

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

DOCUMENT 01 78 36

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.

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. 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.

ADDENDUM "A"

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

(Letterhead of Contractor)

STANDARD GUARANTEE / WARRANTY

for

_____

Project Name

_____

Contract No.

We hereby warrant that the Work we have provided under the above reference Contract has been completed in accordance with the Drawings, Specifications, and other Contract Documents.

Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within the period of 24 months from the date of filing of the Notice of Completion of the above named Project by the Board of Trustees of the School District, and we also agree to repair any and all damages resulting from such defects, without any expense whatsoever to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with above-mentioned guarantee conditions within ten (10) day after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.

SIGNED (Contractor) _____

_____

(Address)

_____ _____

(Printed Name of Authorized Representative) Signature

_____ _____

(License Number) (Date of Signing)

COUNTERSIGNED (Owner) _____

_____ _____

(Printed Name of Authorized Representative) Signature

Date of Filing or Notice of Completion: _____

ADDENDUM "A"

(Letterhead of Company)

SUBCONTRACTOR STANDARD GUARANTEE / WARRANTY

We hereby warrant that

_____

which we have provided in _____
Name of Project

for _____
District

has been completed in accordance with Specification Section _____ and requirements of the Contract Documents.

Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within a period of 24 months from date of filing the Notice of Completion of the above-named Project by the Board of Trustees of the School District without any expense whatsoever to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with above-mentioned guarantee conditions within ten (10) day after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.

SIGNED (Subcontractor)

_____
(Signature)

_____
(Company Name)

_____
(Address)

_____ _____
(License Number) (Date of Signing)

COUNTERSIGNED (General Contractor)

_____
(Signature)

_____
(Company Name)

_____
(Address)

_____ _____
(License Number) (Date of Signing)

ADDENDUM "A"

(Letterhead of Company)

SPECIAL EXTENDED WRITTEN GUARANTEE / WARRANTY

We hereby warrant that

_____

which we have provided in _____
Name of Project

for _____
District

has been completed in accordance with Specification Section _____ and requirements of the Contract Documents.

Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within a period of _____ year(s) from date of filing the Notice of Completion of the above-named Project by the Board of Trustees of the School District without any expense whatsoever to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted. We also agree to repair any and all damages resulting from such defects.

In the event of our failure to comply with above-mentioned conditions within a reasonable time but in no case longer than ten (10) calendar days after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.

SIGNED (Subcontractor)

_____
(Name)

_____
(Address)

_____

_____ _____
(License Number) (Date of Signing)

COUNTERSIGNED (General Contractor)

_____
(Name)

_____
(Address)

_____

_____ _____
(License Number) (Date of Signing)

ADDENDUM "A"

DOCUMENT 01 78 39

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 will provide Contractor with one set of reproducible, full size original Contract Drawings (mylars).

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.

ADDENDUM "A"

(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

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Demolition and removal of selected site elements.

1.02 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

1.03 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.04 FIELD CONDITIONS

A. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

B. Storage or sale of removed items or materials on-site is not permitted.

C. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.05 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.06 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

ADDENDUM "A"

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

3.02 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.03 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

ADDENDUM "A"

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.04 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
1. Do not allow demolished materials to 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 demolished materials.

3.06 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

ADDENDUM "A"

END OF SECTION

ADDENDUM "A"

SECTION 03 30 53 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture.

1.03 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. Comply with ACI 301.

C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
1. Portland Cement: ASTM C 150, Type I .[**Supplement with the following:**]

B. Normal-Weight Aggregate: ASTM C 33, graded, 1-1/2-inch nominal maximum aggregate size.

C. Water: ASTM C 94/C 94M.

2.02 CONCRETE MIXTURES

A. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301, as follows:
1. Maximum Water-Cementitious Materials Ratio: [**0.50**] [**0.45**] <**Insert ratio**>.
2. Slump Limit: 4 inches, plus or minus 1 inch.

ADDENDUM "A"

2.03 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M[**and ASTM C 1116/C 1116**], and furnish batch ticket information.
1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 FORMWORK

A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.03 STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.04 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Contraction Joints in Slabs-on-Grade: Form weakened-plane [**grooved**] [**sawed**] contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least [**one-fourth**] <**Insert depth**> of concrete thickness.

C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.05 CONCRETE PLACEMENT

A. Comply with ACI 301 for placing concrete.

ADDENDUM "A"

B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

C. Do not add water to concrete during delivery, at Project site, or during placement.

D. Consolidate concrete with mechanical vibrating equipment.

3.06 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding 1/2 inch.
1. Apply to concrete surfaces [**not exposed to public view**] <**Insert locations**>.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch.
1. Apply to concrete surfaces [**exposed to public view,**] [**to receive a rubbed finish,**] [**or to be covered with a coating or covering material applied directly to concrete**] <**Insert locations**>.

C. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301, to smooth-formed finished as-cast concrete where indicated:
1. Smooth-rubbed finish.
2. Grout-cleaned finish.
3. Cork-floated finish.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.07 FINISHING UNFORMED SURFACES

A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
1. Do not further disturb surfaces before starting finishing operations.

ADDENDUM "A"

C. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes, unless otherwise indicated.

D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.

E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.08 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.

ADDENDUM "A"

c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.09 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Tests: Perform according to ACI 301.
1. Testing Frequency: One composite sample shall be obtained for each day's pour of each concrete mix exceeding 5 cu. yd. but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: One composite sample shall be obtained for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.

3.10 REPAIRS

A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION

ADDENDUM "A"

SECTION 06 41 00 - ARCHITECTURAL WOOD CASEWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Plastic-laminate-clad cabinets.
   2. Cabinet hardware and accessories.

B. Related Sections:
   1. Division 01 sustainable design requirements Section(s) for supplementary sustainable design criteria.

1.02 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For architectural cabinets.
   1. Include plans, elevations, sections, and attachment details.
   2. Show large-scale details.
   3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
   4. Show locations and sizes of cutouts and holes for items installed in architectural cabinets.
   5. Apply WI Certified Compliance Program label to Shop Drawings.

C. Samples for Verification: For the following:
   1. Plastic Laminates: 8 by 10 inches or 12 by 12 inches, for each type, color, pattern, and surface finish required.
      a. Provide one sample applied to core material with specified edge material applied to one edge.
   2. Corner Pieces:
      a. Cabinet-front frame joints between stiles and rails and at exposed end pieces, 18 inches high by 18 inches wide by 6 inches deep.
      b. Miter joints for standing trim.
   3. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

ADDENDUM "A"

1.04 INFORMATIONAL SUBMITTALS

A. Sustainable Design Submittals:
1. Documentation for composite wood products, indicating compliance with emissions testing or certification.

B. Qualification Data: For Installer.

C. Field Quality-Control Reports: From field quality control inspections.

1.05 CLOSEOUT SUBMITTALS

A. Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

1.06 QUALITY ASSURANCE

A. Quality Standard: Unless otherwise indicated, comply with WI's North American Architectural Woodwork Standards (NAAWS) for grades indicated for construction, finishes, installation, and other requirements.
1. Where the Contract Documents contain requirements that are more stringent than the referenced quality standard, comply with requirements of the Contract Documents in addition to those of the referenced quality standard.

B. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
1. Manufacturer's Certification: Licensed participant in WI's Certified Compliance Program.

C. Installer Qualifications: Licensed participant in WI's Certified Compliance Program.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.08 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

ADDENDUM "A"

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.01 SUSTAINABLE DESIGN CRITERIA

A. Sustainable Design Criteria: Comply with indicated criteria for the following product categories:
   1. Composite Wood Products:
      a. Formaldehyde emissions testing or certification.

2.02 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

A. Architectural Woodwork Standards Grade: Custom.

B. Type of Construction: As indicated on drawings.

C. Door and Drawer-Front Style: As indicated on drawings.
   1. Reveal Dimension: 1/8 inch.

D. High-Pressure Decorative Laminate: ISO 4586-3, grades as indicated or if not indicated, as required by quality standard.

E. Exposed Surfaces:
   1. Edges: Grade VGS PVC edge banding, 3.0 mm thick, matching laminate in color, pattern, and finish.

F. Materials for Semiexposed Surfaces:
   1. Drawer Sides and Backs: Thermally fused laminate panels with PVC or polyester edge banding .
   2. Drawer Bottoms: Thermally fused laminate panels .

G. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

H. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   1. As selected by Architect from laminate manufacturer's full range in the following categories:
      a. Solid colors, [gloss] [matte] finish.

ADDENDUM "A"

b. Solid colors with core same color as surface, [gloss] [matte] finish.
c. Wood grains, [gloss] [matte] finish.
d. Patterns, [gloss] [matte] finish.

2.03 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
1. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
2. Particleboard (Medium Density): ANSI A208.1, [Grade M-2] [Grade M-2-Exterior Glue].
3. Thermally Fused Laminate (TFL) Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of ISO 4586.

2.04 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 08 71 00 "Door Hardware."

B. Butt Hinges: 2-3/4-inch, five-knuckle steel hinges made from 0.095-inch- thick metal, and as follows:
1. Semiconcealed Hinges for Overlay Doors: ANSI/BHMA A156.9, B01521.

C. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.

D. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141 or Push-in magnetic catches, ANSI/BHMA A156.9, B03131.

E. Adjustable Shelf Standards and Supports: [**ANSI/BHMA A156.9, B04071; with shelf rests, B04081**] [**ANSI/BHMA A156.9, B04102; with shelf brackets, B04112**].

F. Adjustable Shelf Brackets: BHMA A156.9, B04071; Aluminum mortise-mount pilaster and steel support clip shelving system with 1/2 inch vertical slot adjustability.
1. Basis-of-Design Product: Knape & Vogt 255/256 Aluminum Series.
2. Finish: [**Bronze-anodized**] [**Black-anodized**] [**Natural aluminum**] [**As selected by Architect from manufacturer's full range**].
3. Installation Method: Pilaster supports mortised flush into cabinet and shelving walls.

ADDENDUM "A"

G. Shelf Rests: ANSI/BHMA A156.9, B04013; [**metal**] [**plastic**] [**two-pin plastic with shelf hold-down clip**].

H. Door Locks: ANSI/BHMA A156.11, E07121.

I. Drawer Locks: ANSI/BHMA A156.11, E07041.

J. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

K. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for BHMA finish number indicated and as follows:
1. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.

L. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.05 MISCELLANEOUS MATERIALS

A. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.06 FABRICATION

A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.01 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

ADDENDUM "A"

3.02 INSTALLATION

A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates.
   1. Secure plastic-laminate-clad cabinets with wafer-head cabinet installation screws.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
   1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
   2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   3. Comply with requirements for seismic installation in accordance with Architectural Woodwork Standards and Drawings.

3.03 FIELD QUALITY CONTROL

A. Inspections: Provide inspection of installed Work through WI's Independent Inspection Service certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.
   1. Inspection entity shall prepare and submit report of inspection.

3.04 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semiexposed surfaces. Touch up finishes to restore damaged or soiled areas.

END OF SECTION

ADDENDUM "A"

SECTION 10 11 00 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Markerboards.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Sustainable Design Submittals:
   1. Product Data: For installation adhesives, indicating VOC content.

C. Samples: For each exposed product and for each color and texture specified.

D. Qualification Data: For qualified Installer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of fabrics.

F. Operation and Maintenance Data: For visual display surfaces to include in maintenance manuals.

G. Warranties: Sample of special warranties.

1.03 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Surfaces lose original writing and erasing qualities.
      b. Surfaces exhibit crazing, cracking, or flaking.
   2. Warranty Period: Life of the building.

1.04 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

ADDENDUM "A"

B. Lighting: Do not install wall covering until a permanent level of lighting is provided on the surfaces to receive wall covering.

C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Glass markerboard assemblies shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
   1. The term "withstand" means "the glass markerboard assemblies will remain in place without separation of any parts when subjected to the seismic forces specified."

2.02 MATERIALS, GENERAL

A. Porcelain-Enamel Face Sheet: Porcelain-enamel-clad, ASTM A 463/A 463M, Type 1, stretcher-leveled aluminized steel, with 0.024-inch uncoated thickness; with porcelain-enamel coating fused to steel at approximately 1000 deg F.
   1. Products: Subject to compliance with requirements, provide the following: Insert manufacturer's name; product name or designation.
      a. Claridge Products and Equipment, Inc.; LCS Markerboard.

B. Melamine: Thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.

C. High-Pressure Plastic Laminate: NEMA LD 3.

D. Extruded Aluminum: ASTM B 221, Alloy 6063.

2.03 ACCESSORIES

A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application; as recommended in writing by wall-covering manufacturer.

B. Primer/Sealer: Mildew resistant, complying with requirements in Division 09 Section "Painting " and recommended in writing by wall-covering manufacturer for intended substrate.

ADDENDUM "A"

2.04 MARKERBOARD ASSEMBLIES

A. Porcelain-Enamel Markerboards: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction consisting of backing sheet, core material, and [0.021-inch- **thick,**] [0.013-inch- **thick,**] porcelain-enamel face sheet with [**high**] [**low**]-gloss finish.
1. Manufacturer's Standard Core: Minimum 1/4 inch thick, with manufacturer's standard moisture-barrier backing.
2. Laminating Adhesive: Manufacturer's standard, moisture-resistant thermoplastic type.

2.05 MARKERBOARD ACCESSORIES

A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- thick, extruded aluminum; standard size and shape.
1. Field-Applied Trim: Manufacturer's standard, snap-on trim with no visible screws or exposed joints or slip-on trim or screw-on trim with Phillips flat-head screws.

B. Chalktray: Manufacturer's standard, continuous.
1. Box Type: Extruded aluminum with slanted front, grooved tray, and cast-aluminum end closures.

C. Map Rail: Provide the following accessories:
1. Map Hooks and Clips: One map hooks with flexible metal clips for every 24 inches of map rail or fraction thereof.
2. Flag Holder: Two for each room.

2.06 FABRICATION

A. Visual Display Boards: Field assemble visual display boards unless otherwise indicated.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.

B. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to a neat, hairline closure.
1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.07 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

ADDENDUM "A"

PART 3 - EXECUTION

3.01 INSTALLATION

A. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display surfaces and wall surfaces.

B. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

C. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches o.c. Secure both top and bottom of boards to walls.
   1. Field-Applied Aluminum Trim: Attach trim over edges of visual display boards and conceal grounds and clips. Attach trim to boards with fasteners at not more than 24 inches o.c.
      a. Attach chalktrays to boards with fasteners at not more than 12 inches o.c.

D. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room. Cover and protect visual display surfaces.

END OF SECTION

ADDENDUM "A"

SECTION 26 01 00 – BASIC ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the basic requirements for the electrical work on this project

B. Work Included
1. Furnish and install a fully functional electrical power system including all panelboards, breakers, wiring, relays, and other material as shown on in the Electrical Drawings and specified herein. It is the intent that a complete operating system conforming to all applicable codes and District Standards be installed and that any power supplies, disconnect, relays, controls, programming or other items required to achieve this end result shall be furnished whether or not such item or items are specified herein.
2. Site and System Investigation: The bidding contractor for the electrical power system shall visit the site prior to the bid and become thoroughly knowledgeable about the existing system and work required to perform work of this section. Failure to discover the equipment, materials, and labor required to complete the extensions will not relieve the contractor from completing the work at no additional cost.
3. Utility Coordination: The contractor shall be responsible for coordinating the additional electrical load for this project with the electrical utility provider serving the facility.

1.02 REFERENCES AND STANDARDS

A. California Electrical Code (CEC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Energy Code (CENC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. National Electrical Contractors Association (NECA): Standard of Installation

D. National Fire Protection Association (NFPA): 70E

E. National Safety Council (NSC)

F. Occupational Safety and Health Administration (OSHA)

1.03 SUBMITTALS

A. Product Data

ADDENDUM "A"

B. Operation and Maintenance (O&M) Manuals

C. As-Built Drawings

D. Field Test Reports (including Energy Code Acceptance Tests)

1.04 QUALITY ASSURANCE

A. Reference to Codes, Standards, Specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.

B. When codes, standards, regulations, etc. allow Work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements, or extent of the Contract Documents. The Contract Documents address the minimum requirements for construction.

C. Work shall be performed in accordance with all applicable requirements of the 2022 edition of all governing codes, rules and regulations including but not limited to the following minimum standards, whether statutory or not:
1. California Electrical Code (CEC)
2. California Building Code (CBC)
3. California Green Building Code (CGC)
4. California Fire Code (CFC)
5. California Energy Code (CENC)
6. California Mechanical Code (CMC)
7. California Plumbing Code (CPC)

D. Standards: Equipment and materials specified under this Division shall conform to the following standards where applicable:
1. ACI American Concrete Institute
2. ANSI American National Standards Institute
3. ASTM American Society for Testing Materials
4. AWS American Welding Society
5. CBM Certified Ballast Manufacturers
6. ETLElectrical Testing Laboratories
7. FS Federal Specification
8. IEEE Institute of Electrical and Electronics Engineers, Inc.
9. IPCEA Insulated Power Cable Engineer Association
10. NEMA National Electrical Manufacturer's Association
11. UL Underwriters' Laboratories

E. Independent Testing Agency qualifications:
1. Testing Agency shall be an independent testing organization that will function as an unbiased authority, professionally independent of Manufacturer, Supplier and

ADDENDUM "A"

Contractor, furnishing and installing equipment or system evaluated by Testing Agency.

2. Testing Agency shall be regularly engaged in the testing of electrical equipment, devices, installations, and systems.
3. Testing Agency shall meet Federal Occupational Safety and Health Administration (OSHA) requirements for accreditation of independent testing laboratories, Title 9, Part 1907.
4. On-site technical personnel shall be currently certified by the International Electrical Testing Association in electrical power distribution system testing.
5. Testing Agency shall use technicians who are regularly employed by the firm for testing services.
6. Contractor shall submit proof of above Testing Agency qualifications with bid documentation upon request.

F. All base material shall be ASTM and/or ANSI standards.

G. All electrical apparatus furnished under this Section shall conform to NEMA standards and the CEC and bear the UL label where such label is applicable.

PART 2 - PRODUCTS

2.01 CONDUCTORS

A. SEE ELECTRICAL DRAWINGS

2.02 PANELBOARDS

A. SEE ELECTRICAL DRAWINGS

2.03 TRANSFORMERS

A. SEE ELECTRICAL DRAWINGS

2.04 PULL BOXES

A. Provide traffic rated pull boxes for power and signal as noted in the Electrical Drawings

2.05 CIRCUIT BREAKERS

A. Unless noted otherwise, circuit breakers shall be molded case, bolt on and trip indicating.

B. Where stationary molded case circuit breakers are indicated on the Drawings to be current limiting type, they shall be current limiting as defined by UL 489 and shall not employ any fusible elements.

ADDENDUM "A"

C. Circuit breakers shall have interrupting capacity not less than that indicated on the Drawings or if not indicated, not less than 25,000 RMS symmetrical amps for 480 volt systems and 10,000 RMS symmetrical amps for 208 volt systems.

D. Covers shall be sealed on non-interchangeable breakers and trip unit covers shall be sealed on interchangeable trip breakers to prevent tampering. Circuit breaker ratings shall be clearly visible after installation or engraved nameplates shall be provided stating the rating. All ferrous parts shall be plated to minimize corrosion.

E. Circuit breakers shall be toggle, quick-make and quick-break operating mechanisms with trip-free feature to prevent contacts being held closed against overcurrent conditions in the circuit. Trip position of the breakers shall be clearly indicated by operating handles moving to a center position.

F. Multipole breakers shall have a single handle to open and close all contacts simultaneously in both manual operation and under automatic tripping. Interpole barriers shall be provided inside the breaker to prevent any phase-to-phase flashover. Each pole of the breaker shall have means for Arc extinguishing.

G. All terminals shall be rated for aluminum or copper wire.

H. Unless noted otherwise, circuit breakers with trip ratings 400 amp and smaller shall be ambient temperature compensated, thermal magnetic type unless otherwise noted. Breakers shall be of full size, 1" per pole type. Panels with more than one branch breaker larger than 100 amps shall be installed in distribution type panels.

I. Accessories: Provide accessories as noted on the Drawings, i.e. shunt-trip, auxiliary contacts, undervoltage trip, alarm switch, etc.

J. Spaces in the boards shall be able to accept any combination of 1, 2 or 3 pole circuit breakers as indicated. Provide all necessary bus, device supports and mounting hardware sized for frame, not trip rating.

K. Series rated breakers are not acceptable unless specifically noted on the Drawings.

2.06 RECEPTACLES

A. Standards:
1. Provide general purpose 20 ampere, 125/250 VAC receptacles that conform to NEMA WD-1 Specifications. Specialty receptacles shall conform to NEMA WD-5 Specifications as applicable.
2. Provide NEMA 5-20R, commercial specification grade as noted herein, 20 amp, 125 VAC, 2 pole, 3 wire grounding type receptacles.
3. Receptacles shall be the standard conventional style device.

B. Color:
1. Device color shall be as selected by the Architect, unless otherwise noted.

ADDENDUM "A"

C. General purpose single outlets:
   1. Provide self-grounding back and side wired with binding head staked terminal screw.

D. General purpose duplex receptacles:
   1. Provide self-grounding, back and side wired with binding head staked terminal screws and break-off strip for two-circuit wiring.

E. Tamper-resistant single outlets:
   1. Provide self-grounding back and side wired with binding head staked terminal screw.
   2. Shall have tamper-resistant feature and shall conform to CEC Article 406.12.

F. Tamper-resistant duplex receptacles:
   1. Provide self-grounding, back and side wired with binding head staked terminal screws and break-off strip for two-circuit wiring.
   2. Shall have tamper-resistant feature and shall conform to CEC Article 406.12.

G. Ground-fault circuit interrupting (GFCI) receptacles:
   1. Provide 20 amp, 125 VAC, receptacles consisting of NEMA 5-20R duplex device with integral solid state sensing and signaling circuitry capable of detecting and interrupting a maximum 5 milli-amp line-to-ground fault current in approximately 1/40th of a second.
   2. Provide visual device with trip indication, manual reset and test mechanisms and with point of use and multi-outlet protection.
   3. Shall have tamper-resistant feature and shall conform to CEC Article 406.12.

H. Special purpose receptacles: Provide Specification grade devices with the NEMA configuration, voltage and current rating, number of poles and ground provisions as noted on the Drawings.

2.07 COVER PLATES

A. General:
   1. Provide all coverplates with rounded edges and corners, smooth and free of grooves, embossing or other embellishment.
   2. Provide mounting screws to match the plate finish.
   3. Provide gang type coverplates where two or more devices are installed at one location. Individual gangable coverplates are not acceptable.
   4. Provide plates of one design throughout the Project unless otherwise specified.

B. Color:
   1. Coverplate color shall be as specified by the Architect, unless otherwise noted.

C. Plastic coverplates:
   1. Provide smooth, high impact, self-extinguishing thermoplastic coverplates and 0.100 inches thick with rounded edges and corners.

ADDENDUM "A"

2. Provide openings to accommodate the devices indicated on the Drawings and in the Specifications.

D. Metal coverplates:
1. Provide smooth, type 430 stainless steel coverplates, 0.035" thick with rounded edges and corners.
2. Provide openings to accommodate the devices indicated on the Drawings and in the Specifications.

E. Outdoor covers:
1. Provide in-use weatherproof, metal, lockable outlet covers for all receptacles installed in outdoor locations.

PART 3 - EXECUTION

3.01 ROUGH-IN

A. Contractor shall verify lines, levels and dimensions indicated on the construction document drawings and shall be responsible for the accuracy of the setting out of Work and for its strict conformance with existing conditions at the Project site.

B. Verify final locations for rough-ins with field measurements and with the requirements for the actual equipment to be connected.

C. Refer to equipment specifications in other sections for equipment rough-in requirements.

3.02 INSTALLATION

A. Preparation, sequencing, handling, and installation shall be in accordance with Manufacturer's written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified.

B. Comply with Manufacturer Shop Drawings.

C. Verify all dimensions by field measurements.

D. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.

E. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.

F. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.

ADDENDUM "A"

G. Where mounting height is not detailed or dimensioned, contact the Architect for direction prior to proceeding with rough-in.

H. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies and controlling agencies. Provide required connection for each service.

I. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the construction documents, recognizing that portions of the Work are indicated only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.

J. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.

K. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

L. Coordinate electrical systems, equipment, and materials installations with other building components.

M. Provide access panel or doors where devices or equipment are concealed behind finished surfaces.

N. Install systems, materials and equipment giving right-of-way priority to other systems that are required to maintain a specified slope.

O. Conform to the National Electrical Contractors' Association "Standard of Installation" for general installation practice.

3.03 CUTTING, PATCHING, PAINTING, AND SEALING

A. Structural members shall in no case be drilled, bored, or notched in such a manner that will compromise their structural integrity. Cutting of holes, if required, shall be done with core drill and only with the approval of the Architect and Structural Engineer.

B. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

C. Application of joint sealers:
   1. General: Comply with joint sealer Manufacturers' printed application instructions applicable to products and applications indicated, except where more stringent requirements apply.

ADDENDUM "A"

2. Installation of fire-stopping sealant: Install sealant, including forming, packing and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops and fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

3.04 FIELD QUALITY CONTROL

A. General testing requirements:
   1. The purpose of testing is to ensure that all tested electrical equipment, both Contractor and Owner supplied, is operational and within industry and Manufacturer's tolerances and is installed in accordance with design Specifications.
   2. Tests and inspections shall determine suitability for energization.
   3. Perform tests in presence of the Owner's Representative and furnish test equipment, facilities and technical personnel required to perform tests.
   4. Tests shall be conducted during the construction period and at completion to determine conformity with applicable codes and with these Specifications.

B. Tests: In addition to specific system test described elsewhere, tests shall include:
   1. Equipment operations: Test motors for correct operation and rotation.
   2. Lighting control circuits: Test lighting circuits for correct operation through their control devices.
   3. Alarm and interlock systems: Produce malfunction symptoms in operating systems to test alarm and interlock systems. In addition, all specific tests described in the fire alarm system shall be performed.
   4. Circuit numbering verification: Confirm all circuit breakers in the panelboards are correctly labeled in agreement with typed panel directories with actual field wiring.
   5. Voltage check:
      a. At completion of job, check voltage at several points of utilization on the system that has been installed under this Contract. During test, energize all installed loads.
      b. Adjust taps on transformers to give proper voltage, which is 118 to 122 volts for 120 volt nominal systems and proportionately equivalent for higher voltage systems. If proper voltage cannot be obtained, inform the Owner and the serving Utility Company.

C. Contractor shall provide test power required when testing equipment before service energization and coordinate availability of test power with General Contractor after service energization. The Contractor shall provide any specialized test power as needed or specified herein.

D. Testing safety and precautions:
   1. Safety practices shall include the following requirements:
      a. Applicable State and Local safety operating procedures.

ADDENDUM "A"

b. OSHA
c. NSC
d. NFPA 70E

2. All tests shall be performed with apparatus de-energized and grounded except where otherwise specifically required ungrounded by test procedure.

E. Calibration of test equipment:
1. Testing Agency shall have calibration program that assures test instruments are maintained within rated accuracy.
2. Instruments shall be calibrated in accordance with the following frequency schedule:
a. Field instruments: Analog, 6 month maximum; Digital, 12 months maximum.
b. Laboratory instruments: 12 months.
c. Leased specialty equipment: 12 months where accuracy is guaranteed by lessor.
3. Dated calibration labels shall be visible on test equipment.
4. Records, which show date and results of instruments calibrated or tested, must be kept up-to-date.
5. Up-to-date instrument calibration instructions and procedures shall be maintained for test instrument.
6. Calibration standards shall be of higher accuracy than instrument tested.
7. Equipment used for field testing shall be more accurate than instrument being tested.

F. Coordinate with General Contractor regarding testing schedule and availability of equipment ready for testing.

G. Notify Owner one week in advance of any testing.

H. Any products which fail during the tests or are ruled unsatisfactory by the Owner's Representative shall be replaced, repaired, or corrected as prescribed by the Owner's Representative at the expense of the Contractor. Tests shall be performed after repairs, replacements or corrections until satisfactory performance is demonstrated.

I. Testing Agency shall maintain written record of tests and shall assemble and certify final test report. All test results/reports shall be submitted to the Electrical Engineer for review.

J. Include all test results in the maintenance manuals.

3.05 CLEANING

A. Prior to energizing of electrical equipment, the Contractor shall thoroughly clean the interior of enclosures from construction debris, scrap wire, etc. using Manufacturer's approved methods and materials.

ADDENDUM "A"

B. Upon completion of Project, prior to final acceptance, the Contractor shall thoroughly clean both the interior and exterior of all electrical equipment per Manufacturers approved methods and materials. Remove paint splatters and other spots, dirt, and debris.

C. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

3.06 ENERGY CODE COMPLIANCE

A. NRCC: Per Title 24, Part 6 California Energy Code (CENC) the Non-Residential Certificates of Compliance (NRCC) shall be included in the Contract Documents. The NRCC outlines the specific requirements for how the project meets or exceeds CENC. Including what equipment, fixtures, and controls must be installed and how they are installed. The Contractor shall review the NRCC forms and coordinate all requirements with the applicable parties.

B. NRCI: Upon installation of the applicable equipment, fixtures, and controls, the Contractor shall provide and complete the required Non-Residential Certificates of Installation (NRCI) as listed in the NRCC forms. The NRCI form verifies that what was installed matches what was specified in the NRCC.

C. Acceptance Tests (NRCA): After initial start-up of the applicable equipment, fixtures, and controls, the Contractor shall conduct Acceptance Testing per CENC requirements. The Contractor shall be responsible for all testing and ensure the testing is documented in the applicable Non-Residential Certificate of Acceptance (NRCA) forms. The lighting Acceptance Testing shall be conducted by a technician that is certified with one of the California Energy Commission's approved Acceptance Test Technician Certification Providers (ATTCP).

D. Upon completion of the project, the Contractor shall provide all energy compliance forms to the Owner.

END OF SECTION

SECTION 26 05 33 – ELECTRICAL RACEWAYS AND BOXES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes conduit, surface raceways, J-hooks, wireways, outlet boxes, pull and junction boxes, concrete pullboxes and vaults, floor boxes.

1.02 REFERENCES

A. American National Standards Institute:
   1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
   2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.

B. National Electrical Manufacturers Association:
   1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
   2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
   3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
   4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
   5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
   6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
   7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.03 SYSTEM DESCRIPTION

A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.

B. All wiring shall be installed in raceway.

C. Provide raceway as follows:
   1. Underground: Provide thickwall nonmetallic conduit. Provide cast metal boxes or nonmetallic handhole.
   2. In Slab Above Grade: Not permitted.
   3. Below Slab on Grade: Use thickwall nonmetallic conduit. Terminate with coated rigid steel elbows and short length of coated rigid steel conduit out of concrete.

ADDENDUM "A"

4. Outdoor Locations, Above Grade: Provide galvanized rigid steel conduit. Provide cast metal outlet, pull, and junction boxes.
5. Wet and Damp Locations: Provide galvanized rigid steel conduit. Provide cast metal outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
6. Concealed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes where shown on drawings. Provide J-hooks when shown on plans.
7. Exposed Interior Dry Locations: Use rigid steel conduit or intermediate metal conduit below eight feet or where subject to damage. Use rigid steel conduit, intermediate metal conduit, or electrical metallic tubing above eight feet or in electrical, mechanical or telecommunication rooms. Use sheet-metal or cast metal boxes. Use flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

1.04 DESIGN REQUIREMENTS

A. Minimum Raceway Size: 0.75 inch unless otherwise specified.

B. Minimum Raceway Size for Data Communications: 1.00 inch unless otherwise specified.

C. Minimum Raceway Size for Telecommunications: 1.00 inch unless otherwise specified.

D. Minimum Raceway Size for AV Systems: 1.00 inch unless otherwise specified.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents:
1. Record actual routing of conduits larger than 2 inches.
2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

B. Protect PVC conduit from sunlight.

1.07 COORDINATION

A. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

B. Coordinate Work of this Division and Work of other Divisions in advance of installation. Provide additional Work to overcome tight conditions at no increase in Contract Sum.

C. Coordinate installation of outlet boxes for equipment specified in other divisions.

PART 2 - PRODUCTS

2.01 METAL CONDUIT

A. Rigid Steel Conduit: ANSI C80.1.

B. Rigid Aluminum Conduit: ANSI C80.5.

C. Intermediate Metal Conduit (IMC): Rigid steel.

D. Fittings and Conduit Bodies: NEMA FB 1. Fittings shall be steel/malleable iron with threaded fittings. Use insulated metallic bushings with lug where ground connections are required. Use plastic bushing for non-bonding applications.

2.02 PVC COATED METAL CONDUIT

A. Product Description: NEMA RN 1; rigid steel conduit with external PVC coating, 40 mil thick.

B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

2.03 FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction.

B. Fittings: NEMA FB 1.

2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction with PVC jacket.

B. Fittings: NEMA FB 1.

2.05 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description: ANSI C80.3; galvanized tubing.

B. Fittings and Conduit Bodies: NEMA FB 1; steel couplings and connectors. Box connectors shall have with insulated throat. Set screw type couplings.

ADDENDUM "A"

2.06 NONMETALLIC CONDUIT

A. Product Description: NEMA TC 2; Schedule 40 PVC.

B. Fittings and Conduit Bodies: NEMA TC 3.

2.07 SURFACE RACEWAY (WIREMOLD)

A. Product Description: Surface raceway as shown on plans. Raceway shall be Wiremold or equal.

B. Fittings: Provide all supports, adapters, clips, elbows, covers, device fittings, and other hardware as required for a complete installation. Provide B-Line “transition” boxes to clear offset surfaces. Supports shall be concealed, exposed straps are not allowed.

C. Finish:
1. Steel raceway and associated transition boxes and exposed hardware shall be spray painted with two coats of semi-gloss acrylic enamel paint, color as directed by Architect.
2. Aluminum raceway shall be provided with factory finish, color as directed by Architect. Transition boxes shall be spray painted with two coats of semi-gloss acrylic enamel paint, color as directed by Architect.
3. Plastic raceway shall be provided with factory finish, color as directed by Architect. Transition boxes shall be spray painted with two coats of semi-gloss acrylic enamel paint, color as directed by Architect.
4. Coordinate all colors with Architect prior to ordering.

2.08 J-HOOKS

A. Product Description: Low voltage signal cable J-Hooks shall be Panduit. Provide with support device for construction encountered.

2.09 WIREWAY

A. Product Description: General purpose for indoor applications and raintight type for outdoor locations wire way.

B. Knockouts: Manufacturer's standard.

C. Cover: Hinged cover with full gaskets.

D. Connector: Flanged.

E. Fittings: Lay-in type with removable top, bottom, and side; captive screws and drip shield for outdoor.

ADDENDUM "A"

F. Finish: Rust inhibiting primer coating with gray enamel finish.

2.10 OUTLET BOXES

A. All boxes shall be suitable for the environment in which they are installed.

B. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 0.5-inch male fixture studs where required.
2. Boxes for shall be 1.5-inch-deep by 4-inch square minimum for single devices.
3. Boxes for shall be 1.5-inch-deep by 4-11/16 inch square minimum for two devices.
4. Boxes for data and signal outlets shall be 2-1/8-inch-deep by 4-11/16-inch square minimum.
5. Concrete Ceiling Boxes: Concrete type.
6. Provide rings as required.

C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.

2.11 BOX EXTENSIONS

A. At rooms being remodeled and where existing walls are to receive new finish material, replace existing plaster rings with new rings.

2.12 PULL AND JUNCTION BOXES

A. Boxes having an internal volume less than 100 cubic inches shall be as specified for outlet boxes. Boxes having internal volume greater than 100 cubic inches shall be of panelboard type construction except that covers shall be secured by screws or bolts.

B. Boxes exposed to rain or installed in wet locations shall be specifically designed for the purpose.

C. All boxes shall be installed so that covers are accessible after completion of the installation.

D. Boxes shall not be installed in finished areas unless specific approval for such installation is granted by Architect.

2.13 CONCRETE PULLBOXES AND VAULTS

A. Boxes: Boxes shall be precast, high density reinforced concrete. In areas of vehicular traffic, boxes shall be H20 rated.

B. Extensions: Extensions shall be provided at each pullbox. Provide a minimum of (1) extension. Provide additional extension(s) as required to provide space in box for code required cable bending.

C. Covers: Covers in concrete or asphalt shall be galvanized. In all other areas, covers shall be steel checker plate. In areas of vehicular traffic, lids shall be galvanized steel, H20 rated. All covers shall be provided with hold-down bolts.

D. Floor: Provide poured concrete slab as detailed on plans. At H20 rated boxes, provide manufacturer's concrete slab.

E. Size: Provide size as noted on plans. If size is not shown, provide boxes sized per codes.

F. Labeling: Covers shall be factory marked as shown on plans.

2.14 FLUSH MULTI SERVICE FLOOR BOXES (4 PORT)

A. Floor boxes shall be cast iron, fully adjustable, Walker RFB4-CI-1 with FPBTCAL cover. Provide brackets required to mount devices shown on plans. Provide blank plates at unused ports.

2.15 FLUSH MULTI SERVICE FLOOR BOXES (11 GANG):

A. Floor boxes shall be steel, fully adjustable, Walker RFB11 with RFB119BTCAL cover. Provide brackets required to mount devices shown on plans. Provide blank plates at unused ports.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.02 EXISTING WORK

A. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, and patch surfaces.

B. Remove concealed abandoned raceway to its source.

C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.

ADDENDUM "A"

D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.

E. Extend existing raceway and box installations using materials and methods [compatible with existing electrical installations, or] as specified.

F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

G. At rooms being remodeled and where existing walls are to receive new finish material, replace existing plaster rings with new rings with depth required to bring box flush with new finish. Contractor shall review Architectural drawings prior to bid to note walls receiving new finishes (tackboards, sheetrock, etc.) and include the necessary work in bid.

3.03 INSTALLATION

A. Ground and bond raceway and boxes.

B. Fasten raceway and box supports to structure and finishes.

C. Identify raceway and boxes.

D. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.04 INSTALLATION - RACEWAY

A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.

B. Unless otherwise specified, all raceway shall be installed concealed. Raceway may be run exposed on unfinished walls, in attic spaces, in electrical rooms and when routed to surface panels, cabinets or gutters.

C. Arrange raceway supports to prevent misalignment during wiring installation.

D. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

E. Group related raceway; support using conduit rack. Construct rack using steel channel and provide space on each for 25 percent additional raceways.

F. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports

G. Do not attach raceway to ceiling support wires or other piping systems.

ADDENDUM "A"

H. Construct wire way supports from steel channel.

I. Route exposed raceway parallel and perpendicular to walls.

J. Route raceway installed above accessible ceilings parallel and perpendicular to walls.

K. Route conduit in and under slab from point-to-point.

L. Maintain clearance between raceway and piping for maintenance purposes.

M. Maintain 12-inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.

N. Cut conduit square using saw or pipe cutter; de-burr cut ends.

O. Bring conduit to shoulder of fittings; fasten securely.

P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.

Q. Install conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

R. Install no more than equivalent of three 90-degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2-inch size.

S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

T. Install fittings to accommodate expansion and deflection where raceway crosses seismic and expansion joints.

U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.

V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

W. Surface Raceway:
   1. Anchor raceway to structural members using screws. Supports shall be concealed. Space screws 24” maximum on center. Each run shall have a minimum of (2) screws.
   2. Mount plumb and level.
   3. Install insulating bushings and inserts at connections to outlets and corner fittings.

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4. Raceway shown on plans is schematic. Contractor shall coordinate exact routing and installation with building conditions and provide all parts, pieces, elbows, transition boxes and other items as required for a complete, closed and professionally installed installation.
5. Coordinate exact routing with Architect prior to installation.

X. J-Hooks:
1. Provide J-hooks 48” maximum on center.
2. All cable to be run parallel and perpendicular to building lines.
3. Provide mounting hardware as required.
4. Provide Unistrut channels between structural members as required.
5. Provide 24” long 2” conduit sleeves through walls, draft stops, etc. Provide as many as necessary to accommodate cables in contract plus two extra capped at each end for future cabling. All conduits shall be provided with bushed ends.

Y. Close ends and unused openings in wire way.

3.05 EXCAVATING AND TRENCHING:

A. Perform all excavations as required for the installation of the work included under this Section, including shoring of earth banks to prevent cave-ins and to protect workmen and equipment.

B. Restore all surfaces, roadways, walks, curbs, walls, existing underground installation, etc., damaged or cut as a result of the excavations to their original condition in a manner approved by the Architect.

C. Stop machine excavation for trenches, in solid ground, several inches above required grade line, then trim trench bottom by hand to accurate grade so that a firm and uniform bearing throughout entire length of duct is provided. In lieu of above hand excavation in bottom of trench, Contractor may excavate to depth no less than 6" below required grade line and place a bed of sand or granular soil, properly compacted to provide a uniform grade and to provide a firm support for duct throughout its entire length.

D. Minimum conduit depth of pipe crown shall be 2'0" below finished or natural grade, unless detailed otherwise on Drawings. Conduits under parking lots, roadways, driveways, fire truck access routes, and other areas subject to vehicular traffic shall be installed a minimum of 24" below grade.

3.06 BACKFILLING:

A. No backfilling operations shall begin until the required tests and inspection has been made. Should any of the work be enclosed or covered up before it has been approved, Contractor shall, at his expense, uncover the work.

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B. After it has been inspected, tested, and approved, he shall make all repairs necessary to restore the work of other contractors to the condition in which it was found at the time of uncovering.

C. Except under existing paved area, walks, roads, or similar surfaces, and in cases where rock is encountered, backfill more than 12" above the top of the pipe shall be made using suitable excavated material placed in 6" layers measured before compaction, and tamped by machine.

D. Surface work shall be replaced to match the existing.

E. Entire backfill for bored excavations under existing pavement, walks, roads, or similar surfaces, shall be made with clean sand compacted by flooding.

F. The contractor shall install a marking tape 6” below grade and directly above all electrical conduits. The tape shall consist of a 4 mil insert plastic film specifically formulated for prolonged use underground. It shall be highly resistant to alkalis, acids and other destructive agents found in the soil. Tape shall have a minimum tensile strength of 20 lbs. per 3” with strips and a minimum elongation of 500%. Tape shall bear a continuous painted message repeated every 16” to 36” warning of the installation buried below. The message shall read “CAUTION – ELECTRICAL POWER LINE BURIED BELOW” or “CAUTION – ELECTRICAL SIGNAL LINES BURIED BELOW” as applies. Installation instruction for the tape shall be printed with each message along the entire length. The tape shall be as that manufactured by Reef Industries, Inc., or approved equal. For those installations involving non-metallic pipe, tape shall be aluminum foil encased in two layers of inert plastic film enabling the tape to be inductively located. Terre Tape “D” Warning Tapes are acceptable. When conduit below is plastic, tape shall have metallic content and shall respond to metal detectors. Do not exclude this. It will be required to verify the installation of this tape.

3.07 FLASHING AND SEALING:

A. Flash and counterflash roof and wall penetrations in manner described under other applicable sections of this Specification and as approved by the Architect.

B. Conduits, ducts, etc., passing through finished walls and ceilings shall be fitted with steel escutcheon plates, chrome or paint finish as directed.

C. Conduits which penetrate floor slabs and concrete or masonry walls shall be grouted and sealed watertight at penetration.

D. Conduits penetrating exterior walls other than concrete or masonry shall be sealed watertight with polyurethane sealant.

E. Underground conduits stubbing up into a room shall be sealed around cables or pullstring with foam sealant.

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F. All flashing and sealing shall be provided by this Contractor.

3.08 INSTALLATION – BOXES

A. Boxes shall be accurately placed as shown on Drawings or as close thereto as possible. Contractor shall refer to Drawings, specifications, and submittals covering work of the other trades to coordinate outlet location. In the event of conflict between planned locations of outlet and other equipment or furnishing, Contractor shall not proceed until direction has been given by Architect.

B. Unless otherwise specified or shown on Drawings, boxes shall be flush mounted with front edge of box or ring flush with wall or ceiling finish. Use plaster ring of appropriate depth in plastered or gypboard applications. Contractor shall review architectural drawings and note wall and ceiling construction and finishes for each wall.

C. Boxes shall not be installed back-to-back in walls. To prevent sound transfer, outlets, switches, etc. shown on opposing sides of the same wall shall be installed in separate stud spaces, except that outlets installed at different elevations may occupy the same stud space when box separation exceeds 18". Where these requirements cannot be met, Contractor shall provide insulation material between boxes.

D. Orient boxes to accommodate wiring devices.

E. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

F. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.

G. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

H. Install stamped steel bridges to fasten flush mounting outlet box between studs.

I. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

J. Install adjustable steel channel fasteners for hung ceiling outlet box.

K. Do not fasten boxes to ceiling support wires or other piping systems.

L. Support boxes independently of conduit.

M. Install gang box where more than one device is mounted together. Do not use sectional box.

N. Install gang box with plaster ring for single device outlets.

3.09 INSTALLATION CONCRETE PULLBOXES AND VAULTS

A. Install boxes flush with finished grade or surface material.

B. Install hold down bolts for all covers.

C. Ground bond steel cover plate with insulated green grounding conductor.

D. Grout between box and extension(s).

E. Any box installed in areas of vehicular traffic shall be H20 rated. Contractor shall verify this requirement prior to ordering.

3.10 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.

C. Locate outlet boxes to allow luminaires positioned as indicated on reflected ceiling plan.

D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.11 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.

B. Install knockout closures in unused openings in boxes.

3.12 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 27 16 – CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the requirements for the cabinets and enclosures for this project.

1.02 REFERENCES

A. National Electrical Manufacturer's Association (NEMA):
   1. NEMA 250; Enclosures for Electrical Equipment.
   2. NEMA ICS 1; Industrial Control and Systems.
   3. NEMA ICS 4; Terminal Blocks and Industrial use.
   4. NEMA ICS 6; Enclosures for Industrial Controls and Systems.

B. Underwriters Laboratories (UL):
   1. UL 50; Enclosures for Electrical Equipment.
   2. UL 65; Standards for Wired Cabinets.
   3. UL 1059; Terminal Blocks.
   4. UL 1773; Termination Boxes.

1.03 SUBMITTALS

A. Product Data

B. Operation and Maintenance (O&M) Manuals

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

PART 2 - PRODUCTS

2.01 CABINETS AND ENCLOSURES

A. Description: Interior Locations: NEMA 1. Exterior locations: NEMA 3R

ADDENDUM "A"

B. Construction: Shall be code gauge galvanized steel with standard concentric knockouts for conduit terminations. Size shall be as indicated on Drawings.

C. Finish: Manufacturer's standard gray baked enamel finish.

D. Covers: Continuous hinged steel door, lockable and keyed to match panelboard locks. Provide padlock hasp at exterior locations.

E. Mounting:
1. Flush cabinets shall be furnished with concealed trim clamps and shall be not less than 4 inches deep.
2. Surface cabinets shall be furnished with screw cover trim, flush hinged door and shall not be less than 6 inches deep.

2.02 TERMINAL BLOCKS AND ACCESSORIES

A. Terminal blocks: NEMA ICS 4; UL listed.

B. Power terminals: Unit construction type, closed-back with tubular pressure screw connections, rated 600 volts.

C. Identification: Identify terminal strips with permanent numbers.

D. Wiring diagram: Provide wiring diagram in protective pocket on inside front cover of cabinet. Diagram shall indicate control wiring, connections, and layout of components within enclosure.

2.03 HINGED COVER ENCLOSURES

A. Description: NEMA 250, Type 1 (Interior) and 3R (Exterior) steel enclosure
1. Covers: Continuous hinge, held closed by flush latch operable by key.
2. Furnish interior plywood panel for mounting terminal blocks and electrical components; finish with white enamel.
3. Enclosure Finish: Manufacturer's standard enamel.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of cabinets and enclosures installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

ADDENDUM "A"

3.02 INSTALLATION

A. Set cabinets and enclosures plumb and symmetrical with building lines. Furnish and install all construction channel bolts, angles, etc. required to mount all equipment furnished under this Section of the Specifications.

B. Cabinets and enclosures shall be anchored and braced to withstand seismic forces calculated in accordance with that referenced in Section 26 0100: Basic Electrical Requirement.

C. "Train" interior wiring, bundle and clamp using specified plastic wire wraps.

D. Install interior cabinets with top of enclosure 6’6” above finished floor.

E. Install exterior cabinets with top of enclosure 6’6” above finished grade.

F. Replace doors or trim exhibiting dents, bends, warps or poor fit that may impede ready access, security or integrity.

G. Terminate conduit in cabinet with lock nut and grounding bushing.

H. Terminate wiring on terminal blocks and identify each with heat shrink tags.

3.03 CLEANING

A. Touch up scratched or marred surfaces to match original finish.

B. Clean electrical parts to remove conductive and harmful materials.

C. Remove dirt and debris from enclosure.

D. Clean existing panelboards and load centers to remain or to be reinstalled.

END OF SECTION

ADDENDUM "A"

SECTION 26 28 00 – CIRCUIT PROTECTIVE DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes
   1. This section describes the requirements for the circuit protective devices for this project.

1.02 REFERENCES

A. Federal Specification (FS):
   1. FS W-C-375; Circuit Breakers, Molded Case, Branch Circuit and Service.
   2. FS W-F-870; Fuseholders (for Plug and Enclosed Cartridge Fuses).

B. Underwriters Laboratories, Inc. (UL):
   1. UL 248(1-16); Low-Voltage Fuses.
   2. UL 489; Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures.
   3. UL 512; Fuseholders.
   4. UL 1066; Low Voltage AC and DC Power Circuit Breakers Used in Enclosures.

C. National Electrical Manufacturer Association (NEMA):
   1. NEMA AB 1; Molded Case Circuit Breakers.

1.03 SUBMITTALS

A. Product Data

B. Operation and Maintenance (O&M) Manuals

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery: Overcurrent Protective Device components shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by

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rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

PART 2 - PRODUCTS

2.01 FUSES

A. General: All power fuses shall be time-delay, high interrupting (300 K AIC), current limiting type, unless otherwise noted on the Drawings. All fuses shall be the product of a single Manufacturer and shall be selectively coordinated when applied in 2:1 ratios. Types of fuses shall be as follows:
   1. 0 - 600 amperes: UL Class J, dual element, time delay type fuse with separate overload and short-circuit elements. The fuse shall hold 500% of rated current for a minimum of 10 seconds.
   2. 601 - 4000 amperes: UL Class L, time delay type fuses with 99.9% pure silver fuse links and "O-rings" to seal between the end bells and the fuse barrel. Fuses shall hold 500% of rated current for a minimum of 4 seconds, clear 20 times rated current in 0.01 seconds or less.
   3. Motor branch circuit fuses (0-600 amperes): UL Class J dual element, time delay type fuse. Motor branch circuit fuses shall be sized for Type 2 coordination for the motor controller and back-up motor overload protection and shall be coordinated with motor starter overload relay heaters.

B. Control and instrument fuses shall be suitable for installing in blocks or fuse holders. Exact type and rating shall be as recommended by the Manufacturer of the equipment being protected.

C. Fuses for installation in current limiting circuit breakers or motor circuit protectors shall meet the specific requirements of the Manufacturers of that equipment to ensure compatibility.

2.02 MOLDED CASE CIRCUIT BREAKERS

A. Unless noted otherwise, circuit breakers shall be molded case, bolt on and trip indicating.

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B. Where stationary molded case circuit breakers are indicated on the Drawings to be current limiting type, they shall be current limiting as defined by UL 489 and shall not employ any fusible elements.

C. Circuit breakers shall have interrupting capacity not less than that indicated on the Drawings or if not indicated, not less than 25,000 RMS symmetrical amps for 480 volt systems and 10,000 RMS symmetrical amps for 208 volt systems.

D. Covers shall be sealed on non-interchangeable breakers and trip unit covers shall be sealed on interchangeable trip breakers to prevent tampering. Circuit breaker ratings shall be clearly visible after installation or engraved nameplates shall be provided stating the rating. All ferrous parts shall be plated to minimize corrosion.

E. Circuit breakers shall be toggle, quick-make and quick-break operating mechanisms with trip-free feature to prevent contacts being held closed against overcurrent conditions in the circuit. Trip position of the breakers shall be clearly indicated by operating handles moving to a center position.

F. Multipole breakers shall have a single handle to open and close all contacts simultaneously in both manual operation and under automatic tripping. Interpole barriers shall be provided inside the breaker to prevent any phase-to-phase flashover. Each pole of the breaker shall have means for Arc extinguishing.

G. All terminals shall be rated for aluminum or copper wire.

H. Unless noted otherwise, circuit breakers with trip ratings 400 amp and smaller shall be ambient temperature compensated, thermal magnetic type unless otherwise noted. Breakers shall be of full size, 1" per pole type. Panels with more than one branch breaker larger than 100 amps shall be installed in distribution type panels.

I. Accessories: Provide accessories as noted on the Drawings, i.e. shunt-trip, auxiliary contacts, undervoltage trip, alarm switch, etc.

J. Spaces in the boards shall be able to accept any combination of 1, 2 or 3 pole circuit breakers as indicated. Provide all necessary bus, device supports and mounting hardware sized for frame, not trip rating.

K. Series rated breakers are not acceptable unless specifically noted on the Drawings.

L. Provide lockable breakers for equipment disconnects as indicated on the Drawings.

ADDENDUM "A"

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of cabinets and enclosures installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Install overcurrent protective devices in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Tighten electrical connectors and terminals; including screws and bolts, in accordance with equipment Manufacturers published torque-tightening values for equipment connectors. Where Manufacturers torque requirements are not indicated tighten connectors and terminals to comply with tightening torque specified in UL Standard 486A.

C. Install overcurrent protective devices and accessories in accordance with Manufacturer's written instructions and with recognized industry practices to ensure that protective devices comply with requirements. All devices shall be installed in accordance with applicable CEC and NEMA standards for installation.

D. Circuit breakers serving "Fire Alarm Control Panel(s)" shall be red in color.

3.03 FIELD QUALITY CONTROL

A. The Contractor shall supply a suitable and stable source of electrical power to each test site.

B. Testing of overcurrent protective devices shall be done only after all devices are installed and system is energized.

C. Prefunctional testing:
   1. Visual and mechanical inspection:
      a. Inspect for physical damage, defects alignment and fit.
      b. Perform mechanical operational tests in accordance with Manufacturer's instructions.
      c. Compare nameplate information and connections to Contract Documents.
      d. Check tightness of all control and power connections.
      e. Check that all covers, barriers and doors are secure.
   2. Electrical tests:
      a. Circuit continuity: All feeders shall be tested for continuity. All neutrals shall be tested for improper grounds.

b. Determine that circuit breaker will trip under overcurrent condition, with tripping time in conformance with NEMA AB 1 requirements.
c. Test all circuit breakers with frame size 225 amps and larger and 10 percent of all circuit breakers with frame sizes less than 225 amps in each panelboard, distribution board, switchboard, etc. unless otherwise noted.

D. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

E. Contractor shall submit the final test report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results, observation, deficiencies and remedies. Test report shall be included in the operation and maintenance manuals.

3.04 ADJUSTING

A. Adjust circuit breaker trip settings for coordination with other overcurrent protective devices in system.

B. Adjust circuit breaker trip settings for adequate protection from overcurrent and fault currents.

3.05 CLEANING

A. Upon completion of Project prior to final acceptance the Contractor shall thoroughly clean overcurrent protective devices per Manufacturer's approved methods and materials. Remove paint splatters and other spots, dirt and debris.

END OF SECTION

ADDENDUM "A"

SECTION 26 61 16 – FIRE ALARM

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the requirements for the fire alarm system on this project

B. Work Included
1. Furnish and install extensions to the existing fire alarm system including all wiring and connections and other material as shown on in the Electrical Drawings and specified herein. It is the intent that a complete operating system conforming to all applicable codes and District Standards be installed and that any power supplies, relays, resistors, cards, modules, programming or other items required to achieve this end result shall be furnished whether or not such item or items are specified herein.
2. Site and System Investigation: The bidding contractor for the fire alarm system shall visit the site prior to the bid and become thoroughly knowledgeable about the existing system and work required to perform work of this section. Failure to discover the equipment, materials, and labor required to complete the extensions will not relieve the contractor from completing the work at no additional cost.

1.02 REFERENCES AND STANDARDS

A. California Fire Code (CFC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. American National Standards Institute, Inc. (ANSI): ANSI C62.41

C. National Fire Protection Association (NFPA): 72, 101

D. Underwriter Laboratories, Inc. (UL)
1. UL 38; Manual Signaling Boxes Fire Alarm Systems.
2. UL 268;Smoke Detectors for Fire Alarm Signaling Systems.
3. UL 268 A; Smoke Detectors for Duct Application.
4. UL 464;Audible Signal Appliances.
5. UL 497B; Protectors for Data Communications and Fire Alarm Circuits.
6. UL 521;Heat Detectors for Fire Protective Signaling Systems.
7. UL 864;Control Units and Accessories for Fire Alarm Systems.
8. UL 1424; Cables for Power-Limited Fire-Alarm Circuits.
9. UL 1480; Speakers for Fire Alarm, Emergency and Commercial and Professional Use.
10. UL 1481; Power Supplies for Fire-Protective Signaling Systems.
11. UL 1638 Visual Signaling Appliances Standard.
12. UL 1711; Amplifiers for Fire Protective Signaling Systems.

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13. UL 1971 Signal Devices for Hearing Impaired.

E. International Engineering Consortium (IEC): IEC 60849

F. Factory Mutual System (FM) approval guide: FM P7825

G. California State Fire Marshal (CSFM)

1.03 SUBMITTALS

A. Product Data

B. Shop Drawings

C. Operation and Maintenance (O&M) Manuals

D. As-Built Drawings

E. Field Test Reports

1.04 QUALITY ASSURANCE

A. Reference to Codes, Standards, Specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.

B. When codes, standards, regulations, etc. allow Work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements, or extent of the Contract Documents. The Contract Documents address the minimum requirements for construction.

C. Work shall be performed in accordance with all applicable requirements of the latest edition of all governing codes, rules and regulations including but not limited to standards listed in Section 26 01 00.

D. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

E. Only products and applications listed in this Section and in the Electrical Drawings may be used on the Project unless otherwise submitted.

ADDENDUM "A"

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the Manufacturers indicated in the Electrical Drawings and this section shall be acceptable if in compliance with all features specified herein
   1. Gamewell-FCI
   2. System Sensor

2.02 DEVICES

A. Initiation: See Component Schedule in the Electrical Drawings
   1. Addressable Heat Detector
   2. Addressable Smoke Detector

B. Notification: See Component Schedule in the Electrical Drawings
   1. Strobe
   2. Combination Speaker-Strobe

2.03 CONDUIT

A. Conduit shall be in accordance with the California Electrical Code (CEC).

B. Where required, all wiring shall be installed in conduit. Conduit fill shall not exceed 40 percent of interior cross-sectional area where three or more cables are contained within a single conduit.

C. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per CEC Article 760-29.

D. Wiring for 24-volt DC control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

E. Conduit shall not enter the fire alarm control panel or any other remotely mounted control panel equipment or back boxes, except where conduit entry is specified by the Fire Alarm Control Panel (FACP) manufacturer.

F. Connectors shall be compression type fittings to join EMT to a box or enclosure and to couple two ends of EMT conduit. Fittings shall be: Zinc plated, steel UL listed concrete tight, and threadless where connecting to conduit. Male hub threads -NPSM (American National Standard Pipe Straight Mechanical) where connecting to box or cabinet with steel locknuts.

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2.04 WIRE

A. See wiring/cable schedule in the Electrical Drawings

B. Wiring shall be in accordance with state and national codes (e.g., CEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG (1.63 mm) for Notification Appliance Circuits.

C. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

D. Wire and cable shall be installed in conduit or metal surface raceway when in exposed spaces. Minimum size of conduit shall be 3/4" inch. Utilize Wiremold 700 series surface raceway (in lieu of conduit) for area where conduit cannot be installed concealed. Cable above accessible ceiling can be installed free air when using applicable cable. Support all free air cable every 48" with j-hooks.

E. All field wiring (with exception of external communications Ethernet) shall be electrically supervised for open circuit and ground fault.

F. The FACP shall be capable of T-tapping NFPA Style 4 (Class B) Signaling Line Circuits (SLCs). Systems which do not allow or have restrictions in, for example, the number of T-taps, length of T-taps etc., is not acceptable.

2.05 EQUIPMENT & BOXES

A. See Component Schedule in the Electrical Drawings

B. Control panels and remote power supplies shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. FACP primary power wiring shall be 12 AWG. The control panel cabinet shall be grounded securely to either a cold water pipe or grounding rod. The control panel enclosure shall feature a quick removal chassis to facilitate rapid replacement of the FACP electronics.

C. Terminal Boxes, Junction Boxes and Cabinets: All boxes and cabinets shall be UL listed for their use and purpose.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of cabinets and enclosures installation to verify conformance with Manufacturer and Specification

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tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Wiring:
1. Individual input and output device addressability as well as remote sensitivity measurement, supervision and power shall all be performed on the same pair of wires. Wiring shall be Class B.
2. Each Class B initiating circuit shall consist of a two (2)-wire circuit. allowing a maximum of 20 T-taps and not requiring any end-of-line device for supervision. Each initiating circuit shall accommodate up to 75% of the manufacturers maximum addressable programmable initiating devices, to allow for future expansion.
3. Wiring for shielding certain conductors from others or routing in separate raceways, shall be as recommended by the Manufacturer's current requirements.
4. All wiring shall be installed in a continuous steel conduit or metal surface raceway when in exposed spaces. All conduit fittings shall be steel compression. Conduit shall be of the size recommended by the equipment Supplier with a minimum of 3/4” inch.
5. Wire color-coding shall remain the same throughout the system.
6. No wiring other than that directly associated with life safety/fire alarm detection, alarms, or auxiliary fire protection functions (no 120 VAC), shall be permitted in life safety/fire alarm conduits.
7. Make conduit and wiring connections to sprinkler flow switches, PIV's, sprinkler valve monitors, door hold-open/closure devices, smoke management fans, smoke dampers, elevator controller, emergency generator, etc.
8. All wiring shall be checked and tested to ensure that there are no grounds, opens or shorts.
9. All life safety/fire alarm junction boxes shall be color-coded and marked
10. Wire nut splices are not allowed.
11. Wires shall be numbered at each connection, termination, and junction point. Wire numbering tags shall be Brady Perma-Code, Westline or equal wire markers. Each group of wires shall be tagged with its destination at each panel, terminal box or junction box.
12. All wire used on the life safety/fire alarm and communication system shall have a minimum insulation rating of 105 degrees C. Bell wire or thermostat wire is not acceptable.

3.03 FIELD QUALITY CONTROL

A. Pre-functional testing: Visual and mechanical inspection
1. Inspect for physical damage, defects alignment and fit.
2. Compare nameplate information and connections to Contract Documents.
3. Check tightness of all conduit and wire connections.
4. Check that all covers, barriers and doors are secure.

ADDENDUM "A"

B. Pre-functional testing: Electrical tests
   1. The system shall be completely tested prior to final acceptance testing. All points shall be tested from point of initiation to the final point or points of annunciation. All circuits shall be tested for continuity and ability to transmit the required signal correctly to the FACP. Any problem due to wrong wire type, wire twist, impedance, mismatches, noise filtering or shielding shall be completely corrected during pretesting and prior to any final acceptance tests.
   2. Testing shall include each and every device in the system. Coordinate with other trades as necessary for testing.
   3. Tamper switches: Verify "trouble" signal is received and alarmed on closing of each valve.
   4. Smoke detectors and duct smoke detectors: Test with actual or approved artificial smoke. Verify that reset does not occur when devices are cleared of smoke. Verify supervisory circuit function. Perform pressure differential test on all duct-mounted smoke detectors.
   5. Intelligibility testing shall be per IEC 60849 and verified and tested by a third-party testing organization.
   6. Central station notification: Verify that one set of conductors in the terminal cabinet becomes a short circuit on any "trouble" condition and that the other set becomes a short circuit on any "alarm" condition. Verify that the conductor groups are labeled properly.

C. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

3.04 TESTING

A. One-half to three-quarters of the way through project, District Facilities will set up a meeting (preferably at the school site) with decision makers from Facilities, Police Services, Maintenance, Maintenance Alarm Tech, General Contractor, Alarm Sub-contractor, and School Administrator to review the alarm protocol and to identify responsible personnel and timelines for the items listed in paragraph D, which follows.

B. After all equipment specified herein has been installed and is in operating condition, performance tests shall be conducted by Contractor in accordance with, but not limited to, Table 14.3.1 & 14.4.3.2, NFPA 72 to verify that installation and components comply with these specifications. Contractor shall furnish competent personnel for these tests. Testing shall be scheduled with the Owner and shall occur after receipt by Architect of Contractor's written certification of completion, record one-line diagram, wiring diagrams, maintenance and operation manuals, and other "As-Built" data required by these specifications.

C. Upon completion of the installation of the fire protective signaling equipment and after satisfactory performance tests have been conducted, a satisfactory demonstration of the entire system shall be made in the presence of the Project Inspector. Contractor

shall coordinate with Project Inspector and School. Demonstration shall be completed prior to occupancy by School and prior to final testing with the Owner.

D. After system is completely tested, the Contractor shall take the following actions with the Owner:
   1. The Contractor will schedule a meeting with the Alarm Sub-contractors and Owner's Representatives to determine alarm zone and device nomenclature. The Contractor shall insure that the alarm zone and device nomenclature matches the actual building and room numbers used by the school. Architectural numbering shall not be used. Once confirmed, the Contractor shall demonstrate this to Owner's Representatives.

3.05 CERTIFICATION

A. Written certification on the form found in NFPA 72 shall be submitted by the Contractor to the Project Inspector stating for the Contractor and the equipment manufacturer that component parts are as LISTED AND APPROVED BY the California State Fire Marshal, that the installation confirms in all respects to requirements as set forth in California Electrical Code, that acceptance testing has been performed in the presence of the Project Inspector. Contractor shall complete and sign form and submit to Project Inspector.

END OF SECTION

ADDENDUM "A"

SECTION 27 10 00 – DATA COMMUNICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the requirements for the data communication system on this project.

B. Work Included
   1. Furnish and install extensions to the existing data communication system including all wiring and connections and other material as shown on in the Electrical Drawings and specified herein. It is the intent that a complete operating system conforming to all applicable codes and District Standards be installed and that any power supplies, patch panels, modules, programming or other items required to achieve this end result shall be furnished whether or not such item or items are specified herein.
   2. Site and System Investigation: The bidding contractor for the data communication system shall visit the site prior to the bid and become thoroughly knowledgeable about the existing system and work required to perform work of this section. Failure to discover the equipment, materials, and labor required to complete the extensions will not relieve the contractor from completing the work at no additional cost.

1.02 REFERENCES AND STANDARDS

A. California Electrical Code (CEC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Fire Code (CFC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. Contractor shall ensure that, manufacturer, ANSI/TIA/EIA-586-B cable testing, and install of the telecommunications cabling network is per manufacturer's requirements and in accordance with California Electrical Code (CEC), state codes, local codes, requirements of authorities having jurisdiction, and particularly the following standards:

D. American National Standards Institute, Inc. (ANSI):
   1. ANSI/TIA/EIA-568-B.1 - Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements
   2. ANSI/TIA/EIA-568-B.2 - Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components
   3. ANSI/TIA/EIA-568-B.3 - Optical Fiber Cabling Components Standard
   4. ANSI/TIA/EIA-569-A - Commercial Building Standard for Telecommunications Pathways and Spaces

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5. ANSI/TIA/EIA-586-B - Cable Testing
6. ANSI/TIA/EIA-606(A) - The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
7. ANSI/TIA/EIA-607(A) - Commercial Building Grounding and Bonding Requirements for Telecommunications
8. ANSI/TIA/EIA 565.B.2,10 - Standard for Cat6
9. ANSI/TIA/EIA-758(A) Customer-Owned Outside Plant Telecommunications Cabling Standard
10. TIA TSB 155 - 10G Ethernet over existing Cat6 up to 50 meters

E. International Electrotechnical Commission (IEC):
1. IEC 11801:2002 ed 2- International standard for Class F (Cat7)
2. IEC 61076-3-104:2002- International standard for RJ quad jack
3. IEC CD14165-114 - International standard for duplex gigabit on two pair Ethernet

F. National Fire Protection Association (NFPA): 70

G. Underwriter Laboratories, Inc. (UL)

H. Cal/OSHA-Pocket Guide for the Construction Industry

I. Contractor shall install cabling in accordance with the most recent edition of Building Industry Consulting Service International (BICSI) publications:
1. BICSI - Telecommunications Distribution Methods Manual (TDMM)
2. BICSI - Cabling Installation Manual
3. BICSI - Customer-Owned Outside Plant Design Manual

J. Federal, state, and local codes, rules, regulations, and ordinances governing the work, are as fully part of the specifications as if herein repeated or hereto attached. If the contractor shall note items in the drawings or the specifications, construction of which would be code violations, promptly call them to the attention of the owner's representative in writing. Where the requirements of other sections of the specifications are more stringent than applicable codes, rules, regulations, and ordinances, the specifications shall apply.

1.03 SUBMITTALS

A. Product Data

B. Operation and Maintenance (O&M) Manuals

C. Detail Visio 2007 As Built Drawings and Diagrams

D. Field Test Reports

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1.04 QUALITY ASSURANCE

A. Copper cabling will be Panduit with a 25 year Pan-Net warranty.
   1. At project completion, the contractor shall present to owner a single project binder with electronic and hard copies of test results, as built drawings, pictures, bill of materials listing part numbers, etc. and a Visio 2007 drawing electronic provided to owner's Information Services and Educational Technology (ISET) office which identifies all Data jack locations and port assigned numbers.

B. The installing contractor shall furnish and install all hardware, cables, devices, and other materials even though not specifically mentioned herein, which are necessary for the proper integration of the system so that the system shall perform the functions listed herein in compliance with all specified requirements.

C. A Contractor may use up to ONE sub-contractor to install all CAT6 data cabling. Contractor will provide 'As Builts' and warranty information to the owner.
   1. The contract shall have a minimum of five years professional field experience pulling/terminating fiber and Cat6 cable.
   2. The contractor shall possess a valid C-7 California State contractor's license. This license shall have been issued two (2) years prior to the date of the bid. No other license classification is acceptable.
   3. The contractor and/or sub-contractors shall have Panduit Certified Installers as well as Corning Certified NPI Installers.

D. Pre-Installation Meeting:
   1. Schedule a meeting a minimum of five calendar days prior to beginning work.
   2. Agenda: Clarify questions related to work to be performed, scheduling, coordination, labeling for data jacks, data jack layout on telco racks in MDF and IDFs, etc.
   3. Attendance: Communications systems installer, general contractor, and other parties affected by work.
   4. A copy of manufacturer warranty application shall be provided at this meeting.

E. The contractor shall provide a twenty-five (25) year application performance warranty for all Panduit Pan-Net copper cable and connectivity products. The system shall be installed to meet all TIA/EIA commercial building wiring standards and installed per appropriate Panduit instruction sheets. If any Panduit product fails to perform as stated above, Panduit will provide new components at no charge.

1.05 WARRANTY

A. The project shall be pre-registered with manufacturer before installation has begun.

B. The installation will have to pass scan tests by a certified contractor.

C. The installation will have to be documented with labels and drawings.

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D. A 25-year PAN-NET manufacturer warranty covering all components, equipment and workmanship shall be passed through in writing with system documentation. The warranty period shall begin on the system's first use by the owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The acceptable manufacturers for the cabling connectivity is Panduit/General copper, Panduit/Panduit copper, and Corning Cable.

B. Part listed are the owner's standards and any substitutions shall be approved in writing through submittal.

C. Panduit 25 year Pan-Net

D. Corning Cable

2.02 APPROVED PARTS LIST

A. The follow is an approved parts list:

Wire Management

Manufacturer	Part Number	Description
Panduit		J-Hooks shall be Panduit
Panduit	WMP1E	2U Horizontal Wire management
Panduit	WMPSE	1U Horizontal Wire Management
Panduit	CLT100F-C3	1" Split Loom Tubing Orange
Panduit	CLT188F-X3	1.88" Split Loom Tubing Orange
		1" Fiber Innerduct
		2" Fiber Innerduct
Panduit	CWF400N	4" Conduit Waterfalls
Panduit	CCMKIT1	Cable Management Kit
Panduit	WMPVHC45E	Vertical Cable Manager Front & Rear
Panduit	NCMH2	2U Horizontal Cable Manager Front & Rear
Trilobular		Taptite II thread

Twisted Pair Products

Manufacturer	Part Number	Description
Panduit	PUR6004BU-U	Cat 6 Riser Blue
Panduit	PUR6004WH-U	Cat 6 Riser White
Panduit	PUR6004OR-U	Cat 6 Riser Orange
Panduit	PUR6004RD-U	Cat 6 Riser Red
Panduit	PUR6004YL-U	Cat 6 Riser Yellow
Panduit	PUR6004VL-U	Cat 6 Riser Violet

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Panduit	PUP6004BU-U	Cat6 Plenum Blue
Panduit	PUP6004WH-U	Cat6 Plenum White
Panduit	PUP6004OR-U	Cat6 Plenum Orange
Panduit	PUP6004RD-U	Cat6 Plenum Red
Panduit	PUP6004YL-U	Cat6 Plenum Yellow
Panduit	PUP6004VL-U	Cat6 Plenum Violet
General Cable	7136100	Outside Plant Cat 6
Panduit	CFPE1WHY	1 Port White Faceplate
Panduit	CFPE2WHY	2 Port White Faceplate
Panduit	CFPE4WHY	4 Port White Faceplate
Panduit	CFPE6WHY	6 Port White Faceplate
Panduit	CFP2SY	Stainless Steel 2 Port Faceplate
Panduit	CJ688TGWH	Cat 6 Jack White
Panduit	CJ688TGOR	Cat 6 Jack Orange
Panduit	CJ699TGYL	Cat 6 Jack Yellow
Panduit	CJ688TGBL	Cat 6 Jack Blue
Panduit	CJ688TGVL	Cat 6 Jack Violet
Panduit	CJ688TGRD	Cat 6 Jack Red
Panduit	CPPL24WBLY	Blank, Minicom, 24 port patch panel
Panduit	CPPL48WBLY	Blank, Minicom, 48 Port Patch Panel
Panduit	SRBWCY	Strain Relief for Patch Panel
Panduit	PSL-DCJB	Black out Module Red (Need White, Red Listed)
Panduit	PSL-DCJB-IW	Black out Module White
Panduit	PSL-DCJB	Black out Module
Panduit	C4PPLK	Replacement Label Kit
Panduit	UTPSP3RD	3 Foot Cat 6 Red Patch Cord
Panduit	UTPSP5RD	5 Foot Cat 6 Red Patch Cord
Panduit	UTPSP3OR	3 Foot Cat 6 Orange Patch Cord
Panduit	UTPSP6OR	5 Foot Cat 6 Orange Patch Cord

Raceway

Manufacturer	**Part Number**	**Description**
Panduit	LD3WH6-A	LD3 Raceway (Substitute 6 with 8 and 10, for Longer Lengths
Panduit	LD5WH6-A	LD5 Raceway (Substitute 6 with 8 and 10, for Longer Lengths)
Panduit	LD10WH6-A	LD10 Raceway (Substitute 6 with 8 and 10, for Longer Lengths)
Panduit	CFXWH-E	Raceway Coupler (Replace 'X' with 3, 5, or 10 for the different size raceway)
Panduit	RAFXWH-E	Right Angle Fitting (Replace 'X' with 3, 5, or 10 for the different size raceway)
Panduit	ICFXWH-E	Inside Corner Fitting (Replace 'X' with

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		3, 5, or 10 for the different size raceway)
Panduit	OCFXWH-E	Outside Corner Fitting (Replace 'X' with 3, 5, or 10 for the different size raceway)
Panduit	DCFXWH-E	Drop Ceiling Fitting (Replace 'X' with 3, 5, or 10 for the different size raceway)
Panduit	JBX3510WH-A	Single Gang Outlet for LD Raceway

Tools

Manufacturer	Part Number	Description
Panduit	CGJT	
Panduit	EGJT	
Panduit	CWST	
Panduit	CJAST	
Panduit	TTS-20R0	Tak Tape Rolls
Panduit	HLS-75R0	Bulk Velcro

2.03 SYSTEMS COMPONENTS

A. Distances mentioned and shown on drawings or spreadsheets are approximate. Field verification shall be made prior to install.

B. Materials provided shall meet or exceed the standards/description listed below.

C. Fiber Trunk Cable
1. Corning 12 strand single mode outdoor riser fiber optic cable

D. Horizontal Cable (Cat6):
1. Solid copper, 24 AWG, 100 balanced twisted-pair (UTP) Category 6 cables with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2 to 250 MHz. General Cables Genspeed 6000 Enhanced CAT6E meets the specification.
2. Use plenum rated cable in PLENUM air environments only.
3. Use gel-filled cables in OSP environments as under slab concrete, outside near water, etc.
4. Use outdoor plant cable when going in slab or in areas with moisture.

E. Connectors (Cat6):
1. 8-pin modular, category 6, pinned to T5689B standard.

F. Faceplates:
1. Provide 1, 2, 4 or 6 port faceplates and use classic style with label window. Fill unused ports with blank inserts.

G. Patch Frames:
   1. Data frame is to be 19” rack mountable, 24 or 48 empty ports for 8-pin modular jacks. Panels shall include a window for labels. Note: unused ports are to be filled in with black blank inserts.

H. Wire management:
   1. On racks the horizontal cable managers shall be Panduit center mounting brackets (WMPF1E) for the wire managers in front for easy access during Moves, Adds and Changes (MACs). Horizontal managers shall be a minimum 1 RU.
   2. Vertical cable managers (WMPVHC45E) are to be same height as rack. With fingers in the rear and in the front. They shall to have a bend radius control or strain relief clips. Panduit vertical managers are to be used for extra capacity.
   3. Cable runway shall be ladder style or mesh /solid cable tray with a 12” width and 4” depth. The runway shall be mounted to a support loading wall as well as supported to the rack. An angle transition shall be used for adjoining runways or 90 degree bends. A cable drop shall be used to protect cables transitioning from runway to point of termination. If using a ladder style, use cable fingers attached to the sides to prevent spilling of cable over the sides.

I. Cable Pathways:
   1. Conduit will be used for cable pathways
   2. J-hooks will be used for suspending cables. These hooks shall have a 50 cable capacity and optional mounting. Preferred hooks have a wheel attachment capability so cables will not be dragged across during installation. Ensure that bends and edges will not pinch or cut cable sheath. Provide enough J-hooks to keep pathway along walls, J-hooks shall not cross the room.
   3. Penetrations through fire rated walls shall utilize a metallic assembly with fire stop built into the assembly. EZ Path mechanical fire stop by Specified Technologies meets this requirement and shall be used. There is no exception to this.

J. Miscellaneous:
   1. Cable ties shall be Velcro with a loop strap. Nylon cable ties shall not be used. If they are they shall be black and strapped with a loose tie so as not to pinch the cable sheath and with enough slack to get snips and fingers between tie and cable. The end of the tie shall be cut off after strapping.
   2. Labels for patch panels, faceplates, and cables shall be by one manufacturer. Ex: Label Ware, EasyMark, Brady, LabelMo, etc.
   3. All conduits shall have a maximum fill ratio of 60%.
   4. All labels including the cable label shall be laser printed.
   5. Labeling (Wire and Wall Jacks): All Labeling shall follow the “Tracy U.S.D. Labeling Format” (See “Tracy U.S.D. Labeling Format” Spreadsheet) with exception of workstation cables (i.e. patch cords). Hand written labels are not acceptable. All labels shall be machine printed black lettering on opaque white tape, stenciled onto adhesive labels, or type written onto adhesive labels. The

font shall be at least one-eighth inch (1/8") in height, block characters, and legible. Patch panels shall be assembled and terminated in a sequential order, exhibiting room and workstation numbers for all workstations served by the MDF or IDF.

6. Each fiber optics cable segment shall be labeled at each end with its respective IDF identifier. Each fiber interconnect device shall be labeled with its respective IDF identifier.
7. Each telecommunication outlet shall be labeled with its respective workstation number respective (machine labels only).
8. Workstation Terminal Outlets are to be installed within single-gang or double-gang electrical boxes. No mud-rings are to be used. WAO faceplates are to have labeling which identifies connected IDF.
9. Each copper backbone cable shall be machine labeled and printed EIA/TIA-606 Section 8 compliant only at each end with its respective IDF number/letter. Each binder group shall be tied off with its respective identifying ribbon at each breakout point.
10. Labeling will be completed before testing shall begin; discrepancies during inspection with the labeling will void all test results.

2.04 PROJECTOR

A. Contractor shall furnish and install Epson Brightlink 1485Fi and associated Epson Pilot control pad

2.05 WIRELESS ACCESS POINT

A. Contractor shall furnish and install a District approved wireless access points (WAPs)

PART 3 - EXECUTION

3.01 EXAMINATION

A. On a daily basis, the contractor’s project manager shall inspect the installation to ensure that installers are following the specifications and quality craftsmanship. Additionally, the contractor shall coordinate with the owner’s IT department all details and specifications per the owner.

B. Throughout the project regular, interval inspections will be completed by an architect representative to eliminate “unchangeable” installations.

C. If the representative inspects the site and makes a change to the design or installation, this shall be noted in writing. The contractor shall not complete this change until approval is given.

D. After installation, the architect representative will first inspect the site and create a closeout punch list for contractor to complete.

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E. After completion, the representative and contractor will inspect the site together.

3.02 SYSTEM SPECIFIC INSTRUCTIONS

A. Horizontal Cable:
1. Contractor shall label cables in 2 locations 12” apart.
2. Contractor is to terminate using the 568B pin out.
3. Contractor is to leave 10 feet of slack for all cables at the station in the accessible ceiling.
4. All cables will terminate at the stations with RJ45 connectors and shall be housed in a faceplate. If the connector is in the ceiling or behind a faceplate (such as the AV control panel) the connector shall be installed in a surface housing.

B. Closet/Rack:
1. All cables will terminate on the rack on a modular patch panel with an RJ45 connector.
2. A horizontal manager shall be installed above and below every 48 ports of patch panels (CPPL48WBLY) and switches.
3. A service coil shall be created above the rack on the wall of the closet. Do not place a service coil within the vertical and horizontal wire management. Cables within those managers shall be kept straight with proper bend radius.
4. The service coil shall be long enough to reach the farthest corner of the room and then down to the floor.
5. Patch frames shall be rack mounted using grounding screws and washers.
6. Note: unused ports on the patch frames are to be filled in with black blank inserts. Also, 1-2 blanks will be installed after each student data, teacher, admin, ceiling, and paging outlet with less than 4 cables to allow for future MACs.
7. Contractor shall place a drawing next to the data rack showing a floor plan with outlet locations and labels that match the rack labels. These drawings are to be laminated or in a plastic casing.

3.03 INSTALLATION

A. The following are installation practices that ensure superior performance and aesthetics.

B. NOTE: References to conduit, raceway and electrical are for contractor’s information. Actual installation of these components is included in another specification. If contractor notices a difference between actual install and the specs below, the contractor shall bring that immediately to the attention of the electrical engineer.

C. Work Area Outlet
1. The 10 ft coil shall not be a traditional service loop. Rather, the cable shall be extended along the wall then brought back at a lower height.
2. A pull string for MACs shall be pulled with cable into accessible ceiling space or length of conduit. Label strings to indicate destination of conduit.
3. Fill and label faceplates starting in the top left then moving right and downward.

4. In addition to labeling, jacks shall be quickly identifiable by the following color:
   a. Paging Jack Blue
5. All jacks are to be terminated using 568B pin assignment.
6. Minimize the amount of untwisting in a pair as a result of termination to connecting hardware. The amount of twisting shall not exceed 1/2" for category 6 and higher cables. Cable sheath shall touch the back of jack after termination (leave no portion of the cable exposed).
7. A classic series faceplate (or surface mount box if needed) with a label window shall be used or the Jack itself labeled (Easy Mark #PLL-46-Y3C-1 or equal).
8. The cable behind the faceplate shall also be labeled to match faceplate.
9. ALL labels are to be machine generated, laminated, and adhesive.
10. Each faceplate shall be labeled with its respective workstation number.

D. Acceptable Pathways:
   1. All horizontal cable shall have support, the cable shall never be lain freely and resting on structural supports nor shall they use ceiling grid or lighting support wires.
   2. The pathway to the work area shall allow for a minimum of 3 cable runs per individual work area.
   3. Pathways shall ensure that a maximum pulling tension 25 lb-f is not exceeded and pathways (or installers) shall not deform the cable jacket. If cable becomes kinked, contractor shall replace the cable.
   4. All cable shall be installed within conduit.

E. J-hooks - responsibility of cable installer
   1. Cables shall not be attached to ceiling grid or lighting support wires. Instead cable pathway shall be along walls. Cables shall never cross a room. The pathway shall always be along a wall. This makes for easier MAC as any tile next to a wall can be moved to access.
   2. For large quantities of cables (50 to 75) that converge at the TR and other areas, provide cables trays that are specifically designed to support the required cable weight and volume. When more than 50 cables are in a pathway j-hooks shall not be used or a second pathway shall be created. (NOTE: It is recommended that no more than 25 UTP Cat6 cables be placed in a single J-hook).
   3. If cable tray is used follow manufacturer guidelines for installation and use a product that is designed specifically for communications cabling. The depth of the tray shall not exceed 4".
   4. When using J-hooks, locate them staggered between 4 ft to 5 ft to adequately support and distribute the cable's weight. Do not evenly space the hooks, vary between 4 to 5 feet between each hook to prevent signal disruption.
   5. When using J-hooks install cable with a wheel pulley system that will remove after cable is in place.
   6. Contractor shall not strap the cables in between hooks to enable easier MACs and to lessen possibility of alien crosstalk.

F. Conduit:

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1. When pulling through conduit, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the cable manufacturer.
2. Pull string shall be installed in conduit to allow future moves, adds, or changes. If more than one sting is installed in a conduit, the strings shall be labeled for identification of destination.
3. Conduits shall have grommets on end to protect the cable.
4. No more than (2) 90 degree turns in a given length.
5. Fill capacities
   a. Cable pathways shall not be filled greater than the CEC maximum fill for the particular pathway type.
   b. The fill cable capacity for conduit shall not exceed the following and be no more than 60% full:
      1) ½" 0 – Do not use
      2) ¾" 0 – Do not use
      3) 1" 4 – Do not use
      4) 1-1/4" 6
      5) 1-1/2" 8
      6) 2" 12
      7) 2-1/2" 16
      8) 3" 24
   c. Fill capacity for raceway: (See Manufacturer Specs and Size by Cat6 requirements or 8.4mm/.33in diameter cable)
6. Distance Limitations
   a. Horizontal cable distance (Outlet to Panel) is not to exceed 298 feet.
   b. Premise cable distance (Outlet to Panel) shall be no less than 55 ft for any cable installed. Coil excess in ceiling if physically closer than 55 ft.
   c. Arial cable shall not be utilized.

G. Bend Radius Limit
1. The minimum bend radius for copper cable 4x cable diameter which is approximately 1.24 inches (31 mm).
2. The minimum bend radius for indoor (ISP) backbone optical fiber when under no load is 10 times the cable diameter and while it is being pulled it is 15 times.

H. EMI Avoidance
1. Cabling shall be installed to avoid devices that cause electromagnetic interference, such as Microwaves, Refrigerators, lighting, ballasts, power panels, etc.
2. Keep a minimum of 6" from electrical conductor cable.
3. Telecommunications conductors shall not be routed closer than 6 ft. from any lightning protection system conductor.

I. Cabinets and Racks
1. Only black Velcro cable ties shall be used for bundling and routing. Bundles shall be loose and Velcro ties shall have at least 18 inches between and the bundle shall be loose enough to place two fingers between the cable and the ties.

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2. The service coil at the rack shall be located above the rack on the ladder rack/cable tray system or on the wall. Do not place the service coil within the vertical and horizontal wire management.
3. Entrances to cabinets shall be protected with grommets and shall have a conduit stubbed to ceiling space.
4. Installer shall create a detailed floor drawing designating jack locations and labels. A copy shall be attached inside the cabinet or back wall of the rack. The drawing shall also have the date and contractors contact information.
5. Installer shall ensure that every telco rack/cabinet shall have separate and individual patch panels for workstation data cabling for each classroom, office or room space. In-addition, separate and individual patch panels shall be installed for each individual system such as: Advance Network IP Paging, Security Surveillance, and Wireless Access Point devices.

J. Wire Management
1. When bringing cable into the data rack, keep the bundle size small (optimum size may be 12 cables no more than 24 cables).
2. Velcro Ties shall be used in place of cable ties. Do not cinch cables so tightly to deform the cable in any way. It is recommended to leave Velcro ties loose enough to get fingers in between without deforming cable. Velcro ties shall be placed no less than 18 inches from other Velcro straps.
3. Every 48 ports of patch frame shall have its own wire manager below and above (except angled patch frames). The manager shall be d-rings on the front for easy access for MACs. Rear management shall also be used and may be finger style or bar style.
4. In addition to the horizontal managers, the installer shall either install a vertical (WMPVHC45E) Panduit center mounting brackets for the wire managers for vertical management.
5. In addition to binding in Velcro ties, ring runs shall be used for cables run in corners and for drop and rise on walls. These bundles shall be labeled indicating the destination of the bundle (i.e. floor horizontal cables, to TR2, etc.).
6. When cable bundles transition from wall to a floor rack a cable tray or ladder rack shall be utilized. Install brackets on sides to prevent cables from falling off the rack if ladder rack is used.

K. Fire Stopping
1. All procedures in this category shall be done in accordance with authority having jurisdiction (AHJ), local codes, CEC, CFC, and insurance underwriter's requirements. If a procedure in one of these effects performance, the AHJ shall be alerted immediately in writing.
2. Ensure that materials used are U.L. Listed.
3. For sleeves through ALL walls, EZ Path by Specified Technologies shall be used to ensure a fire stopped pathway.
4. Contractor shall put a label per ANSL1IA/EIA 569 with warning to not remove, company name and phone number, and date next to each penetration. Contractor shall also place a label stating how many cables can fit within the EZ

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Path. If initial install fills the firestop, the label shall read “Capacity full — DO NOT ADD CABLES”. Do this labeling and take a picture to include in close out documents. Cabling will not exceed 60% fill.

5. If the firestop capacity is filled more than 85% during initial, contractor shall install an additional EZ Path.

L. Grounding and Bonding

1. All network equipment, shielded cables, patch panels, racks, and tray/ladder rack segments shall be Bonded and Grounded according to TJNEIA 607, BICSI guidelines, CEC, insurance underwriter’s requirements, and local code (AHJ). The purpose is to provide a path to ground for all components to ensure personal safety and equipment protection.
2. Ensure that materials used are UL Listed.
3. Conduits that contain grounding backbone conductors shall be bonded to the grounding conductor at each end of the conduit. This negates the high impedance choke” effect while the cable carries lightning currents.
4. All racks, trays, and electronics shall be grounded.
5. Contractor shall install on rack an ESD Port Kit on each rack in front and back.
6. The use of aluminum conductors is discouraged in the establishment of grounding scenarios. Aluminum does not provide the lowest resistive path. Additionally, aluminum conductors can become loose from mechanical screw/bolt connections due to vibration from carrying AC current.
7. Panduit’s Data Center Grounding Solution and components shall be used. The following components shall be used to form a complete system (see the detailed drawing): Cabinet Grounding Complete Kit, Common Bonding Network Jumper (CBN) Kit, Surge Suppressor Jumper Kit, Front to Back Rail Jumper Kit, Rack Ground Strip Kit, Grounding Bus bar Kit, Paint Piercing Grounding Washers Kit, Thread Forming Screws, and Electrostatic Discharge (ESD) Discharge Port Kit.
8. Contractor shall test the ground system to ensure it has less than 5 Ohms. The test results shall be documented and submitted in close out docs.
9. Documentation: Contractor shall provide a single set of documentation to include test results and Visio “As-built” drawings in both soft copy and hard copy format.
    a. Workstation Cable: The results of the workstation cable tests shall be provided in the form of printouts from the test equipment as well as computer file copies on CD with the software to read the results included. Test results shall be in PDF format.
    b. As-Built Drawings: Contractor shall produce drawings depicting data outlet locations as they are actually installed. The drawings shall indicate actual cable routing, work station locations and workstation numbers, to be submitted before final inspection for punch list. Incorrect Visio drawings are punch list items and are to be corrected before re-inspection. “Tracy Unified School District's Telecommunications Jack Legend” shall be applied to all drawings. Results shall be returned to ISET within 30 days.

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3.04 FIELD QUALITY CONTROL

A. On a daily basis, the contractor's project manager shall inspect the installation to ensure that installers are following the specifications and quality craftsmanship.

B. Throughout the project regular interval inspections will be completed by an architect representative to eliminate "unchangeable" installations.

C. If the representative inspects the site and makes a change to the design or installation, this shall be noted in writing. The contractor shall not complete this change until approval is given.

D. After installation, the architect representative will first inspect the site and create a closeout punch list for contractor to complete.

E. After completion, the representative and contractor will inspect the site together.

F. Testing:
1. Testing shall be done with a Fluke Level IV cable tester (DTX 1800 meets this specification) and an Optical Time-Domain Reflectometer (OTDR). The new Fluke DTX 1800 unit is one test set that is capable of testing all frequencies through 900 MHz. If another manufacturer provides this test, contractor shall submit spec sheets and receive written approval for the tester prior to testing.
2. Contractor shall ensure that the tester has been manufacturer calibrated within nine months of testing and has the latest software version downloaded.
3. Prior to testing, the tester shall be set for the specific cable and jack used on the project.
4. A summary test report shall be submitted as well as detailed reports for each cable.
5. All test results shall have the individual cable label and project name in the header along with the date and time of testing.
6. Test results shall clearly indicate a Pass or Fail on the report. If a cable fails in one parameter the test is considered a Fail. Marginal Pass cables (indicated with an asterisk) are not acceptable and will be considered as a Fail.
7. Any cable damaged or exceeding recommended installation parameters during installation shall be replaced by the contractor prior to final acceptance at no cost to the Owner.
8. Test reports shall show a pass result for network standards, continuity, length, cross-talk, attenuation, and ambient noise.
9. No Splices will be accepted.
10. Prior to the work commencing and on conclusion of the work, an optical time domain reflectometer (OTDR) test will be required on any existing fiber pathways impacted by this project. New fiber optical cabling shall be tested upon completion of work. District IT will provide final acceptance of the OTDR test results and sufficiency.

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3.05 IDENTIFICATION

A. The labels are to be laser printed onto adhesive labels using software and labels by Label Ware, Easy Mark, Brady, LabelMo, etc.

B. Each cable is to be labeled using the following pattern: XXX-A##
   1. Segment XXX: Designates the location where the other end of the cable is. That is, at the station it says what room the patch panel is, and at the patch panel it says what room the station is.
   2. Segment A: Designates which patch panel the cable is terminated. This allows 26 patch panels per closet.
   3. Segment ##: Designates which port on the patch panel the cable is terminated.

C. Segment A and ## shall be the same on both sides of the cable.

D. Contractor is to place labels onto the faceplates and panels. In addition, contractor shall place an adhesive label on each end of the cable.

E. Layout of an IDF rack (not to scale). Rack height shall be 72”.

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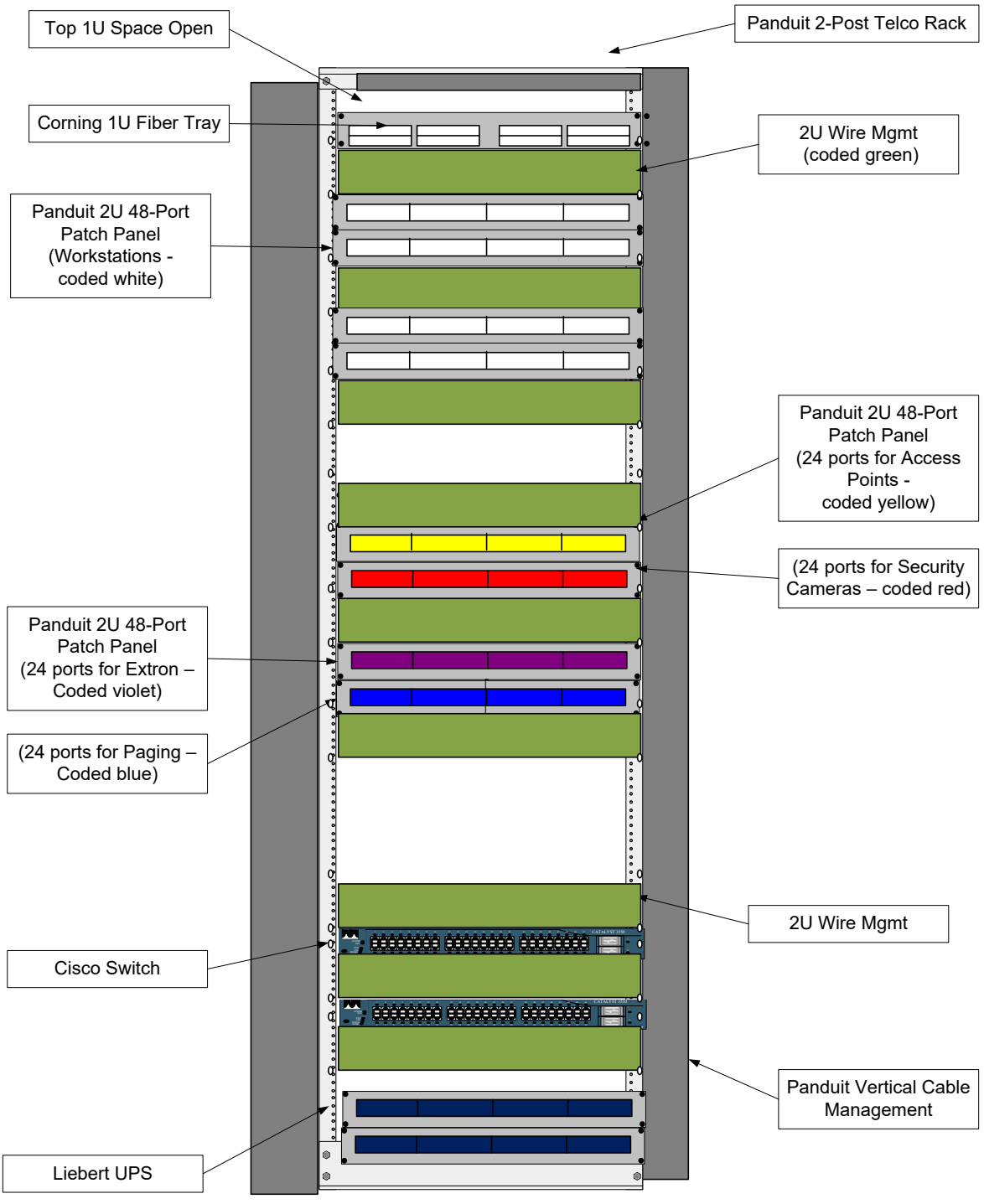
Top 1U Space Open
Panduit 2-Post Telco Rack
Corning 1U Fiber Tray
2U Wire Mgmt (coded green)
Panduit 2U 48-Port Patch Panel (Workstations - coded white)
Panduit 2U 48-Port Patch Panel (24 ports for Access Points - coded yellow)
(24 ports for Security Cameras – coded red)
Panduit 2U 48-Port Patch Panel (24 ports for Extron – Coded violet)
(24 ports for Paging – Coded blue)
2U Wire Mgmt
Cisco Switch
Panduit Vertical Cable Management
Liebert UPS

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F. Labeling Format
   1. All data cables at both the patch panel and the data jacks shall be labeled using the following standard labeling format. The labels are to be laser printed onto adhesive labels using software and labels by Label Ware, Easy Mark, Brady, LabelMo, etc.
   2. Telecommunication outlets for an IP Paging horn, speaker or clock/speaker shall be labeled with its respective IP device number (machine labels only). Numbers shall be comprised of the room number (i.e. C1, C2, etc.) and IP device number/drop number (i.e. PA1, PA2, etc.). Each data cable at a telecommunications outlet shall have an alpha identifier for the data jack (i.e. A). No biscuit shall be used and the data jack should be placed inside the back box. The labeling will start from the main door entering the room and go clockwise around the room. Each workstation cable shall be neatly labeled at each end with its respective workstation number.
   3. Labeling for the respective port on the MDF/IDF patch panel shall be:
      a. C1 – PA1 – A

3.06 CLEANING

A. All work shall be cleaned to remove all dust, dirt, grease, paint or other marks. All electrical equipment shall be left in a clean condition inside and out, satisfactory to the owner. Keep buildings and premises free from accumulated waste materials, rubbish and debris resulting from work herein, and upon completion of said work, remove tools, appliances, surplus materials, waste materials, rubbish debris, and accessory items used in or resulting from work and legally disposed of offsite.

3.07 CLOSEOUT

A. The contractor will submit to owner within thirty days of completion a closeout package containing:
   1. Hard copy and electronic test results
   2. Hard copy and electronic as-built drawings with labels
   3. Warranty information and manuals
   4. A bill of materials with part numbers to be used for later MAC
   5. Electronic pictures

B. As prerequisite to final acceptance, supply to the owner certificates of inspection from IOR and owner designated representative.

END OF SECTION

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SECTION 27 51 23 – SOUND AND COMMUNICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the requirements for the sound/communications system on this project

B. Work Included
1. Furnish and install new Internet Protocol (IP) devices into existing IP sound/communications system with clock subsystem, including all wiring and connections and other materials as shown in the Electrical Drawings and specified herein. It is the intent that complete operating systems be installed and that any power supplies, transformers, modules, cards, cages, programming, or other items required to achieve this end result shall be furnished whether or not such item or items are specified herein.
2. IP School Application VoIP equipment supplied by Rauland or Valcom, Inc. shall be considered as meeting all specification requirements and the District Standards.
3. The system shall provide distribution of intercom, overhead paging, emergency paging, class change time tones and emergency tones.
4. System shall be UL 813 and FCC Part 15 listed for safety reasons. Systems not listed are not acceptable.
5. Site and System Investigation: The bidding contractor for the sound/communications system shall visit the site prior to the bid and become thoroughly knowledgeable about existing system and work required to perform work of this section. Failure to discover the equipment, materials, and labor required to complete the extensions will not relieve the contractor from completing the work at no additional cost. Existing system is Rauland IP system, and all devices shall integrate with existing system.

1.02 GENERAL REQUIREMENTS

A. System Requirements: All of various equipment components to be complete with all appurtenant accessories required to provide specified facilities and perform specified functions throughout presently planned construction and space; and provisions for expanding system to provide same facilities, and perform same functions in all future planned construction, including space and mountings in consoles and terminal backboards.

B. Equipment Tests and Standards:
1. For all equipment operating at 26 volts or more, or utilizing over 50 watts, Contractor to submit proof within time allowed for submittals that all items of

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equipment will conform to requirements of U.L. Label or listing of equipment by U.L. to be accepted as evidence of conformance.

2. For all items of equipment operating at 25 volts or less, and utilizing less than 50 watts, Contractor may submit, in lieu of such label or listing, written certificate from any nationally recognized testing agency, adequately equipped and competent to perform such services, that each item has been tested and conforms to U.L. standards, including method of test of U.L.

C. Instructions and Manuals:
   1. Equipment supplier of systems to demonstrate operation of systems to satisfaction of Owner and furnish Owner three (3) wiring schematics and a list of MAC addresses for all items of equipment, installation instructions, and details of all routine maintenance and servicing which must be given systems by Owner. Manuals shall be provided in 3-ring binders, with title page, list of contents, and conspicuous label on cover and shall be delivered to District. Submit copy to Architect for approval before delivering to Owner.
   2. Supplier shall demonstrate operation of systems and provide training to all end users, administrative staff, and system administrator. Coordinate times of instruction with District, at District's convenience. Supplier shall provide a minimum of 2 hours of user instructions to clerical staff and 4 hours of user/maintenance instructions to District maintenance personnel. Instruction periods shall not coincide and shall be scheduled with District, not school staff. District shall provide list of authorized personnel for training sessions.

D. Submittals:
   1. Refer to Section 27 1000.
   2. Contractor shall submit name of firms he proposes to do work under this Section, addresses, phone numbers, and name of firm's contact, for approval. Such firms shall be factory authorized representatives of the existing system and submittal shall include manufacturer's letter of confirmation. Proposed firm shall furnish all equipment and specialty cables, make all connections to same, and place the systems in operation. Such firms shall have offices and service departments within a 100 mile radius of project and shall have been in business of this type for at least five years.

E. Record Drawings:
   1. Final Inspection will not be made until drawings are received and approved. Record Drawings shall include "As Built" one line and wiring diagrams, with terminations identified, wire color coding schedule, pullbox locations, and conduit routing plans.
   2. The Contractor shall provide complete drawings detailing all interconnections and panel wiring diagrams.

F. Guarantee:
   1. One firm to assume full responsibility for performance on all work of this section. Guarantee all equipment against defects in material and workmanship for two (2)

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years, and provide on the premises service during normal working hours for two years, at no cost to Owner if trouble is not caused by misuse, abuse, or accident, or at current labor rates if so caused. Provide manufacturer's written one year guarantee for equipment and parts to Owner.

2. Service shall normally be available within 24 hours from service department of authorized distributor of manufacturer by factory trained servicemen.
3. On the premises service at other than normal working hours to also be available, but labor charges for such calls to be paid by Owner at current labor rates.

PART 2 - PRODUCTS

2.01 SOUND/COMMUNICATIONS SYSTEM

A. General: Install new IP devices into existing IP Intercommunications System.

B. Exceptions to these specifications are not acceptable. Substitutions are not permitted.

C. Verify existing server is provided and programmed. Server shall be Rauland, or similar.

D. Provide station ports as required.

E. Equipment Standards:
1. All enclosures for all equipment to be of metal throughout system. Enclosures other than metal are not acceptable.
2. Speaker grilles to be non directional diffusion type insulated from speaker by fiber mounting board. Dampening material to be installed between mounting board and grille to prevent metallic resonance.

2.02 SYSTEM CABLING

A. Each clock/speaker and speaker shall have a Category-6 cable homerun from the local data rack. The cable shall be terminated on a jack and surface mount box inside the provided housing.

B. Electronics contractor completing this specification shall provide the patch cord for connecting the speaker to the jack. Contractor shall provide a 1 foot (or shorter) blue patch cable.

C. Refer to Section 27 10 00 for wiring requirements.

2.03 DEVICES

A. Clock: Rauland WC1312P

B. Indoor Speaker: Rauland ACCWB8RJ with recess mounting backbox.

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C. IP module: Rauland TCC2011B

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

A. Electrical Contractor shall retain the services of the duly appointed representative as specified hereinbefore, who shall furnish all equipment, make all connections to same, and place system in operation. Technician and workman employed shall be particularly skilled in this type of work. Workmanship on installed systems shall be of professional quality, best commercial practice.

B. All wiring throughout entire system shall be installed in conformance with standard industry practice.

C. Station locations shall be identified by location and school's actual room numbers as furnished by District, and in all ways shall relate as closely as possible to record wiring drawings. Prior to performing final labeling and programming, coordinate information with District.

3.02 CONSTRUCTION MEETINGS

A. The Contractor shall schedule construction meetings at the jobsite as follows:
1. Prewire meeting shall occur after raceways are installed and prior to pulling of any wire or cable.
2. Pre termination meeting shall occur after wire and cable has been installed and prior to termination.

B. Meetings shall be scheduled by the Contractor on a building-by-building basis and shall include the Project Inspector, School's Representative, the electrical subcontractor, and the Signal System subcontractor as a minimum.

3.03 TESTS

A. After all equipment specified herein has been installed and is in operating condition, performance tests shall be conducted to determine that installation and components comply with these specifications. Contractor shall furnish competent personnel for these tests.

B. Perform initial programming of system and audio level adjustments.

C. Contractor shall physically walk to each speaker and ensure that sound is coming from each speaker.

D. Contractor shall set the volume level to approximately 6 dB above ambient noise during occupancy.

E. The sound level for each speaker and zone shall be tested with an audio meter.

F. Contractor shall provide a drawing showing dB levels for each speaker and zone. The drawing shall be dated and signed by the person administering the test.

G. Contractor shall test the extension for each room. Extension also be noted on the drawings.

H. Testing shall be scheduled with the Owner and shall occur after receipt by Architect of Contractor's written certification of completion, record one line diagram, wiring diagrams, maintenance and operation manuals, and other "As Built" data required by these specifications. Tests shall be scheduled with School before occupancy occurs.

END OF SECTION

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SECTION 28 31 00 – INTRUSION ALARM

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the requirements for the intrusion alarm system on this project.

B. Work Included
1. Furnish and install extensions to the existing intrusion alarm system including all wiring and connections and other material as shown on in the Electrical Drawings and specified herein. It is the intent that a complete operating system conforming to all applicable codes and District Standard be installed and that any power supplies, relays, keypad, cards, modules, programming or other items required to achieve this end result shall be furnished whether or not such item or items are specified herein.
2. Site and System Investigation: The bidding contractor for the intrusion alarm system shall visit the site prior to the bid and become thoroughly knowledgeable about the existing system and work required to perform work of this section. Failure to discover the equipment, materials, and labor required to complete the extensions will not relieve the contractor from completing the work at no additional cost.

1.02 REFERENCES AND STANDARDS
1. California Electrical Code (CEC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
2. California Fire Code (CFC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
3. National Fire Alarm Code with California Amendments: NFPA 72
4. Title 4 of the Americans with Disabilities Act
5. Title 19 of the California Code of Regulations

1.03 SUBMITTALS

A. Product Data
1. Contractor shall submit name of firm he proposes to do work under this Section, addresses, phone numbers, and name of firm's contact, for approval. Such firms shall be factory authorized representatives of the system and submittal shall include manufacturer’s letter of confirmation. Proposed firm shall furnish all equipment and specialty cables, make all connections to same, and place the systems in operation.

B. Operation and Maintenance (O&M) Manuals
1. Operating Instruction Manuals outlining the step-by-step procedures required for system start-up and operations shall be furnished. The instructions shall include

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manufacturer's name, model number, service manual parts list, and brief description of all equipment and their basic operating features.

2. Maintenance Instruction Manuals outlining maintenance procedures shall be furnished. The manual shall include a troubleshooting guide listing possible breakdowns and repairs and a simplified connection wiring diagram for the system as installed.

C. Shop Drawings
1. Drawings shall contain complete wiring and schematic diagrams for equipment furnished, equipment layout, conduit and wiring layout drawings, and any other details required to demonstrate that system has been coordinated and will properly function as a unit. Equipment Vendor shall check Drawings for adequacy of conductors and raceways for proposed system. Include in Bid Amount all required raceways, conductors and material necessary to suit proposed system.

D. Record Drawings
1. Final Inspection will not be made until drawings are received and approved. Record Drawings shall include "As Built" one line and wiring diagrams, with terminations identified, wire color coding schedule, pullbox locations, and conduit routing plans.

E. Furnish to District a printed copy of the control panel programming upon completion of final system programming.

F. Performance Test Reports: Upon completion of installed system, submit in booklet form all field tests performed to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls.

1.04 QUALITY ASSURANCE

A. Reference to Codes, Standards, Specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.

B. When codes, standards, regulations, etc. allow Work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements, or extent of the Contract Documents. The Contract Documents address the minimum requirements for construction.

C. Work shall be performed in accordance with all applicable requirements of the 2022 edition of all governing codes, rules and regulations including but not limited to the following minimum standards, whether statutory or not:
1. California Electrical Code (CEC)
2. California Building Code (CBC)

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3. California Green Building Code (CGC)
4. California Fire Code (CFC)

D. Contractor Qualifications
1. Per District Standards the installing contractor shall be Sierra Building Systems, Inc.
2. Fabricator/Installer/Vendor shall be licensed contractor and servicing agent, as well as installer for all components and systems in this System and be acceptable to manufacturer of the major components of the system. Service personnel shall be capable of serving any and/or all components of the System.
3. Fabricator/Installer/Vendor must be able to present evidence of technical expertise, be a firm who has successfully installed projects of a similar scope to this project for a minimum of five (5) years and shall maintain service office within 100 miles of the project site.
4. All equipment is to be manufactured by a firm(s) who have successfully fabricated elements/systems of a scope similar to this project for a minimum of ten (10) years.
5. Have a valid State of California Contractor's license in classification C10 - Electrical.
6. Provide authorized dealer service on-site at facility within four (4) hours of a problem being reported, with this response time available twenty-four (24) hours per day, seven (7) days per week.
7. Affirm that he maintains, or will maintain, or has access to, a stock of system spares sufficient to ensure that no element of the System will be out of service for more than twenty-four (24) hours due to lack of proper spares.

E. System Requirements: All of various equipment components to be complete with all appurtenant accessories required to provide specified facilities and perform specified functions throughout presently planned construction and space; and provisions for expanding system to provide same facilities, and perform same functions in all future planned construction, including space and mountings in control panels and terminal backboards.

F. Interruption of Service: Existing intrusion alarm system must be kept operational during unoccupied hours. In the event that the system or portion of system is nonoperational during off-hour periods as a result of work of this contract, the Contractor must provide guard(s) to patrol the campus. Guard(s) and guard duties proposed by Contractor must be acceptable to District and District Police (local enforcement if District does not have its own Police Services). All costs for security guard(s) shall be Contractor’s responsibility.

G. Guarantee
1. One firm to assume full responsibility for performance on all work of this section. Guarantee all equipment against defects in material and workmanship for two (2) years, and provide on the premises service during normal working hours for two years, at no cost to Owner if trouble is not caused by misuse, abuse, or accident,

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or at current labor rates if so caused. Provide manufacturer's written one year guarantee for equipment and parts.

2. Service shall normally be available within 24 hours from service department of authorized distributor of manufacturer by factory trained servicemen.
3. On the premises service at other than normal working hours to also be available, but labor charges for such calls to be paid by Owner at current labor rates.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Acceptable Manufacturer: Intrusion Detection Alarm Panel Manufacturer: System VISTA 128BPT by Honeywell, www.security.honeywell.com.

B. SYSTEM DESCRIPTION

C. Existing control panel shall be examined to provide the following features:
   1. The DACS control panel shall shall support the following:
      a. The DACS system is capable of being utilized as a combination Intrusion and Commercial Fire system per code. Fully integrated intrusion and fire functions allow users to interface with 1 system instead of 2
      b. Optional Telephone Line Module, programmable for signaling and supervision.
      c. Integrated Conettix IP based communication provides high-speed, secure alarm transport and control.
      d. 32 programmable areas with perimeter and interior partitioning.
      e. 8 on-board, hardwired points with expansion capability for a total of 599 using a combination of wired or wireless points.
      f. Compatibility with Color Graphic Touch Screen, 2-line alpha numeric capacitive touch, ATM style LCD or 2-line LCD style Alarm Keypads.
      g. Local or remote programming, test, and diagnostic capability via a computer running the Remote Programming Software (RPS).
      h. The system shall include an integrated USB port for local programming and diagnostics using a computer running Remote Programming Software (RPS) and a male USB2.0 to male USB 2.0 cable with no additional hardware modules required.
      i. The system shall support the use of an Apple iOS device and/or Android device for control. Functions to include arming, disarming and control of outputs and access door, viewing of connected IP cameras. This application shall connect directly to the DACS using internet, wifi or cellular communications and shall not require a third party server of network operations center (noc).
      j. The DACS shall support up to thirty-two (32) custom functions allowing the installer to combine up to 6 functions into one command. These custom functions shall be operated by keypad command, point activation, keyfob button, or programmable schedule

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k. The DACS shall support up to 32 keypad shortcuts which allow the installer to define which commands are available at each keypad.
l. The DACS shall support flash firmware upgrades of systems firmware for the control panel and peripherals, allowing for future updates.
m. Integrated real time clock, calendar, test timer and programmable scheduling capability for relay control and automatic execution of system functions based on a time / event.
n. Provide 1.4 amps of power for standby operation and 2.0 amps of alarm power, both rated at 12 VDC.
o. 3 configurable form 'C' wet or dry-contact relay outputs with expansion capability for up to an additional 472 dry-contact relay outputs.
p. Integrated battery charger with reverse hook up protection, battery supervision and battery deep discharge protection.
q. Supervision of peripheral devices and communications interface(s).

D. Point Functionality and Expansion:
1. The system shall support a programmable Monitor delay functionality for supervision of points during disarmed periods. These points may be programmed to ignore status from 1 to 60 minutes and will activate only if the point is off-normal for this time period.
2. The system shall support a programmable delay response functionality for supervision of points during armed or disarmed periods. These points may be programmed to ignore status from 1 to 60 minutes and will activate only if the point is off-normal for this time period.
3. The system shall support virtual points and outputs for customized programming of events
4. The DACS shall be capable of supporting "group zoning." Group zoning refers to the combining of points into a separately identifiable and separately annunciated (programmable text) areas.
5. The DACS shall be capable of allowing variable point response times via programming. Point response times shall be programmable over a range of 300 milliseconds to 4.5 seconds.
6. The DACS shall have the capability to expand up to 599 separately identifiable points, of which 8 are on-board and 472 are off-board wired, addressable or wireless points.
a. The 8 on-board points shall be able to accommodate powered class B functionality using a powered loop interface module.
b. Point Expansion Modules (Wired and Wireless) shall be able to be located remote to the main panel to a maximum distance of 1000 feet.
c. Addressable modules shall be able to be located remote to the panel to a maximum of 500 feet.

E. Areas/Accounts:
1. The DACS shall support 32 independent areas. Each of the 32 areas shall have custom text associated with the armed state, disarmed state and point-off-normal state.

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2. The DACS shall be capable of assigning 1 to 4 account identifiers to the areas depending on the distribution of areas per account.
3. The DACS shall be capable of assigning 1 to 2 account identifiers to the areas depending on the distribution of areas per account.
4. All of the areas must be capable of Master (All) and/or Perimeter (Part) arming (excluding predefined Interior protection).
5. The DACS shall be capable of logically grouping 1 or more points into an area, or conversely, dividing 2 or more points into two or more areas.
6. Any area shall be configurable to allow arming by specific users when a programmable number of devices are faulted or bypassed.
7. Area(s) shall accommodate assignment of independent account numbers to define annunciation, control, and reporting functions.
8. The DACS shall be capable of linking multiple areas to a shared area which may be automatically controlled (hallway or lobby).

F. Output Relay Expansion: The DACS shall provide the capability for output relay expansion using relay expansion modules. Independent control of relay functions by area shall be possible through programming assignments.
   1. The DACS shall be capable of activating 472 additional relay outputs for auxiliary functions based on its classifications (area vs. panel wide). Output Expansion Modules shall be able to be located remote to the main panel to a maximum distance of 1000 feet. 8 relays (Form C) are to be provided per octo-relay module
   2. The DACS shall be capable of activating 64 additional relay outputs for auxiliary functions based on its classifications (area vs. panel wide). Output Expansion Modules shall be able to be located remote to the main panel to a maximum distance of 1000 feet. 8 relays (Form C) are to be provided per octo-relay module

G. Alarm Keypads:
   1. The DACS shall accommodate connection with up to 32 ACCs, each capable of displaying custom English, Latin American Spanish, Portuguese, Canadian French, Hungarian, Greek, Italian, Polish, German, Dutch, Swedish and/or Chinese text on a liquid crystal display.
   2. The Alarm Keypads shall accommodate viewing and configuration of system parameters including:
      a. Network Parameters
      b. Point Parameters
      c. Event Routing Parameters to allow programming of up to 4 report routing groups as well as configuration of primary and secondary paths.

H. User Passcodes and Authority: Passcodes shall be programmable with authority levels to allow users to operate any or all areas.
   1. Up to 2000 different passcodes shall be accommodated
   2. Up to 500 different passcodes shall be accommodated.

3. Each passcode shall be 3 to 6 digits (variable) and be assigned a 32-character user name

I. Access Control: THE DACS shall support access control using the B901 access control module(s).

J. Communication: The DACS shall be capable of reporting system events and supervisory reports including alarm, trouble, missing modules, restorals, system status, AC failure, battery status to primary and secondary off-site DACR's. The following features shall be supported.
1. The DACS shall be capable of communicating via dial-up analog telephone lines, over a LAN/WAN/Internet using a wired network interface module, or over a cellular network.

K. Network Communication: The DACS shall be capable of network communications over a LAN, WAN, Intranet, or the Internet. The system shall include supervision of the network communication utilizing configurable periodic heartbeats to the Digital Alarm Communications Receiver (DACR). The DACR shall provide notification of the loss of communications from a networked system after a programmable timeframe since the last communication. The notification options shall be programmable and include local annunciation or indication to automation software.

L. Event Log: The DACS shall maintain a log of events indicating time, day, month, year type of event, account number, area number, user ID, point text, user text and primary/secondary event route. The system shall allow the following characteristics:
1. The DACS shall be capable of storing up to 10,000 events
2. The DACS shall support viewing of logs locally at the ACC and remotely via an upload to a remote central station computer running the RPS software.
3. The DACS shall provide notification via a report to the DACR when the event log reaches a programmable "percent full capacity". This allows retrieval of stored events via RPS to prevent any loss of event history.

M. Testing, Diagnostic, and Programming Facilities: The DACS shall be capable of sending (manually or automatically) test and status reports to remote DACRs.

N. Miscellaneous Features: Programmable alarm output timer, 4 programmable entry delay times, exit delay programmable by area, individually programmable point of protection text, point bypassing, key switch arming capability with LED outputs, and fire verification.

O. False Alarm Reduction: The DACS shall comply with all ANSI SIA CP-01 2010 requirements for false alarm reduction

P. Ambush Detection: The DACS shall include an early ambush feature that requires that the user disarm, and then inspect the facility within a specified time period, before entering their passcode or a different authorized passcode again. If the user does not

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enter a passcode a second time, a duress event is generated. If the user does enter a passcode within the specified time period, the system disarms.

2.02 COMPONENTS

A. Equipment and accessories furnished under the terms of these specifications shall be the standard products of the manufacturers specified or required. All equipment shall be listed by U.L. All equipment and accessories shall be compatible with the system.

B. System Integration:
1. System shall integrate with facility doors, windows, and departments. The system shall also integrate with external systems, such as building appliances and building alert systems for remote control and central collection of external system alerts. When integrated with external systems, the system shall connect to the external system to receive status changes by way of a dry contact output from the external system. The system shall use its user interface to provide local status messages from external systems, providing for the initiation of local building policies. Optionally, the system may transmit information to an off-site monitoring service to provide initiation of remote policies when appropriate. The installer shall follow manufacturer's instructions when installing and programming system equipment.
2. Zone Input: System zone inputs allow the system to sense the change in state of an output from an external device, such as a door/window position sensor, a motion detector, a relay output from an appliance, the output of an external alert system, or other devices that provide a dry closure output.
3. Door Contact: Honeywell Model 4939SN surface mount sensor.
4. Motion Detector, Wall-Mounted: Honeywell Model DT7500SN V-Plex Motion Detector.
5. End of line resistors, as required.

C. Wiring: The contractor shall provide cables consistent with the manufacturer's recommendations. The following general guidelines shall be followed for wiring installation:
1. Wiring shall be appropriately color-coded with permanent wire markers. Copper conductors shall be used.
2. All signal cables provided under this contract shall be Class II, plenum-rated cable where required. Where subject to mechanical damage, wiring shall be enclosed in metal conduits or surface metallic raceway.
3. Data wires shall not be enclosed in conduit or raceways containing AC power wires.
4. Where EMI may interfere with the proper operation of the DACS circuits, twisted/shielded cable shall be used.

ADDENDUM "A"

PART 3 - EXECUTION

3.01 INSTALLATION

A. Furnish and install extensions to the existing Intrusion Alarm System including all wiring and connections and other materials as shown on Plans and specified herein. It is the intent that a complete operating system be installed and that any power supplies, relays, resistors, cards, modules, programming, or other items required to achieve this end result shall be furnished whether or not such item or items are specified herein.

B. Site and System Investigation: System bidder shall visit site prior to bid and become thoroughly knowledgeable about existing system and work required to perform work of this section. Failure to discover the equipment, materials, and labor required to complete the extensions will not relieve the contractor from completing the work at no additional cost.

C. Proprietary Systems: Where school is protected and monitored by a proprietary system, such as ADT or Sonitrol, Contractor shall coordinate the exact requirements with those firms. If the Division 16 Contractor elects to use a sound and signal firm other than the proprietary company, the sound and signal firm must include in bid, the materials, equipment, and labor required by the proprietary company to make the extensions complete and fully functional.

D. Work shall be installed as shown on the Drawings in accordance with the manufacturer's diagrams and recommendations, except where otherwise indicated.

E. Electrical Contractor shall retain the services of the duly appointed representative as specified hereinbefore, who shall furnish all equipment, make all connections to same, and place system in operation. Technician and workman employed shall be particularly skilled in this type of work.

F. At existing sites, the existing system shall be tested as soon as possible after award of contract and prior to preparing submittals. Contractor shall test entire system to ensure proper operation. Any defects of deficiencies found shall be listed and presented to Owner in letter form. It will be assumed that existing equipment is fully functional unless identified otherwise by Contractor.

G. Control panel shall be mounted with sufficient clearance for observation and testing.

H. All junction boxes must be clearly marked for distinct identification.

I. Panel enclosures shall comply with the Requirements of UL 864. Enclosures having doors over forty-eight inches (48") in height shall be provided with a three (3) point catch and lock; all other doors shall contain a cabinet type cylinder lock. Inserts shall be blind fastened so that no screws show on panel front.

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J. Detectors shall be installed in accordance with manufacturer's written instructions in areas as indicated on the Drawings.

K. Circuits shall be terminated on screw terminals. Terminal blocks shall be Allen Bradley Bulletin 1492 with 600 volt screw terminals for #22 to #10 conductors, mounted to type N22 channel, or approved equal. Submittal shall show internal elevation of terminal cabinets with equipment laid out.

L. All cables shall be run through fanning strip to terminals of terminal blocks.

M. All cables entering terminal cabinet shall be identified with T&B Vinyl, Brady Permashield mylar markers, or equal. Upon completion of installation, six (6) copies of one line "as built" wiring diagram shall be furnished to Architect.

N. Each cable run on wiring diagram shall be identified with exact wire marker code (numerical or alphabetical) as appears in terminal cabinets.

O. Detector locations shown on drawings are approximate only. Exact locations shall be coordinated with lighting and mechanical equipment and shall be placed in accordance with manufacturer's recommendations (with respect to supply air diffusers, etc.).

P. Station locations shall be identified by school’s actual room numbers and system shall be programmed accordingly. Coordinate actual room numbers with District. Coordinate final programming with District. Contractor shall furnish a printed copy of final programming to District.

Q. End of line resistors shall be installed at locations readily accessible, not above an elevation of 10 feet above finish floor or grade, or as shown on Drawings.

R. No splices shall occur in underground pullboxes. System wiring shall be continuous, without splices, from terminal cabinet to terminal cabinet and control panel to devices. All interior pullboxes shall be accessible and locations shall be recorded on "As Built" drawings.

S. Door contacts shall be located 6" from strike side of door and both the switch and magnet shall be “glued” in place with clear silicone. Wiring shall enter door frame through jamb. Do not drill headers.

T. Each detector installed in this contract shall have a popit. Each door contact installed in this contract shall have a popit, unless door contacts are shown grouped on drawings. In rooms with accessible ceilings, mount popit in junction box above ceiling. Where hard ceilings occur, provide flush box high on wall or on ceiling with blank finish plate. Wiring shall go to popits, then down to detectors.

U. Protected areas accessing remote keypads shall be wired and connected on delay zone, separate from all other protected areas.

V. After all equipment is installed and is operational, Intrusion Alarm System subcontractor shall set angle settings, sensitivity settings, etc., of each detector to ensure optimum performance and minimal false alarms. Mask out areas of each motion type detector to remove sources of false alarms (windows, heaters, air diffusers, etc.) from detection zones.

3.02 CONSTRUCTION MEETINGS

A. The Contractor shall schedule construction meetings at the jobsite as follows:
   1. Pre rough in meeting shall occur before installation of any boxes, raceways, etc. Exact locations of all detectors shall be established as recommended by the Intrusion Alarm System subcontractor.
   2. Prewire meeting shall occur after raceways are installed and prior to pulling of any wire or cable.
   3. Pre termination meeting shall occur after wire and cable has been installed and prior to termination.

B. Meetings shall be scheduled by the Contractor on a building-by-building basis and shall include the Project Inspector, School's Representative, the electrical subcontractor, and the Intrusion Alarm System subcontractor as a minimum.

C. One-half to three-quarters of the way through project, District Facilities will set up a meeting (preferably at the school site) with decision makers from Facilities, Police Services, Maintenance, Maintenance Alarm Tech, General Contractor, Alarm Sub-contractor, and School Administrator to review the alarm protocol and to identify responsible personnel and timelines.

3.03 SYSTEM PERFORMANCE

A. Operation: Activation of an intrusion alarm sensor shall cause a signal to be transmitted to a Central Station via telephone lines. Signal transmission shall be initiated by a built in dialer unit. In addition to alarm reporting, system shall report trouble, low battery, and shunted zone indications.

B. Voltage Triggers: System shall provide voltage triggers, which change state for different conditions. Used with devices such as a remote keypad sounder or keyswitch ARMED and READY LEDs.

C. Audio Alarm Verification Option: Provides a programmable Audio Alarm Verification (AAV) option that can be used in conjunction with an output relay to permit voice dialog between an operator at the central station and a person at the premises.

D. Cross-Zoning Capability: Helps prevent false alarms by preventing a zone from going into alarm unless its cross-zone is also faulted within 5 minutes.

E. Exit Error False Alarm Prevention Feature: System shall be capable of differentiating between an actual alarm and an alarm caused by leaving an entry/exit door open.

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F. Built-in User's Manual and Descriptor Review: For end-user convenience, the control panel shall contain a built-in User's Manual.

3.04 TESTING

A. After all equipment specified herein has been installed and is in operating condition, performance tests shall be conducted to determine that installation and components comply with these specifications.
   1. Testing shall be scheduled by the Contractor and shall be conducted at time least disruptive to school activities and as approved by District. Contractor shall provide technicians to conduct all testing (from same firm preparing submittals and performing intrusion alarm work). Testing shall be coordinated to include the Project Inspector and a representative from Engineer's office.
   2. At time of testing, Contractor shall ensure that his submittal will reflect all materials and work necessary to make new equipment function properly with existing.
   3. Contractor shall furnish all instruments and personnel required for tests.
   4. Conduct tests for following:
      a. Verify that the system is free of grounds or open circuits. The central control board shall indicate when a ground or open circuit exists.
      b. Verify that devices are functioning as specified.

B. Testing shall be reconducted to verify correction of any defect found in initial testing.

C. After system is completely tested, the Contractor shall take the following actions with the Owner:
   1. The Contractor will schedule a meeting with the Alarm Sub-contractors and Owner's Representatives to determine alarm zone and device nomenclature. The Contractor shall ensure that the alarm zone and device nomenclature matches the actual building and door or room numbers used by the school. Architectural numbering shall not be used. Once confirmed, the Contractor shall demonstrate this to Owner's Representatives.

3.05 TRAINING

A. Supplier shall demonstrate operation of systems and provide training to all end users, administrative staff, and system administrator. Coordinate times of instruction with District, at District's convenience. Supplier shall provide a minimum of 1 hour of user instructions to clerical staff and 2 hours of user/maintenance instructions to District maintenance personnel. Instruction periods shall not coincide and shall be scheduled with District, not school staff. Deliver to Owner at time of demonstration, all settings and codes programmed into system. Furnish three copies on manufacturer's standard programming worksheets. District shall provide list of authorized personnel for training sessions.

END OF SECTION

ADDENDUM "A"

SECTION 31 00 00 - EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Engineered fill materials.
   2. Imported engineered fill material.
   3. Landscape backfill material'
   4. Decomposed granite.
   5. Aggregate base.

1.02 RELATED REQUIREMENTS

A. Section 01 5000, Temporary Facilities and Controls.

B. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.

C. Section 31 2333, Trenching and Backfilling.

D. Section 32 1200, Asphalt Concrete Paving.

E. Section 32 1600, Site Concrete.

F. Section 33 0000, Utilities

G. Section 33 4000, Storm Drainage Utilities.

1.03 REFERENCES AND STANDARDS

A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

D. ASTM International (ASTM):

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1. D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
2. D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.
3. D1557-02e2 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
4. D3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
5. D422-63(2007) e1 Test Method for Particle Size Analysis of Soil.
6. D4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

E. CALTRANS Standard Specifications Section 17.

F. CAL-OSHA, Title 8, Section 1590 (e).

1.04 ADMINISTRATION REQUIREMENTS

A. Submittal Procedures:
1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

B. Site Visitation: All bidders interfacing with existing conditions shall visit the site prior to bid to verify general conditions of improvements. Discrepancies must be reported prior to the bid for clarification.

1.05 ACTION SUBMITTALS

A. Provide supplier’s descriptive literature for all products to demonstrate compliance with specified attributes.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Contractor / Installer.

1.07 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor’s guarantee.

1.08 QUALITY ASSURANCE

A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

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B. Contractor shall be solely responsible for all subgrades built. Failures resulting from inadequate compaction or moisture content are the responsibility of the contractor. Contractor shall be solely responsible for any and all repairs.

C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting of inadequate compaction or moisture content is the sole responsibility of the contractor.

D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.

E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

F. Tests (See Part 3, Article “Testing and Observation” for Compaction Testing).

1.09 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

1.10 FIELD CONDITIONS

1.11 EXISTING SITE CONDITIONS

A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

B. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

1.12 ON SITE UTILITY VERIFICATION AND REPAIR PROCEDURES

A. Ground-breaking requirements:
1. All underground work performed by a Contractor must be authorized by the District's Construction Manager or the Low Voltage Consultant prior to start of construction.

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2. The Contractor is to obtain and keep the original School's construction utility site plans on site during all excavation operations. Contractor can contact the District's Construction Manager, Facilities Manager, or the Low Voltage Consultant to procure the drawings.

B. Underground Utility Locating:
   1. The contractor shall hire an Underground Utility Locating Service to locate existing underground utility pathways in areas effected by the scope of work for excavation.
   2. Contractor must use an underground utility locator service with a minimum of 3 years experience. The equipment operator must have demonstrated experience. Contact Norcal Underground Locating (800/986-6722) or Precision Locating (800/577-7324)
   3. The Underground Utility Locator Service must have the use of equipment with the ability to locate by means of inductive clamping, induction, inductive metal detection, conductive coupling, or TransOnde (Radiodetection) to generate signals, passive locating (free scoping) for "hot" electric, and metal detector.
   4. The Underground Utility Locator Service must be able to locate existing utilities at a depth of at least 72".
   5. The Underground Utility Locator Service must be able to locate but are not limited to locating the following types of utility pathways:
      a. All conduit pathways containing 110 volt or greater 50-60Hz electrical wire.
      b. All conduit pathways containing an active cable TV system.
      c. All conduit pathways containing wire or conductor in which a signal can be attached and generated without damaging or triggering the existing systems.
      d. All empty conduit pathways or pipe in which a signal probe or sonde (miniature transmitter) can be inserted.
      e. All conduit pathways containing non-conductive cables or wires in which a signal probe or sonde (miniature transmitter) can be inserted.
      f. All plastic and other nonconductive water lines in which a TransOnde Radiodetection) or other "transmitter" can be applied to create a low frequency pressure waive (signal) without damaging or triggering the existing systems.
      g. All copper or steel waterlines and plastic or steel gas lines.
   6. All markings made by the Underground Utility Locator Service or other shall be clear and visible.
   7. The contractor shall maintain all markings made by Underground Utility Locator Service or other throughout the entire length of the project.
   8. The Underground Utility Locator Service shall provide the contractor with two sets of maps showing the location of utilities and average depth. They will be referenced to permanent buildings. Contractor will deliver one copy to the district at no additional charge.
   9. Contractor is responsible to contact Underground Service Alert (U.S.A. 800/227-2600) and receive clearance prior to any excavation operations.

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10. Contractor shall inform the (District's Construction Manger)(Architect)(Owner) no later than five (5) days prior to the date scheduled for the utility locator service to be on site.

1.13 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

1.14 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

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B. Excessively wet fill material shall be bladed and aerated per Article “Subgrade Preparation”.

1.15 TESTING

A. General: Refer to Section 01 4523 - TESTING AND INSPECTION SERVICES, AND STRUCTURAL TESTS AND INSPECTIONS LIST, DSA-103.

B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be paid by Owner and backcharged to Contractor.
   1. If Contractor elects to process or mine onsite materials for use as Suitable Fill, Aggregate Sub Base, Aggregate Base, Rock, Crushed Rock or sand the cost of all testing of this material shall be paid for by the Contractor.
   2. Testing of import fill for compliance with Department of Toxic Substance Control (DTSC) shall be paid for by the Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Engineered Fill Materials: All fill shall be of approved local materials supplemented by imported fill if necessary. "Approved" local materials are defined as local soils tested and approved by Geotechnical Engineer free from debris, and concentrations of clay and organics; and contain rocks no larger than 3-inches in greatest dimension. The soil and rock should be thoroughly blended so that all rock is surrounded by soil. This may require mixing of the soil and rock with a dozer prior to placement and compaction. Clods, rocks, hard lumps or cobbles exceeding 3-inches in final size shall not be allowed in the upper 6 inches of any fill. Native clay or clayey soils will not be permitted within the upper 12 inches of building pad areas or paved areas.

B. Imported Engineered Fill Material: Imported fill may be required to complete work. Proposed import fill material shall meet the above requirements; shall be similar to the native soils. Import fill shall meet the above requirements; shall have plasticity index of 20 or less; an Expansion Index of 15 or less; be free of particles greater than 3-inch (3") in largest dimension; be free of contaminants and have corrosion characteristics within the acceptable limits. <u>All import fill material shall be tested and approved by Soils Engineer prior to transportation to the site.</u> Proposed fill material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.
   1. DTSC TESTING: Site work contractor is to coordinate testing with an analytical lab, hired by the owner, licensed by the State of California for the DTSC testing. The costs associated with testing will be paid by the contractor.

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2. DTSC testing shall include documentation as to the previous land use, location, and history. Soils shall be analyzed for all compounds of concern to ensure the imported soil is uncontaminated and acceptable. Testing shall be performed per the recommendations included in DTSC Imported Fill Advisory http://www.dtsc.ca.gov/Schools/upload/SMP FS Cleanfill-Schools.pdf). Soils shall be tested prior to import to the project site.
3. Lab shall determine geographically which tests and analysis comparison will be appropriate for the testing. (CAM 17 / Title 22); (RWQCB) Regional Water Quality Control Board; or (OEHHA) Office of Environmental Health Hazard Assessment.
4. Frequency of testing shall be conducted in accordance with DTSC's Imported Fill Advisory as follows;

Fill Material Sample Schedule	
Area Of Individual Borrow Area	Sampling Requirements
2 Acres or less	Minimum of 4 samples
2 to 4 Acres	Minimum of 1 sample every ½ acre
4 to 10 Acres	Minimum of 8 samples
Greater than 10 Acres	Minimum of 8 locations with 4 subsamples per location

Volume of Borrow Area Stockpile	
Up to 1,000 Cubic Yards	1 sample per 250 cubic yards
1,000 to 5,000 Cubic Yards	4 samples for the first 1000 cubic yards + 1 sample per each additional 500 cubic yards
Greater than 5,000 Cubic Yards	12 samples for the first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

5. Reports/ Documentation
   a. Results of the testing analysis shall be sent to the Owner; Architect; Project Inspector, Project Civil Engineer, DTSC, and DSA. Letter shall reference DSA file and application numbers.

C. Landscape Backfill Material:
   1. The top 3" of native topsoil stripped from the site may be used for landscape backfill material.

D. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.

E. Aggregate Base: Provide Class 2 3/4" Aggregate Base conforming to standard gradation as specified in Cal Trans Standard Specifications, Section 26,-1.02A.

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F. Decomposed Granite: Decomposed Granite shall be well graded mixture of fine to 1/8" particles in size with no clods. The material shall be free of vegetation, other soils, debris and rock. The material shall be redish-tan to tan in color.

G. Decomposed Granite Solidifier: PolyPavement or equal.

PART 3 - EXECUTION

3.01 INSPECTION LAYOUT AND PREPARATION

A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point were this installation may properly commence

B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.

C. Verify that specified items may be installed in accordance with the approved design.

D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PERFORMANCE

A. GENERAL:
1. General: Do all grading, excavating and cutting necessary to conform finish grade and contours as shown. All cuts shall be made to true surface of subgrade.
2. Archaeological Artifacts: Should any artifacts of possible historic interest be encountered during earthwork operations, halt all work in area of discovery and immediately contact the Architect for notification of appropriate authorities.
3. Degree of Compaction: Percentage of maximum density, hereinafter specified as degree of compaction required, means density equivalent to that percentage of maximum dry density determined by ASTM D1557 Compaction Test method, and such expressed percentage thereof will be minimum acceptable compaction for specified work.
4. Moisture Content: Moisture content shall be as noted below and as called for on the plans. Moisture content shall be maintained until subgrade is covered by surfacing materials.

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3.03 DEMOLITION, DISPOSAL AND DISPOSITION OF UNDESIRABLE MAN-MADE FEATURES

A. All other obstructions, such as abandoned utility lines, septic tanks, concrete foundations, and the like shall be removed from site. Excavations resulting from these removal activities shall be cleaned of all loose materials, dish shaped, and widened as necessary to permit access for compaction equipment. Areas exposed by any required over-excavation should be scarified to a depth of 12", moisture-conditioned to near optimum moisture content, and recompacted to at least 95% of the maximum dry density.

3.04 TESTING AND OBSERVATION

A. All grading and earthwork operations shall be observed by the Geotechnical Engineer or his representative, serving as the representative of the Owner.

B. Field compaction tests shall be made by the Geotechnical Engineer or his representative. If moisture content and/or compaction are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified moisture or compaction. Notify Geotechnical Engineer at least 48 hours in advance of any filling operation.

C. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer or his representative. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.

D. If the Contractor should fail to meet the compaction or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory, as determined by the Geotechnical Engineer or Architect/Engineer.

E. After each rain event Geotechnical Engineer shall test fill material for optimum moisture. Do not place any fill material until desired moisture is achieved.

3.05 CLEARING AND GRUBBING

A. Prior to grading, remove all debris off-site. Remove trees and brush including the root systems. Holes resulting from tree and brush removal should be prepared and backfilled in accordance with paragraphs 3.7, 3.8, 3.9, and 3.10. This may require deepening and/or widening the holes to adequately remove disturbed soil and provide room for compaction equipment. Strip the surface of all organics. Strippings meeting the requirements of Section 32 9000 may be used in landscape areas only.

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3.06 CUTTING

A. Building pads that are located within a cut/fill transition area will have to be overexcavated to provide a semi-uniform fill beneath the building pad. The portions of building pads located in cut areas shall be overexcavated to provide no more than 1 foot difference in fill placed in the same building pad.

B. Do all cutting necessary to bring finish grade to elevations shown on Drawings.

C. When excavation through roots is necessary, cut roots by hand.

D. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.

3.07 STRUCTURAL EXCAVATION

A. General: Excavate to bear on firm material at contract depth shown on Structural Drawings.

B. Footings: All footing excavations shall be of sufficient width for installation of formwork, unless earth will retain its position during concreting. All portions of footings above grade must be formed. In the event that footings are placed against earth, footing widths below grade shall be increased 2 inches from those shown on Drawings and positive protection shall be provided for top corners of trench.

C. Unsuitable Ground: Any errors in structural excavation, soft ground, or clay soils found when excavating shall be reported to Architect. In no case shall work be built on any such soft or clayey unsuitable surface without direction from the Architect. Restore excavations to proper elevation with engineered fill material compacted to 95% of dry density.

3.08 SUBGRADE PREPARATION

A. Grade compact and finish all subgrades within a tolerance of 0.10' of grades as indicated on Drawings and so as not to pool water. Subgrade within building pads and concrete walks shall be within 0.05' of grades indicated.

B. After clearing, grubbing and cutting, subsurface shall be plowed or scarified to a depth of at least 12", until surface is free from ruts, hummocks or other uneven features. Moisture condition to 2% above optimum moisture content and recompact to at least 95% of the maximum dry density as determined by ASTM Test Method D1557. If the existing soils are at a water content higher than specified, the contractor shall provide multiple daily aerations by ripping, blading, and/or discing to dry the soils to a moisture content where the specified degree of compaction can be achieved. After seven

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consecutive working days of daily aerations, and the moisture content of the soil remains higher than specified, the contractor shall notify the architect. If the existing soils have a moisture content lower than specified, the contractor shall scarify, rip, water and blade existing soil to achieve specified moisture content. The contractor shall make proper allowance in schedule and methods to complete this work.

C. After subgrade for fill within building pad area or within paved areas has been cleared, plowed and scarified, it shall be disked or bladed until uniform and free from large clods, brought to 2% above optimum moisture content and compacted to not less than 95% of maximum dry density, as determined by ASTM Test Method D1557, and such expressed percentage thereof will be minimum acceptable density for specified work.

D. Subgrade in areas to receive landscaping shall be compacted to (85%).

E. Where Contractor over-excavates building pads through error, resulting excavation shall be recompacted as engineered fill at Contractor's expense.

3.09 PLACING, SPREADING AND COMPACTING FILL MATERIAL IN BUILDING PAD AND PAVEMENT AREAS

A. Selected fill material shall be placed in layers which, when compacted, shall not exceed 6 inches in compacted thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity in moisture content.

B. Selected fill material shall be moisture-conditioned to specified moisture content. Selected fill material shall be unfrozen. When moisture content of fill material is below that specified, add water until proper moisture content is achieved. When moisture content is above that specified, aerate by blading or other methods mentioned in 3.08 B until moisture content is satisfactory.

C. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to a minimum of 90% as determined by the ASTM D1557 Compaction Test. Compact each layer over its entire area until desired density has been obtained.

D. Recompaction of Fill in Trenches and Compaction of Fill Adjacent to Walls: Where trenches must be excavated, backfill with material excavated. Place in lifts that when compacted do not exceed 6", moisture conditioned to (optimum)(2% above optimum) moisture content, and compact to a minimum of 90% relative compaction in building pad and paved areas, and to 90% relative compaction in landscape areas.

E. Jetting of fill materials will not be allowed.

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3.10 FINAL SUBGRADE COMPACTION

A. Building Pads: Upper 12" of all final building pad subgrades (including future buildings) shall be uniformly compacted at specified moisture content to at least 90% of maximum dry density, as determined by ASTM D1557 Compaction Test, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.

B. Paved Areas: Upper 12" of all final subgrades supporting pavement sections and all other flatwork shall be brought to specified moisture content and shall be uniformly compacted to not less than 95% of maximum dry density, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.

C. Other Fill and Backfill: Upper 12" of all other final subgrades or finish grades shall be compacted to 90% of maximum dry density.

D. Gravel Fill: Do not place compacted gravel fill until after underground work and foundations are in place. Compact gravel fill with vibratory plate or similar equipment to preclude settlement.

3.11 PLACING, SPREADING, AND COMPACTION OF LANDSCAPE BACKFILL MATERIALS

A. All landscaped areas shall receive topsoil. After subgrade under landscape area has been scarified and brought to 85% maximum dry density, top soil shall be placed evenly to depth of 12" at 85% of maximum dry density.

B. Project Inspector must verify that materials are uniformly spread to minimum depth specified.

3.12 SLOPE CONSTRUCTION

A. Cut slopes shall be constructed to no steeper than 2:1(horizontal:vertical). Fill slopes shall be constructed to no steeper than 2:1 (horizontal:vertical). Prior to placement of fill on an existing slope the existing slope shall be benched. The benches shall be in a ratio of 2 horizontal to 1 vertical. The face of the fill slopes shall be compacted as the fill is placed, or the slope may be overbuilt and then cut back to the design grade. Compaction by track walking will not be allowed.

3.13 FINISH GRADING

A. At completion of project, site shall be finished graded, as indicated on Drawings. Finish grades shall be "flat graded" to grades shown on the drawing. Mounding of finish grades

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will not be allowed unless otherwise directed on the landscape drawings. Tolerances for finish grades in drainage swales shall be +-0.05'. Tie in new and existing finish grades. Leave all landscaped areas in finish condition for lawn seeding. Landscaped planters shall be graded uniformly from edge of planter to inlets. If sod is used for turf areas the finish grade on which it is placed shall be lowered to allow for sod thickness.

B. All landscape areas shall be left free of rock or foreign material.

C. All landscape areas shall be approved by Architect prior to any planting.

3.14 SURPLUS MATERIAL

A. Excavated material not required for grading or backfill shall be removed from site at contractor's expense.

3.15 CLEANING

A. Refer to Section 01 7700.

B. Remove from fill all vegetation, wood, form lumber, casual lumber, and shavings, in contact with ground; buried wood will not be permitted in any fill.

END OF SECTION

ADDENDUM "A"

SECTION 31 23 33 – TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Trench backfill materials.

1.02 RELATED REQUIREMENTS

A. Section 01 5000, Temporary Facilities and Controls.

B. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.

C. Section 31 0000, Earthwork.

D. Section 32 8000, Irrigation.

E. Section 33 0000, Utilities

F. Section 33 4000, Storm Drainage Utilities.

1.03 REREENCES AND STANDARDS

A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. California Plumbing Code (CPC), edition as noted on the drawings.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:
   1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
   2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
   3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

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B. Coordination:
   1. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

1.05 ACTION SUBMITTALS

A. Provide supplier’s descriptive literature for all products to demonstrate compliance with specified attributes:

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For contractor / Installer.

1.07 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor’s guarantee.

1.08 QUALITY ASSURANCE

A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.

C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

1.09 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

1.10 FIELDCONDITIONS

A. Contractor shall acquaint himself with all existing site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

B. Trench dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for trench dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

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1.11 PROTECTION

A. Adequate protection measures shall be provided to protect workers and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations. Repair all trenches in grass areas with new sod (seeding not permitted) and "stake-off" for protection.

B. Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Architect or Owner is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.

D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. Keep all excavations free from water during entire progress of work, regardless of cause, source or nature of water.

F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.

H. Trees: Carefully protect existing trees which are to remain.

1.12 TRENCH SAFETY PROVISIONS

A. General Contractor shall be solely responsible for safety design, construction and coordination with agencies having jurisdiction. If such plan varies from shoring system standards established by Construction Safety Orders, plan shall be prepared by registered civil or structural engineer.

B. Nothing herein shall be deemed to allow use of shoring, sloping or protective system less effective than that required by Construction Safety Orders of California State Division of Industrial Safety.

ADDENDUM "A"

C. When trenching through paved surface, provide steel trench plates to cover open trenches daily until trenches are backfilled.

1.13 SEASONAL LIMITS

A. No backfill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, full operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

B. Material above optimum moisture shall be processed per Section 31 0000, Part 3, Article “Subgrade Preparation”.

1.14 TESTING

A. General: Refer to Section 31 0000, Part 1, Article “Testing” and Part 3, Article “Testing and Observation”.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Backfill materials: Pipeline and conduit trench backfill as shown on the plans and as specified below.
1. ¾ inch crush rock.
2. Native Materials: Soil native to Project Site, free of wood, organics, and other deleterious substances. Rocks shall not be greater than 3-inches.
3. Sand: Fine granular material, free of organic matter, mica, loam or clay.
4. Lean Mix Concrete: 3 sacks of cement per yard plus sand.
5. Class 2 aggregate base, ¾” rock, per Caltrans Section 26-1.02B
6. Controlled Density Fill: 3 sack slurry backfill.

B. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.

C. Provide other bedding and backfill materials as described and specified in Section 33 0000, Section 33 4000 and Divisions 22 and 26.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:
1. Examine areas and conditions under which work is to be performed.

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2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

3.02 INSTALLATION

A. Perform work in accordance with pipe manufacturer's recommendations, as herein specified and in accordance with drawings.

3.03 TRENCHING

A. Make all trenches open vertical construction with sufficient width to provide free working space at both sides of trench around installed item as required for caulking, joining, backfilling and compacting; not less than 12 inches wider than pipe or conduit diameter, unless otherwise noted.

B. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.

C. Trench straight and true to line and grade with bottom smooth and free of edges or rock points.

D. Where depths are not shown on the plans, trench to sufficient depth to give minimum fill above top of installed item measured from finish grade above the utility as follows:
1. Sewer pipe: depth to vary
2. Storm drain pipe: depth to vary
3. Water pipe - Fire Supply: 36 inches
4. Water pipe – Domestic Supply: 30 inches

3.04 BACKFILL

A. Pipe Trench Backfill is divided into three zones:
1. Bedding: Layer of material directly under the pipe upon which the pipe is laid.
2. Pipe Zone: Backfill from the top of the bedding to 6 inches (compacted) over the top of the pipe.
3. Upper Zone: Backfill between top of Pipe Zone and to surface of subgrade.

B. Bedding: Type of material and degree of compaction for bedding backfill shall be as defined in the Details and Specifications.

C. Pipe Zone and Upper Zone Backfill:
1. Type of material and degree of compaction Pipe Zone and Upper Zone Backfill shall be as required by Drawings, Details, & Specifications.
2. Upper Zone Backfill shall not be placed until conformance of Bedding and Pipe Zone Backfill with specified compaction test requirements has been confirmed.

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3. Backfill shall be brought up at substantially the same rate on both sides of the pipe and care shall be taken so that the pipe is not floated or displaced. Material shall not be dropped directly on pipe.

D. Backfill Compaction:
1. Backfill shall be placed in layers which, when compacted shall not exceed 6 inches in thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity. Do not backfill over, wet, frozen or soft subgrade surfaces. Employ a placement method that does not disturb or damage foundation walls, perimeter drainage, foundation damp-proofing, waterproofing or protective cover.
2. When moisture content of fill material is below that required to achieve specified density, add water until proper moisture content is achieved. When moisture content is above that required, aerate by blading or other methods until specified moisture content is met; see Section 31 0000, Part 3, Article “Subgrade Preparation”.
3. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to 95% of maximum dry density while at specified moisture content. Compact each layer over its entire area until desired density has been obtained.
4. Compaction: All backfill operations shall be observed by the Inspector of Record and/or Geotechnical Engineer. Field density tests shall be made to check compaction of fill material. If densities are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified densities. Notify Inspector and Architect at least 24 hours in advance of any operation.

E. Backfill in Areas Previously Lime or Cement Treated
1. Where trenching occurs in areas that have been lime or cement treated, class 2 aggregate bases or approved controlled density backfill material shall be used for the top 12-inches minimum of the trench or thickness shall match the depth of treated material.

3.05 TRENCH AND SITE RESTORATION

A. Finished surface of trenches shall be restored to a condition equal to, or better than the condition as existed prior to excavation work.

3.06 PROTECTION

A. Protect existing surfaces, structures, and utilities from damage. Protect work by others from damage. In the event of damage, immediately repair or replace to satisfaction of Owner.

B. Repair existing landscaped areas to as new condition. Replant trees, shrubs or groundcover with existing materials if not damaged or with new materials if required. Replace damaged lawn areas with sod, no seeding will be permitted.

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C. Replace damaged pavement with new compatible matching materials. Concrete walks to be removed to nearest expansion joint and entire panel replaced. Asphalt to be cute neatly and replaced with new materials.

D. Any existing materials removed or damaged due to trenching to be returned to new condition.

3.07 SURPLUS MATERIAL

A. Remove excess excavated material, unused materials, damaged or unsuitable materials from site.

3.08 CLEANING

A. Refer to Section 01 7700.

B. Contractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others throughout the project and at the completion of work.

C. After completion of work in this section, remove all equipment, materials, and debris. Leave entire area in a neat, clean, acceptable condition.

END OF SECTION

ADDENDUM "A"

SECTION 32 12 00 – ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Aggregate.
   2. Asphalt paving.
   3. Seal coat.
   4. Wood headers and stakes.
   5. Pavement marking.
   6. Precast concrete bumpers.

1.02 RELATED REQUIREMENTS

A. Section 01 5000, Temporary Facilities and Controls.

B. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.

C. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.

D. Section 31 0000, Earthwork.

E. Section 31 2333, Trenching and Backfilling.

F. Section 32 8000, Irrigation.

G. Section 33 0000, Utilities.

H. Section 33 4000, Storm Drainage Utilities.

1.03 REFERENCES AND STANDARDS

A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

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C. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

D. ASTM International (ASTM):
1. D698-00 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
2. D1556-00 Test Method for Density of Soil in Place by the Sand-Cone Method.
3. D1557-02 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
4. D6628-16 Standard Specification for Color of Pavement Marking Materials.
5. D3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
6. D4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

E. CALTRANS Standard Specifications.

F. CAL-OSHA, Title 8, Section 1590 (e).

1.04 ADMINISTRATION REQUIREMENTS

A. Submittal Procedures:
1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

1.05 ACTION SUBMITTAS

A. Provide supplier’s descriptive literature for all products to demonstrate compliance with specified attributes.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Contractor / Installer.

B. Sustainable Design:
1. General
a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
b. Sustainable design submittals are in addition to other submittals.
2. The following information shall be provided:

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a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.07 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

1.08 QUALITY ASSURANCE

A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

B. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction is the responsibility of the contractor.

C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.

D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.

E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

F. Contractor shall provide verification that asphalt mix temperature meets the requirements of this specification at time of application.

G. Tests (See Part 1, Article "Testing").

1.09 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

1.10 FIELD CONDITIONS

A. Environmental Requirements:

1. Base Course: Do not lay base course on muddy subgrade, during wet weather, or when atmospheric temperature is below 40 degrees F.

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2. Asphalt Surfacing: Do not apply asphaltic surfacing on wet base, during wet weather, or when atmospheric temperature is below 50 degrees F.

1.11 EXISTING SITE CONDITIONS

A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

1.12 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the owner’s representative is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

D. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

E. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

F. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

1.13 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

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1.14 TESTING

A. General: Refer to Section 01 4523 – TESTING & INSPECTION SERVICES AND STRUCTURAL TESTS AND INSPECTIONS LIST, DSA-103.

B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be paid by Owner and backcharged to Contractor.

PART 2 - PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Sustainable Design:
1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

2.02 MATERIALS

A. Sterilant: Soil sterilizer shall be CIBA GEIGY's Pramatol 25-E, Treflan EC or Thompson-Hayward Casoron.
1. Soil sterilizer shall be applied in strict accordance with manufacturer's instructions.

B. Base Course Aggregate: State Specifications, Section 26, Class 2 aggregate base (3/4" max.).

C. Asphalt Binder: Steam-refined paving asphalt conforming to State Specifications, Section 92, viscosity grade PG 64-10. Asphalt binder additives for HMA per Caltrans approved list of manufacturers.

D. Liquid Asphalt Tack Coat: Per CALTRANS section 94.

E. Surface Course Aggregate: Mineral aggregates for Type "B" asphalt concrete, conforming to State Specifications 39-2.02, Type B, ½" maximum, medium gradient. 3/8" maximum gradient at Playcourt.

F. Seal Coat: shall be a pre-mixed asphalt emulsion blended with select fillers and fibers such as:
1. “Park-Top No. 302”, Western Colloid Products.
2. “Overcoat”, Reed and Gram.
3. “Drivewalk”, Conoco Oil.

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G. Wood Headers and Stakes: Pressure treated.

H. Pavement Marking: Colors as directed by Architect. Colors of painted traffic stripes and pavement markings must comply with ASTM D6628.
   1. Waterborne traffic line - colors white, yellow and red, State specification PTWB-01R3.
   2. Waterborne traffic line for the international symbol of accessibility and other curb markings – blue, red and green, Federal specification TT-P-1952F.

I. Precast Concrete Bumpers: 3000 psi at 28 day minimum strength; 48" length unless otherwise indicated; provide with steel dowel anchors and concrete epoxy.

J. Pavement Epoxy; K-Lite; Ktepx-590; Ennis Epoxy HPS2 or an approved equal.

K. Crack Filler; QPR model CAR08, 10oz asphalt crack filler; Star STA-FLEX Trowel Grade crack filler or approved equal.

L. Reclaimed Asphalt Paugment (RAP). HMA Type A or Type B may be produced using RAP providing it does not exceed 15% or the aggregate blend.

2.03 MIXES

A. General: Plant mixed conforming to State Specifications, Section 39, Type B, ½" maximum, medium grading. 3/8" maximum grading shall be used at hardcourt.

B. Temperature of Hot Mix Asphalt: Not less than 275 degrees F nor more than 325 degrees F when added to aggregate.

C. Temperature of Hot Mix Aggregate: Not less than 250 degrees F nor more than 325 degrees F when asphalt is added.

D. Temperature of Hot Mix Asphalt Concrete: Asphalt shall be not less than 285 degrees at time of application, nor more than 350 degrees. Asphalt not meeting the required temperature shall not be used.

E. Temperature of Warm Mix Asphalt: Mixing and placement; per the approved manufactures heat range recommendations for mixing and placement.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Conditions of Work in Place: Subsurfaces which are to receive materials specified under this Section shall be carefully examined before beginning work hereunder, and any

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defects therein shall be reported, in writing, to the Architect. Work shall not be started until such defects have been corrected. Starting of work shall imply acceptance of conditions as they exist.

3.02 PREPARATION

A. Sub-Grade: Clean, shape and compact to hard surface free from elevations or depressions exceeding 0.05' in 10' from true plan. Compact per Section 31 0000. Compaction and moisture content shall be verified immediately prior to placement of aggregate base. Proof roll subbase in presence of geotechnical engineer prior to placement of aggregate base.

3.03 INSTALLATION

A. Headers:
   1. General: Install as edging to asphalt paving, except where adjoining existing pavement, concrete curbs, walks or building.
   2. Existing Headers: Remove existing headers where new paving will join existing. Saw cut existing asphalt to provide clean edge.
   3. Lines and Levels: Install true to line and grade. Cut off tops of stakes 2-inches below top of header so they will not be visible on completion of job.

B. Asphalt Paving:
   1. Base Course: Install in accord with State Specifications, Section 26. Compact to relative compaction of not less than 95%, ASTM D1557. The material shall be deposited on the subgrade in such a manner as to provide a uniform section of material within five percent tolerance of the predetermined required depth. Deposition will be by spreader box or bottom dump truck to prevent segregation of the material. The material so deposited on the subgrade shall have sufficient moisture which, in the opinion of the Architect is adequate to prevent excessive segregation. It shall then be immediately spread to its planned grade and cross section. Undue segregation of material, excessive drifting or spotting of material will not be permitted. If in the opinion of the site geotechnical engineer, the material is unsuitably segregated, it shall be removed or completely reworked to provide the desired uniformity of the material.
      a. Moisture content and compaction of base material shall be tested immediately prior to placement of asphalt paving.
   2. Sterilant: Apply specified material at manufacturer's recommended rate. Applicator of sterilant material shall be responsible for determining location of all planter areas. Apply specified material over entire base course area just prior to application of asphalt. Follow manufacturer's printed directions.
   3. Liquid Asphalt Tack Coat: Apply as "tack coat" to all vertical surfaces of existing paving, curbs, walks, and construction joints in surfacing against which paving is to be placed.
   4. Asphalt Concrete Surface Course:

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a. Comply with State Specifications, 39-6 except as modified below.
   1) Final gradation shall be smooth, uniform and free of ruts, humps, depressions or irregularities, with a minimum density of 91% of the theoretical maximum specific gravity determined by California Test Method #309. Maximum variation 1/8 inch in 10' when measured with steel straightedge in any one direction. Test paved areas for proper drainage by applying water to cover area. Correct portions that do not drain properly by patching with plant mix. In no case shall accessible parking spaces or loading and unloading areas exceed 2% slope in any direction.
   2) Asphalt material shall be delivered to the project site in a covered condition to maintain acceptable temperature.

5. Placement and adjustment of Frames, Covers, Boxes and Grates: The Contractor shall set and adjust to finish grade all proposed and existing frames, covers, boxes, and grates of all manholes, drop inlets, drain boxes, valves, cleanouts, electrical boxes and other appurtenant structures prior to placement of asphaltic concrete.
6. Water Testing: All paved areas shall be water tested, to check drainage, in the presence of the project inspector prior to placement of seal coat. The surface of asphalt paving shall not vary more than 1/8 inch above or below the grade established on the plans. If variations in grade are present, they will be corrected by overlaying paving and/or pavement removal and replacement as directed by the Architect.
7. Patching: Cut existing paving square and plumb at all edges to be joined by new paving. In trenches; grind existing asphalt on each side of trench 3” wide x ½ the depth of the section. Apply tact coat to vertical surfaces before installing new work. Warp carefully to flush surface, with seal over joints, and feather edge. Sawcut, remove and patch existing paving where cutting is necessary for installation of piping or conduits under Divisions 15, 16 and 33.
8. Seal Coat:
   a. Seal coat shall be applied no sooner than 30 days from time of asphalt placement.
   b. Surface Preparation: surface shall be clean of all dirt, sand, oil or grease. Hose down entire area with a strong jet of water to remove all debris. Remove soft, loose, or otherwise damaged areas of asphalt concrete to full depth of damage and replace with compacted asphalt concrete as specified herein. Minor holes and imperfections may be patched using hot mix asphalt or mastic using sand/SS-1-H. Use wire brush for removal of oil and grease; prime with shellac or synthetic resin as recommended by manufacturer of pavement sealer material.
   c. Seal Coat Seal Application: Thoroughly mix materials in the presence of the onsite inspector. Failure to do so will be cause for rejection. Apply in accordance with manufacturer's written instructions.
      a. The minimum application rate for each applied coat shall be 30gals per 1000 sq. ft. Two coats of sealcoat will be required.
      b. Clean-Up and Precautions: As recommended by pavement sealer

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material manufacturer.

d. Clean-Up and Precautions: As recommended by pavement sealer material manufacturer.

C. Pavement Marking: painted pavement markings shall be done only after the seal coat has thoroughly dried. On clean surfaces to be painted with traffic paint of dust, dirt, grime, oil, rust or other contaminants which will impair the quality of work or interfere with proper bond of paint coats. Surfaces shall be cleaned to the extent and by whatever means that will satisfactorily accomplish the purpose without damage to asphalt concrete. Provide measured layouts, temporary markings, templates, and other means necessary to provide required marking. Prepare and apply paint in accordance with manufacturer's instructions; paint shall be applied by spray and shall achieve complete coverage free from voids and thin spots. Where indicated on the Drawings, paint parking stall strips, lettering, arrows, accessible symbols, playground markings, game striping, maps, etc. on concrete paving or asphalt concrete paving. Paint stripes shall be 4 inches wide (except otherwise indicated) and applied with two (2) coats of herein specified Traffic Line Paint; white (except as otherwise specified or indicated).

1. International Accessible Symbol: Symbol shall be white figures on a blue background. Blue shall be equal to color No. 15090 in Fed. Std. 595c. Lines and symbols shall be accurately formed and true to line and form; lines shall be straight and uniform in width. Painted edges shall be clean cut and free from raggedness, and corners shall be cut sharp and square. Tolerances: Apply striping within a tolerance 1/2 inch in 50 feet. Apply markings and striping to widths indicated with a tolerance of 1/4 inch on straight sections and 1/2 inch on curved sections.

D. Colors: As directed by Architect

E. Precast Concrete Bumpers: Install where shown, using steel dowels, and epoxy applied for length to wheel stop without damage to bumpers or asphalt concrete paving.

3.04 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

B. Clean excess material from surface of all concrete walks and utility structures.

END OF SECTION

ADDENDUM "A"

SECTION 32 16 00 – SITE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Concrete curbs and gutters.
   2. Concrete pavement, sidewalks and ramps.
   3. Steel reinforcing for flatwork and curbs.
   4. Truncated domes.

1.02 RELATED REQUIREMENTS

A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.

B. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.

C. Division 31, Earthwork.

D. Section 32 1200, Asphalt Concrete Paving.

1.03 REFERENCES AND STANDARDS

A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. American Concrete Institute (ACI):
   1. 117: Specification for Tolerances for Concrete Construction and Materials and Commentary.
   2. 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
   3. 301: Specifications for Structural Concrete.
   4. 302.1R: Guide to Concrete Floor and Slab Construction.
   5. 305R: Guide to Hot Weather Concreting.
   6. 306R: Guide to Cold Weather Concreting.
   7. 308R: Guide to External Curing of Concrete.
   8. 318: Building Code Requirements for Structural Concrete and Commentary.

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9. 347R: Guide to Formwork for Concrete.

D. ASTM International (ASTM):
1. A615/A615M: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
2. A706/A706M: Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
3. C33/C33M: Standard Specification for Concrete Aggregates.
4. C94/C94M: Standard Specification for Ready-Mixed Concrete.
5. C143/C143M: Standard Test Method for Slump of Hydraulic-Cement Concrete.
6. C150C150M: Standard Specification for Portland Cement.
7. C260/C260M: Standard Specification for Air-Entraining Admixtures for Concrete.
8. C309: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
9. C330/C330M: Standard Specification for Lightweight Aggregates for Structural Concrete.
10. C494/C494M: Standard Specification for Chemical Admixtures for Concrete.
11. C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
12. C920: Standard Specification for Elastomeric Joint Sealants.
13. C1107/C1107M: Standard Specification for Packaged Dry, Hydraulic Cement Grout (Non-Shrink).
14. C1315: Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
15. D1751: Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
16. D5893/D5893M: Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

E. Concrete Reinforcing Steel Institute (CRSI):
1. Manual of Standard Practice.
2. Placing Reinforcing Bars.

F. State of California, Department of Transportation (Caltrans):
1. Division of Engineering Services:
   a. California Test 342: Method of Test for Surface Skid Resistance with the California Portable Skid Test.
2. Standard Specifications.
   a. Section 51, Concrete Structures.
   b. Section 52, Reinforcement.
   c. Section 73, Concrete Curbs and Sidewalks.
   d. Section 90, Concrete.

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G. US Government General Services Administration (GSA/SAE):

1. GSA/SAE AMS-STD-595A: Colors Used In Government Procurement.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:
1. Action Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

1.05 ACTION SUBMITTALS

A. Shop Drawings: Joint pattern layout for walks and pavement.

B. Product Data:
1. A complete list of materials proposed to be used for the site concrete work including, but not limited to, sand, gravel, admixtures, surface treatments, coloring agents, sealers, cast-in-place accessories, forming and curing products, concrete mix designs, reinforcing materials, joint materials, curing materials, and detectable warning surface.
2. Manufacturer's descriptive literature for products proposed for use. Include installation instructions, and maintenance instructions.

C. Concrete Mix Design: The Contractor shall submit three copies of each proposed mix design for each class of concrete in accordance with ACI 301, Sections 3.9 "Proportioning on the Basis of Previous Field Experience or Trial Mixture," or 3.10 "Proportioning Based on Empirical Data." The Contractor shall submit a separate mix design for concrete to be placed by pumping, in addition to the mix design for concrete to be placed directly from the truck chute.
1. The following information shall be included in the concrete mix design:
a. Proportions of cement, fine and coarse aggregate, and water.
b. Water-cement ratio, 28-day compressive design strength, slump, and air content.
c. Type of cement and aggregate.
d. Special requirements for pumping.
e. Range of ambient temperature and humidity for which design is valid.
f. Special characteristics of mix, which require precautions in mixing, placing, or finishing techniques to achieve specified finished product.
2. Do not begin concrete production until mixes have been reviewed and approved by Engineer.

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a. Review of mix design by the Architect and Engineer shall in no way relieve the subcontractor of his responsibility for the performance of the concrete.

D. Qualification Data: For manufacturer

E. Delivery tickets as specified for ready-mixed concrete.

F. Sustainable Design:
1. General:
a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
b. Sustainable design submittals are in addition to other submittals.
2. The following information shall be provided:
a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.06 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor’s guarantee.

1.07 QUALITY ASSURANCE

A. Qualifications:
1. Manufacturer of ready-mixed concrete products shall meet ASTM C94/C94M requirements for production facilities and equipment.

B. Design, erect, support, brace and maintain formwork and shoring to safely support all loads that might be applied until such loads can be carried by concrete.

C. The Contractor shall perform work in accordance with ACI 301.

D. Use only new materials and products.

E. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.

F. Materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

G. Testing to determine compliance with the work of this Section will be the responsibility of the Contractor.

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1. Cement and reinforcing shall be tested in accordance with CBC Section 1910A. Testing of reinforcing may be waived in accordance with Section 1910A.2 when approved by the Engineer and DSA.
2. Testing will be performed by an independent testing and inspecting agency in accordance with Section 01 4523, Testing and Inspection Services, and paid for by the Owner.
3. Refer to Article FIELD QUALITY CONTROL in Part 3 of this Section for additional requirements.
4. Cost of retests and coring due to low strength or defective concrete will be paid by the Owner and back-charged to the Contractor.

H. Sieve analysis from testing laboratories identifying rock/sand percentages within the concrete mix; or class 2 aggregate base shall have the current Project name and Project location identified on the report. Outdated analytical reports greater than 90 days old will not be accepted.

I. Mockups: Provide on-site mockup panels for each type of exposed colored concrete flatwork showing texture and color before proceeding with finish to be used on this Project.
1. Construct sample panels after review and approval of samples.
2. Size: Minimum 5 feet square and have at least one longitudinal and one transverse joint unless a more specific note indicates otherwise on Drawings.
3. Construct sample panels at location approved by Architect.
4. Construct sample panels in ample time to allow for finishing and curing before requesting Architect to review.
5. Follow procedures used on accepted samples.
6. Include saw-cut and tooled joints to match method and appearance proposed for use in completed work.
7. Prepare successive sample panels as required until finish, color, and appearance is approved by Architect.
8. Do not remove sample panels until authorized in writing by the Architect and all concrete work has been approved.

1.08 DELIVERY, STORAGE AND HANDLING

A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.

B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the Work.

C. Transport, store and handle in strict accordance with the manufacturer's written recommendations.

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D. Store cement in weather tight building, permitting easy inspection and identification. Protect from dampness. Lumpy or stale cement will be rejected.

E. Aggregates: Prevent excessive segregation, or contamination with other materials or other sizes of aggregate. Use only one supply source for each aggregate stock pile.

1.09 FIELD CONDITIONS

A. Make and be responsible for all field dimensions necessary for proper fitting, slopes, and completion of work. Report discrepancies to Architect before proceeding.

B. Do not place concrete during rain without adequate protection.

C. The Contractor shall conform to ACI 306R when mixing and placing concrete during cold weather. Provide sufficient protection when daily temperatures drop below 40 degrees F.

D. The Contractor shall conform to ACI 305R when mixing and placing concrete during hot weather. When air temperature exceeds 100 degrees F adjust concrete mix with retarding admixture in design mix, and adequately test and take additional measures as directed by concrete supplier.

E. The Contractor shall maintain access for vehicular and pedestrian traffic as required for other construction activities. Use temporary striping, flagmen, barricades, warning signs, and warning lights as required.

F. Placing in hot weather: Comply with ACI 305R. Concrete shall be delivered, placed and finished in a sufficiently short period of time to avoid surface dry checking.
   1. Concrete shall not exceed 85 degrees F at time of placement.
   2. Concrete shall be kept wet continuously after tempering until implementation of curing compound procedure in accordance with this specification.
   3. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 pounds per square foot per hour, before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

G. Placing in Cold Weather: Comply with ACI 306R. Protect from frost or freezing. No antifreeze admixtures are permitted.
   1. When placing concrete during freezing or near-freezing weather, mix shall have temperature of at least 50 degrees F but not more than 90 degrees F.
   2. Concrete shall be maintained at temperature of at least 50 degrees F for not less than 72 hours after placing or until it has thoroughly hardened.
   3. Provide necessary thermal coverings for any flat work exposed to freezing temperatures.

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PART 2 - PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Contractor shall comply with requirements applicable to this Section for concrete materials, admixtures, bonding materials, curing materials, surface sealers and others as required.

B. Concrete walking surfaces shall have a coefficient of friction not less than 0.30 and will be subject to testing to verify compliance as specified in Article FIELD QUALITY CONTROL.
   1. The coefficient of friction will be measured by California Test 342 before pavement is opened to public traffic, but not sooner than 7 days after concrete placement.
   2. Contractor shall notify the Architect and Project Inspector of pavement having a coefficient of friction less than 0.30.

C. Sustainable Design:
   1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
   2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

2.02 FORMING MATERIALS

A. Form Material: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. The forms shall be of a depth equal to the depth of curbing or sidewalk, and so designed as to permit secure fastening together at the tops. Coat forms with non-staining type coating that will not discolor or deface surface of concrete.
   1. Concrete Exposed to View: 5/8-inch minimum APA B-B Plyform, steel or “Sonotube” forms by Sunoco, 888-875-8754, or equal.
   2. Concrete Concealed from View: 5/8-inch minimum APA B-B Plyform, steel or 1 x 8 DF, Number 2 Grade or better.

B. Form Ties: Snap off metal of fixed length, leaving no metal within 1-1/2 inches of surface and no fractures, spalls or other surface defects larger than 1 inch diameter; manufactured by Burke, Dayton Superior, or equal.

C. Spreaders: Metal. Wood is not permitted.

D. Form Coating: Coat forms with non-staining material that will not discolor or deface surface of concrete or leave any residue on concrete that would interfere with surface coating as approved by the Architect.

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E. Chamfer Strips: Rigid polyvinyl chloride, 3/4-inch x 3/4-inch, in maximum possible lengths, manufactured by Burke, Greenstreak, Vulco, or equal.

2.03 REINFORCING MATERIALS

A. Reinforcement Bars: New billet steel deformed bars conforming to requirements of ASTM A615/A615M or ASTM A706/A706M; Grade 60.
   1. Bars for dowels installed through expansion joints or construction joints to existing sidewalks or concrete features shall be smooth or if deformed shall be sleeved on one end for slippage.

B. Reinforcing Supports: Galvanized metal chairs or spacers or metal hangers, accurately placed 3 feet on center each way, staggered, with each support securely fastened to steel reinforcement in place.
   1. Bottom bars in footings may be supported with 3-inch concrete blocks with embedded wire ties.
   2. Concrete supports without wire ties will not be allowed.

2.04 CONCRETE MATERIALS

A. Cement: Portland cement in accordance with ASTM C150/C150M, Type II, low alkali.

B. Concrete Aggregates: Graded from coarse to fine in accordance with ASTM C33/C33M.
   1. Normal Weight Aggregates: Clean and free from deleterious coatings, clay balls, roots, and other extraneous materials, and in conformance with ASTM C33/C33M, except as otherwise specified. Combined grading shall meet limits of ASTM C33/C33M.
      a. Size: Not be larger than one-fifth of the narrowest dimension between forms, or larger than three-fourths of the minimum clear spacing between reinforcing bars.
   2. Lightweight Aggregates:
      a. General: Durable particles suitably processed, washed and screened without adherent coatings, free of materials with deleterious reactivity to alkali in cement, and conforming to ASTM C330/C330M.
      b. Fine aggregate shall be natural sand, or sand prepared from stone or gravel, with grains free of silt, loam and clay.

C. Water: Potable, clean, and in accordance with ASTM C94/C94M, free from injurious amounts of oil, acids, alkalis, salts, scale, organic materials or other deleterious matter, and in compliance with ACI 318 Section 26.4.1.3.

D. Fly Ash: Western Fly Ash, conforming to ASTM C618 for Class N or Class F materials and in accordance with CBC Section 1903A.6.
   1. Class C is not permitted.

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2. Proportions: Not more than 15 percent (by weight) may be substituted for portland cement.

2.05 ADMIXTURES

A. Water Reducing Admixture: Admixture to improve placing, reduce water cement ratio and ultimate shrinkage; “WRDA 64” by GCP Applied Technologies, or equal conforming to ASTM C494/C494M and ACI 318 Section 3.6.
   1. Water reducing admixture may be used subject to prior approval by the Architect, Engineer, and the Testing Lab.
   2. Proposed product and quantity shall be included in original design mix.

B. Air-Entraining Admixture: “Daravair 1000” by GCP Applied Technologies or equal conforming to ASTM C260 and ACI 318, section 26.4.1.4.
   1. Proportion air entraining concrete to attain specified minimum 28-day compressive strength.
   2. Total air entrainment in concrete shall be not less than 4 percent or more than 6 percent of the volume of concrete.

C. Glare Reduction Colorant: Concentrated pigment dispersions designed to permanently color concrete; “Chromix L10 Base-Black” by Sika Corporation, or equal. *Was within 2.2 H.1*

2.06 CURING MATERIALS

A. Clear Curing Compound: Water-based membrane-forming concrete curing compound in accordance with ASTM C309 and C1315; “Aqua Resin Cure Clear” by Burke CO, “1100” by W.R. Meadows, or equal.

2.07 ADDITIONAL MATERIALS AND COMPONENTS

A. Concrete Bonding Agent: The following, or equal, conforming to ASTM C1059/C1059M.
   1. “Weld-Crete” by Larson Products Corporation, 800-633-6668.
   2. “Daraweld C” by GCP Applied Technologies, 877-423-6491.

B. Patching Mortar: One-component, trowel applied, migrating-corrosion-inhibitor enhanced, polymer-modified, shrinkage-compensated, fiber reinforced, micro-silica enhanced, cementitious repair mortar for horizontal, vertical, and overhead applications; “Meadow-Crete GPS” by W.R. Meadows, or equal.

C. Non-Shrink Grout: Premixed, non-metallic, no chlorides, non-staining and non-shrinking conforming to ASTM C1107/C1107M; “MasterFlow 713” by Master Builders Solutions, a division of BASF, 800-433-9517, or equal.

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D. Drainage Rock Base: 3/4-inch aggregate size conforming to Class 2 Aggregate Base as defined in Caltrans Standard Specifications Section 26, or equal clean free-draining gravel or crushed rock as recommended by the Geotechnical Engineer.

E. Expansion Joint Material: Preformed 3/8-inch fiber material, with bituminous binder manufactured for use as concrete expansion joint material and conforming to ASTM D1751 and approved by Architect.
   1. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint-filler sections together.

F. Joint Sealant for Expansion Joints in Concrete: Weather and UV resistant, single component, cold applied silicone sealant, Type S, conforming to ASTM D5893/D5893M; ASTM C920, Grade P, Class 25, Use T.
   1. Self-Leveling: “DOWSIL 890-SL Silicone Joint Sealant” by Dow Chemical Company, or equal.
   2. At Slopes Exceeding 5 Percent: Non-sagging; “DOWSIL 888 Silicone Joint Sealant” by Dow Chemical Company, or equal.
   3. Color: As standard with manufacturer.

G. Pre-Formed Plastic Expansion Joint Caps: Polystyrene, with removable tops; “Snap Cap” by W. R. Meadows, Tex-Trude expansion caps, or equal.

H. Truncated Domes: Vitrified Polymer Composite (VPC) cast-in-place detectable/tactile warning surface tiles complying with Americans with Disabilities Act (ADA) and the California Code of Regulations (CCR) Title 24, Part 2, Chapter 11B; “Armor-Tile”, “Access Tile Tactile Systems,” or equal.
   1. Color: Shall be yellow and approximate 33538 of GSA/SAE AMS-STD-595A in accordance with CBC Section 11B-705.1.1.3.1.

I. Traffic Paint for Accessibility Striping at Stairs: VOC compliant, water-based, vinyl acrylic copolymer fast drying emulsion and specifically formulated as a traffic marking paint; “Setfast” with “Duckback” abrasive additive by Sherwin-Williams, “SAFE-STRIDE” by Wooster Products, Inc., or equal.
   1. Colors: As selected by Architect. [Yellow]

J. Cast Abrasive Accessibility Strips and Stairs: Extruded aluminum with integral anchor and filled with abrasive granules in epoxy binder; Model ST-SF-N by Nystrom, Inc., 800-547-2635, Type T-24 by American Safety Tread Company, Inc., 800-245-4881, Type WP-24A by Wooster Products, Inc., 330-264-2844, or equal.
   1. Colors: As selected by Architect. [Yellow}

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2.08 CONCRETE DESIGN AND CLASS

A. Designed Strength and Classes of Concrete: The following mixes are not applicable to concrete items exceeding 4 feet in height above the adjacent grade.
   1. Class “B”: Concrete shall have 1 inch maximum size aggregate, shall have 3000 pounds per square inch minimum at 28 day strength with a maximum water to cementitious ratio no greater than 0.50.
      a. Location of Use: Exterior slabs, including walks, vehicular paved surfaces, manhole bases, poured-in-place drop inlets, curbs, valley gutters, curb and gutter, and other concrete of like nature.
   2. Class "D" concrete of 1 inch maximum size aggregate shall have 3500 pounds per square inch 28 day strength with a maximum water to cementitious materials ratio of 0.55.
      a. Location of Use: Footings and retaining walls not attached to buildings, and planter walls, monument signs, and other site concrete not described for use in Class “B”.

B. Slump Limits: Provide concrete, at point of final discharge of proper consistency as tested in accordance with ASTM C143/C143M with slumps of 4 inches, plus or minus 1 inch.

C. Mix Design: Concrete shall be designed for strength in accordance with provisions of CBC Section 1905A.
   1. Should the Contractor desire to pump concrete, a modified mix design will need to be submitted for review.
   2. Fly ash may be used in concrete to improve workability in amounts up to 15 percent of the total cementitious weight.

D. Air Entrainment: Provide at concrete paving / flatwork, including concrete ramps and stairs in accordance with local jurisdiction minimum requirements, but no less than 3 percent of the volume of concrete.

E. Glare Reduction Additive:
   1. General:
      a. Provide at exterior concrete slabs, walks, ramps, stairs, including bleachers, and other exposed flatwork to eliminate glare.
      b. Omit glare reduction colorant where color hardener, integral color, and stain treatment of concrete are scheduled.
   2. Quantity: As required to match approved sample but not exceed 2 pounds of colorant per cubic yard of concrete.
   3. Add colorant to mix in accordance with manufacturer's printed instructions.

F. Coloring Agent:
   1. Quantity: Add pigment as required to result in hardened concrete color consistent with approved sample but not exceeding maximum dosage per sack of cement as

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recommended by manufacturer based on total cementitious materials of mix design.

2. Add pre-mixed colorant bags to mix in accordance with manufacturer's printed instructions.

2.09 MIXING OF CONCRETE

A. Conform to requirements of CBC Chapter 19A.

B. Concrete shall be mixed until there is uniform distribution of material and mass is uniform and homogenous; mixer must be discharged completely before the mixer is recharged.

C. Concrete shall be Ready-Mixed Concrete: Mix and deliver in accordance with the requirements set forth in ASTM C94/C94M and ACI 301. Batch Plant inspection may be waived in accordance with CBC Section 1705A.3.3, when approved by the Project Engineer and DSA.
   1. Furnish batch certificates for each batch discharged and used in the work.
   2. Approved Testing Laboratory shall check the first batching at the start of the work and furnish mix proportions to the Licensed Weighmaster.
   3. Licensed Weighmaster shall identify materials as to quantity and to certify to each load by ticket.
   4. Delivery tickets are to accompany each truck and shall be kept in the job superintendent’s file. Delivery tickets must indicate the following information or be subject to rejection:
      a. Name of Project.
      b. Supplier of concrete.
      c. Truck identity and ticket serial number.
      d. Date of delivery.
      e. Brand of cement.
      f. Cement content.
      g. Strength classification.
      h. Batching time.
      i. Point of deposit.
      j. Total amount of water.
      k. Weight of aggregate.
      l. Daily temperature.
      m. Number of cubic yards in load.
      n. Admixture content.
      o. Name of Contractor.
      p. Name of driver.
      q. Time loaded and first mixing of concrete.
      r. Reading of revolution counter.
      s. Color additive.
   5. Ticket shall be transmitted to Project Inspector by truck driver with load identified thereon. Project Inspector will not accept load without load ticket identifying mix

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and will keep daily record of pours, identifying each truck, its load and time of receipt, and will transmit two copies of record to DSA.

6. At end of project, Weighmaster shall furnish affidavit to DSA on form satisfactory to DSA, certifying that all concrete furnished is in conformance with proportions established by mix designs.
7. Placement of concrete shall occur as rapidly as possible after batching and in a manner which will assure that the required quality of the concrete is maintained. In no case may concrete be placed more than 90 minutes from batch time.
   a. When air temperature is between 85 and 90 degrees F, reduce maximum batching to discharge time from 90 minutes to 75 minutes.
   b. When air temperature is above 90 degrees F, reduce maximum batching to discharge time to 60 minutes.
8. Water may be added to the mix only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded.
   a. The quantity of water used for each batch shall be accurately measured.
   b. In no case shall more than 10 gallons of water be added to a full 9-yard load, or 1 gallon per yard on remaining concrete within the drum, providing load tag indicates at time of mixing at plant an allowance for additional water.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Confirm general layout, grade, and joint pattern layout with the Architect prior to placing concrete.

B. Verify that gradients and elevations of the base are correct, and that the base is dry.

C. Contractor shall report in writing to the Architect prevailing conditions that will adversely affect satisfactory execution of the work of this Section.
   1. Do not proceed with work until unsatisfactory conditions have been corrected.

D. Forms and reinforcements are subject to approval by the Project Inspector as specified in Article FIELD QUALITY CONTROL.

3.02 PREPARATION

A. Remove frost, water, and other foreign materials from form surfaces, reinforcement, and embedded items against which concrete will be placed.

B. When the ambient temperature necessitates the use of cold or hot weather concreting, make provisions in advance of concrete placement.

C. Before placing concrete, clean tools and equipment, and remove debris from areas to receive concrete.

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D. Clean reinforcing and other embedded items of coatings, oil, mud and soil that may impair bond with concrete.

E. Slab-On-Grade: After subgrade has been approved by Geotechnical Engineer, install specified drainage rock base material to thickness shown. Rock base shall be implemented and compacted in accordance with the Geotechnical Report and recommendations of the Geotechnical Engineer.

3.03 INSTALLATION – FORMWORK

A. Form material shall be straight, true, sound and able to withstand deformation due to loading and effects of moist curing. Materials which have warped or delaminated, or require more than minor patching of contact surfaces, shall not be reused.

B. Build forms to shapes, lines, grades and dimensions indicated. Construct formwork to maintain tolerances required by ACI 301. Forms shall be substantial, tight to prevent leakage of concrete, and properly braced and tied together to maintain position and shape. Butt joints tightly and locate on solid backing. Chamfer corners where indicated. Form bevels, grooves and recesses to neat, straight lines. Construct forms for easy removal without hammering, wedging or prying against concrete.

C. Space clamps, ties, hangers and other form accessories so that working capacities are not exceeded by loads imposed from concrete or concreting operations.

D. Build openings into vertical forms at regular intervals if necessary to facilitate concrete placement, and at bottoms of forms to permit cleaning and inspection.

E. Build in securely braced temporary bulkheads, keyed as required, at planned locations of construction joints.

F. Before placement of reinforcing steel, coat faces of all forms to prevent absorption of moisture from concrete and to facilitate removal of forms. Apply specified material in conformance with manufacturer's written directions.
1. Seal all cut edges.
2. Before re-using form material, inspect, clean thoroughly, and recoat.

G. Slope tie-wires downward to outside of wall.

H. Brace, anchor and support all cast-in items to prevent displacement or distortion.

I. During and immediately after concrete placing, tighten forms, posts and shores. Readjust to maintain grades, levels and camber.

J. Concrete Paving, Curbs, Curb and Gutters, Ramps:

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1. Expansion Joints: Install at locations indicated, and so that maximum distance between joints is 20 feet for exterior concrete unless otherwise shown. Expansion joint material shall be full depth of concrete section. Recess for snap cap and sealant when required.
2. Curbs, Valley Gutter, and Curb & Gutter: Install expansion joints at 60 feet on center, except when placing adjacent to concrete walks, the expansion joints shall align with the expansion joints shown for the concrete walks. Expansion joint material shall be full depth of concrete section. Recess for snap cap and sealant when required.
3. Isolation Joints: 3/8-inch felt between walls and exterior slabs or walks so that paved areas are isolated from all vertical features, unless specifically noted otherwise on plans.
4. Exterior Concrete Paving: Install expansion joints at 20 feet on center maximum, both directions, unless shown otherwise on plans.
5. Ramps: Whether shown or not, all ramps shall have control joints and expansion joints.
    a. Control joints on ramps shall be aligned and placed in between the vertical posts for the handrails. The curbs, if required shall have control joints that align with the handrail posts.
    b. Expansion joints shall be placed at the upper, intermediate, and bottom landings.

K. Inspection: Refer to Article FIELD QUALITY CONTROL.

3.04 INSTALLATION – REINFORCING

A. General: Reinforcing shall be accurately placed at locations indicated on the drawings within required tolerances and providing required clearances. Reinforcement shall be secured prior to placement of concrete such that tolerances and clearances are maintained. Coverage shall be in accordance with Section 1907A.7 of the CBC.
1. Reinforcement must be in place before concreting is begun.
2. Keep a person on the job to maintain position of reinforcing as concrete is placed.
3. All expansion and construction joints in concrete shall have dowels of size and spacing as shown on the Drawings, or as approved by Architect.
4. Give notice whenever pipes, conduits, sleeves, and other construction interferes with placement; obtain method of procedure to resolve interferences.

B. Additional reinforcing steel shall be placed around all utility boxes, valve boxes, manhole frames and covers that are located within the concrete placements.
1. The bars shall be placed so that there will be a minimum of 1-1/2-inch clearance and a maximum of 3-inch clearance. The reinforcing steel shall be placed mid-depth of concrete slab.

ADDENDUM "A"

C. At right angles or intersections of concrete walks, additional 2 feet x 2 feet #5, 90 degree bars shall be added at all inside corners for additional crack control. The bars shall be placed 2 inches from concrete forms and supports, at mid-depth of slab.

D. Reinforcing steel shall be adequately supported by approved devices on centers close enough to prevent any sagging.

E. Placing Tolerances:
1. In accordance with ACI 301 or CRSI/WCRSI Recommended Practice for Placing Reinforcing Bars, unless otherwise shown.
2. Clear distance between parallel bars in a layer shall be no less than 1 inch, the maximum bar diameter shall not exceed 1-1/2 times the maximum size of coarse aggregate.

F. Splices:
1. General: Unless otherwise shown on drawings, splice top reinforcing at midspan between supports, splice bottom reinforcing at supports, and stagger splices. Bar laps shall be wired together. Reinforcing steel laps shall be as follows:
   a. Length of Lap Splices in Concrete:
      1) No. 4 bar: 24 inches minimum.
      2) No. 5 Bar: Not less than 62 bar diameters.
      3) No. 6 Bar: 56 inches minimum.
      4) No. 7 Bars and Larger: Not less than 93 bar diameters.
   b. All splices shall be staggered at 5 feet minimum from adjacent splices.

G. Inspection: Refer to Article FIELD QUALITY CONTROL.

3.05 PLACING OF CONCRETE – GENERAL

A. Adjacent finish surfaces shall be protected at all times during the concrete pour and finishing. Verify that all formwork is tight and leak-proof before concrete is poured. Finish work defaced during the concrete pour and finishing shall be replaced at no extra cost to Owner.

B. Remove wood chips, sawdust, dirt, loose concrete and other debris just before concrete is to be poured. Use compressed air for inaccessible areas. Remove all standing water from excavations.

C. Transport concrete from mixer to place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients. Deposit as close as practicable in final position to avoid re-handling or flowing. Partially hardened concrete must not be deposited in work. Concrete shall not be wheeled directly on top of reinforcing steel.

ADDENDUM "A"

D. Keep excavations free of standing water, but moisture condition sub-grade before concrete placement.

E. Placing: Once started, continue concrete pour continuously until section is complete between predetermined construction joints. Prevent splashing of concrete onto adjacent forms or reinforcement and remove such accumulation of hardened or partially hardened concrete from forms or reinforcement before work proceeds in that area. Free fall of concrete shall not to exceed 4'-0" in height. If necessary, provide lower openings in forms to inject concrete and to reduce fall height.

F. Remove form spreaders as placing of concrete progresses.

G. Place footings as monolithic and in one continuous pour.

H. Compacting: Concrete shall be compacted by mechanical vibrators.
   1. Concrete shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.
   2. Vibrating shall not be applied to concrete which has already begun to initially set or be continued so long as to cause segregation of materials.

3.06 REMOVAL OF FORMS

A. Remove without damage to concrete surfaces.
   1. Sequence and timing of form removal shall insure complete safety of concrete structure.
   2. Forms shall remain in place for not less than the following periods of time. These periods represent cumulative number of days during which temperature of air in contact with concrete is 60 degrees F and above.
      a. Vertical Forms of Foundations, Walls and All Other Forms Not Covered Below: 5 days.
      b. Concrete Paving Edge Screeds or Forms: 7 days.
   3. Concrete shall not be subjected to superimposed loads (structure or construction equipment) until it has attained its full design strength and not for a period of at least 21 days after placing. Concrete systems shall not be subjected to construction loads in excess of design loads.

I. Patching: Install specified patching mortar per manufacturer's recommendations. Repairs to defective concrete which affect the strength of any structural concrete member or component are subject to approval by the architect and DSA.

3.07 CONCRETE PAVING

A. Concrete paving shall be formed and finished to required line and grades true and flat with a maximum tolerance of 1/8-inch in 10 feet for flatness and to slopes indicated.

ADDENDUM "A"

B. Concrete vibrator shall be used to assist concrete placement. Contractor shall have spare concrete vibrator on site during concrete placement.

C. Thoroughly water and soak the subgrade of exterior concrete paving, curbs, curb and gutters, with multiple daily waterings for at least three days or as required to achieve required moisture content prior to the concrete pour in order to place the subgrade soils in full expansion.
   1. Provide damming as required to keep standing water within the formed area and to allow for proper saturation and full expansion of the subgrade soils.
   2. Remove standing water before concrete placement.

D. Construction Joints:
   1. Keep exposed concrete face of construction joints continuously moist from time of initial set until placing of concrete; thoroughly clean contact surface by chipping entire surface not earlier than 5 days after initial pour to expose clean hard aggregate solidly embedded, or by approved method that will assure equal bond, such as green cutting.
   2. If contact surface becomes contaminated with soil, sawdust or other foreign matter, clean entire surface and re-chip entire surface to assure proper adhesion.

3.08 FINISHING

A. Concrete Paving: Finish surface as required by ACI 302.1R using manual and vibrating screeds to place concrete level and smooth.
   1. Under no circumstances shall water be added to the top surface of freshly placed concrete.
   2. Use “jitterbugs” or other special tools designed for the purpose of forcing the course aggregate below the surface leaving a thick layer of mortar 1 inch in thickness.
   3. After tamping the concrete, wood float surface to a true and even plane.
   4. After floating with a wood bull float, make 2 passes with a steel Fresno trowel to start sealing the concrete surface.
   5. While concrete is still wet but sufficiently hardened to bear a persons’ weight on knee boards, start troweling with a steel hand trowel or a machine trowel in larger areas. Use sufficient pressure to bring moisture to surface.
   6. After surface moisture has disappeared, finish concrete utilizing steel, hand or power trowel.
   7. Completed surface shall be free from trowel marks, depressions, ridges or other blemishes. Tolerance for flatness shall be 1/8-inch in 10 feet.
   8. Provide final finish as follows, unless otherwise indicated:
      a. Medium Broom Finish: Typical finish to be used at all exterior walks, stairs and ramps. Brooming direction shall run perpendicular to slope to form non-slip surface.

B. Curb Finish: Steel trowel.

ADDENDUM "A"

C. Joints and Edges:
   1. Mark-off exposed joints, where indicated, with 1/4-inch radius x 1 inch deep jointer or edging tool. Joints shall be clean, cut straight and parallel or square with respect to concrete walk edge.
   2. Tool edges of control joints, walk edges, and wherever concrete walk adjoins other material or vertical surfaces. Expansion joints shall be constructed as detailed on plans.
   3. The expansion joints shall be full depth as shown in the Drawings. Failure to do so will result in non-compliance and shall be immediately machine cut by the Contractor at its expense.

3.09 CURING

A. Formed Concrete:
   1. Keep forms and top on concrete between forms continuously wet until removal of forms, 7 days minimum.
   2. Maintain exposed concrete in a continuous wet condition for 14 days following removal of forms.

B. Concrete Paving, Curb, Curb and Gutter, Valley Gutter:
   1. Cure utilizing curing compound. If applicable, the Contractor shall verify that the approved curing compound is compatible with the approved colorant system.
   2. Curing compound shall be applied in a wet puddling application. Spotty applications shall be reason for rejection and possibly concrete removal and replacement at the contractor's expense with no compensation from the Owner.

C. No curing compound shall be applied to areas scheduled to receive resilient track surface including, curbs, ramps, runways, and similar items.

3.10 DEFECTIVE CONCRETE

A. General:
   1. Determination of defective concrete shall be made by the Architect or Engineer whose opinion shall be final in identifying areas to be replaced, repaired or patched.
   2. As directed by Architect, cut out and replace defective concrete.
      a. Defective concrete shall be removed from the site.
      b. No patching is to be done until surfaces have been examined by Architect and permission to begin patching has been provided.
      c. Permission to patch an area shall not be considered waiver of right by the Owner to require removal of defective work, if patching does not, in opinion of Architect, satisfactorily restore quality and appearance of surface.
      d. Remove and replace concrete if repair to an acceptable condition is not feasible.

ADDENDUM "A"

B. Defective Concrete Is:
   1. Concrete that does not match the approved mix design for the given installation type.
   2. Concrete not meeting specified 28-day strength.
   3. Concrete which contains rock pockets, voids, spalls, transverse cracks, exposed reinforcing, or other such defects which adversely affect strength, durability or appearance.
   4. Concrete which is incorrectly formed, out of alignment or not plumb or level, or outside of the maximum tolerance for flatness and slopes indicated.
   5. Concrete containing embedded wood or debris.
   6. Concrete having large or excessive patched voids which were not completed under Architect's direction.
   7. Concrete not containing required embedded items.
   8. Concrete with excessive shrinkage, transverse cracking, crazing, curling; or defective finish.
   9. Concrete that is unsuitable for placement or has set in truck drum for longer than 90 minutes from the time it was batched.
   10. Concrete where expansion joint filler that is not isolating the full depth of the concrete section, and not recessed as required for backer rod and sealant where required.
   11. Concrete that is excessively wet or excessively dry and will not meet the minimum or maximum slump required per mix design.
   12. Finished concrete with oil stains from equipment use, and or rust spots that cannot be removed.
   13. Concrete with control joints (weakened planed joints) that do not meet the required minimum depth shown on the drawings.
   14. Concrete not meeting slip-resistance requirements.

C. Flatwork: The Owner reserves the right to survey the flatwork, to determine if flatwork is outside of the maximum tolerance for flatness and slopes as indicated.
   1. If the flatwork is found to be out of tolerance, then the Contractor is required to replace concrete at no additional expense to the Owner.
   2. Determination of flatwork flatness, surveying and remedial work must be completed far enough in advance so that the project schedule is maintained, delays are avoided, and the new flatwork or flatwork repairs are properly cured.
   3. The Contractor will be responsible for reimbursing the Owner for costs associated with re-surveying to verify compliance of work remediated by the Contractor.

3.11 SEALANT

A. Apply sealant in compliance with manufacturer's instructions, using hand guns or pressure equipment with proper nozzle size, on clean, dry, properly prepared substrates.

B. Force sealants into joint against sides of joint to make uniform. Avoid pulling of the sealant from the sides. Fill sealant space completely with sealant.

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C. Finished joints shall be straight, uniform, smooth, and neatly finished.

D. Remove any excess sealant from adjacent surfaces of joints utilizing the manufacturer's recommended solvent and cleaning processes. Leave the work in a neat, clean condition.

3.12 FIELD QUALITY CONTROL

A. Inspection of Forms and Reinforcing:
1. Approval of forms and reinforcing steel must be received from Project Inspector prior to pouring concrete.
2. Notice of readiness to place first pour shall be given to Project Inspector, DSA, Architect, and Engineer not less than 48 hours prior to placement of concrete to allow for inspection.
3. Pouring of concrete shall not proceed prior to completing requested adjustments to forms and reinforcing and without approval of Project Inspector.

B. Testing of Concrete:

1. Frequency and Samples for Testing:
a. Four identical cylinder samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, or not less than once for each 50 cubic yards of concrete, or not less than once for each 2,000 square feet of surface area for slabs or walls.
b. In addition, samples for strength tests for each class of concrete shall be taken for seven-day tests at the beginning of the concrete work or whenever the mix or aggregate is changed.
2. Testing:
a. Slump: Each truck’s concrete shall be tested for slump before concrete is placed.
b. Strength:
1) Tests for strength will be conducted by Testing Agency on one cylinder at 7 days and two cylinders at 28 days. The fourth remaining cylinder will be available for testing at 56 days if the 28-day cylinder test results do not meet the required design strength.
2) On a given project, if the total volume of concrete is such that the frequency of specified testing would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

C. Slip-Resistance Testing: Owner’s Testing Agency will perform testing on flatwork to verify compliance with specified slip-resistance.
1. The coefficient of friction will be measured by California Test 342 before pavement is opened to public traffic, but not sooner than 7 days after concrete placement

ADDENDUM "A"

2. Where paving is determined to have a coefficient of friction less than 0.30, Contractor is to repair and/or replace these surfaces at no cost to Owner.

3.13 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

B. Clean excess material from surface of all concrete walks and utility structures.

C. Power wash concrete surfaces to remove stains, dried mud, tire marks, and rust spots.

D. Comply with any additional requirements of additive manufacturer for colored concrete.

3.14 PROTECTION

A. Graffiti-resistant Coating:
1. Surface Preparation: Prepare concrete surface to receive graffiti-resistant coating specified in Section 09 9623, Graffiti-Resistant Coatings, where indicated.
2. Concrete must be clean, dry, and free of efflorescence and dust.

B. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

C. In the event of damage during construction, make all repairs and replacements necessary to the approval of the Architect, at no additional cost to the Owner.

END OF SECTION

ADDENDUM "A"

SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Chain-link fences.
   2. Swing gates.

B. Related Sections:
   1. Section 03 30 53 "Miscellaneous Cast-in-Place Concrete" for cast-in-place concrete post footings.
   2. Section 08 71 00 "Door Hardware" for gate hardware not specified in this Section.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
      a. Fence and gate posts, rails, and fittings.
      b. Chain-link fabric, reinforcements, and attachments.
      c. Gates and hardware.

B. Shop Drawings: For each type of fence and gate assembly.
   1. Include plans, elevations, sections, details, and attachments to other work.
   2. Include accessories, hardware, gate operation, and operational clearances.

C. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:
   1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

D. Design Data Submittal: For structural performance of chain-link fence and gate frameworks, including analysis data signed and sealed by the professional engineer responsible for their preparation.

1.03 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.04 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

ADDENDUM "A"

1.05 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to comply with performance requirements.
      b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Hoover Fence Company.
   2. Master Halco, Inc.

2.02 PERFORMANCE REQUIREMENTS

A. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to ASCE/SEI 7.
   1. Design Wind Load: As indicated on Drawings.
      a. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.

2.03 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
   1. Fabric Height: As indicated on Drawings.
   2. Steel Wire for Fabric: Wire diameter of 0.113 inch, unless indicated otherwise.
      a. Mesh Size: 2 inches, unless indicated otherwise.
      b. Zinc-Coated Fabric: ASTM A392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied before weaving.
      c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.
   3. Selvage: Knuckled at both selvages.

ADDENDUM "A"

2.04 FENCE FRAMEWORK

A. Posts and Rails: ASTM F1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F1043 or ASTM F1083 based on the following:
   1. Fence Height: As indicated on Drawings.
   2. Heavy-Industrial-Strength Material: Group IA, round steel pipe, Schedule 40 orGroup IC, round steel pipe, electric-resistance-welded pipe.
      a. Line Post: 2.375 inches in diameter.
      b. End, Corner, and Pull Posts: 2.875 inches in diameter.
   3. Horizontal Framework Members: top and rails according to ASTM F1043.
      a. Top Rail: 1.66 inches in diameter or 1.25 by 1.63 inches.
   4. Brace Rails: ASTM F1043.
   5. Metallic Coating for Steel Framework:
      a. Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
      b. External, Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- thick, zinc-pigmented coating.
      c. Type C: Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
   6. Polymer coating over metallic coating.
      a. Color: Black, according to ASTM F934.

2.05 SWING GATES

A. General: ASTM F900 for gate posts and single swing gate types.
   1. Gate Leaf Width: As indicated.
   2. Framework Member Sizes and Strength: Based on gate fabric height as indicated.

B. Pipe and Tubing:
   1. Zinc-Coated Steel: ASTM F1043 and ASTM F1083; protective coating and finish to match fence framework.
   2. Gate Posts: Round tubular steel .
   3. Gate Frames and Bracing: Round tubular steel .

C. Frame Corner Construction: Welded.

D. Hardware:
   1. Hinges: 180-degree inward or 180-degree outward swing.
   2. Lock: Manufacturer's standard internal device.
   3. Padlock and Chain: <Insert requirements>.

ADDENDUM "A"

E. Exit Hardware: BHMA A156.3, with push pad actuating bar, suitable for exterior use, including exit bar, adjustable mounting plates, adjustable receiver brackets, lock boxes, strikes, latch protectors, and other hardware required for a complete installation on swing gates.
   1. Product: Subject to compliance with requirements, provide exit hardware kits as follows:
      a. DAC Industries, Inc.: 1000 Series Detex Advantex Stainless Steel Exit Bar.
   2. Exit Bar Material: Stainless steel.
   3. Exit Bar Width: As indicated on drawings.
   4. Latch and Fasteners: Manufacturer's standard, stainless steel.
   5. Mounting Plate: Manufacturer's standard, galvanized steel, size as indicated on drawings.
      a. Finish: Powder coating, color as selected by Architect from manufacturer's full range.
   6. Function: [**01 - Exit only, no trim or blank escutcheon**] [**04 - Entrance by trim when latch bolt is released by key or set in a retracted position by key**] [**08 - Entrance by lever. Key locks or unlocks lever**] [**09 - Entrance by lever only when released by key. Key removable only when locked**] <**Insert function**>.
   7. Mounting Channel: Bent-plate channel formed from 1/8-inch- thick, [**steel**] [**aluminum**] plate. Channel spans gate frame. Exit device is mounted on channel web, recessed between flanges, with flanges extending 1/8 inch beyond push pad surface.

2.06 FITTINGS

A. Provide fittings according to ASTM F626.

B. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

C. Finish:
   1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.
      a. Polymer coating over metallic coating.

PART 3 - EXECUTION

3.01 CHAIN-LINK FENCE INSTALLATION

A. Install chain-link fencing according to ASTM F567 and more stringent requirements specified.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

ADDENDUM "A"

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

C. Line Posts: Space line posts uniformly at 10 feet o.c.

D. Top Rail: Install according to ASTM F567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

E. Intermediate and Bottom Rails: Secure to posts with fittings.

F. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1-1/2-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

G. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.

H. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F626. Bend ends of wire to minimize hazard to individuals and clothing.
1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

I. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side.

3.02 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.03 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

ADDENDUM "A"

B. Lubricate hardware and other moving parts.

END OF SECTION

ADDENDUM "A"

SECTION 33 00 00 – SITE UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Domestic water piping system.
   2. Fire protection piping systems.
   3. Sewer piping system

1.02 RELATED REQUIREMENTS

A. Section 01 5000, Temporary Facilities and Controls.

B. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.

C. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.

D. Section 31 0000, Earthwork.

E. Section 31 2333, Trenching and Backfilling.

F. Section 32 1600, Site Concrete.

1.03 REFERENCES AND STANDARDS

A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. California Plumbing Code, (CPC), edition as noted on the Drawings.

D. California State Health and Safety Code Section 116875, Lead Free Public Water Systems.

E. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

ADDENDUM "A"

F. ASTM International (ASTM):
1. D422-63: Test Method for Particle Size Analysis of Soil.
2. D698-00: Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
3. D1556-00: Test Method for Density of Soil in Place by the Sand-Cone Method.
4. D1557-02: Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
5. D3017-05: Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
6. D4318-05: Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

G. CALTRANS Standard Specifications.

H. CAL-OSHA, Title 8, Section 1590 (e).

I. NFPA 13, 24 and 25, per CFC chapter 80 and CBC chapter 35.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:
1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

1.05 ACTION SUBMITTALS

A. Provide supplier’s descriptive literature for all products to demonstrate compliance with specified attributes.

B. Substitution: Provide all data of proposed material being submitted as a substitution. Provide comparison with specified product data and identify all differences. Failure to provide comparison will be reason for rejection.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For contractor / installer.

B. Provide sieve analysis from accredited testing lab on pipe bedding material. Analysis shall have a current date not older than project contract signing date.

C. Sustainable Design:
1. General:

ADDENDUM "A"

a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
b. Sustainable design submittals are in addition to other submittals.

2. The following information shall be provided:
a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.07 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

B. Water Sterilization Test Report.

1.08 QUALITY ASSURANCE

A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

B. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction or incorrect grades will be the responsibility of the contractor.

C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects or deficiencies discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.

D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the drawings to be salvaged and re-used.
1. Sun damaged or discolored PVC pipe will be rejected.

E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

1.09 FEES, PERMITS, AND UTILITY SERVICES

A. Obtain and pay for permits and service charges required for installation of Work. Arrange for required inspections and secure written approvals from authorities having jurisdiction.

B. Upon completion of work within right-of-way, provide copies of written final approval to the Architect.

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1.10 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction and manufacturer's written recommendations

B. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.

1.11 EXISTING SITE CONDITIONS

A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

B. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

1.12 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

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F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

1.13 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

1.14 RECORD DRAWINGS

A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.

B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.

C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.

D. Properly identify on as-builts and provide dimensions for all stubs for future connections. Provide concrete markers 6” dia. 12” deep, flush with finish grade at the ends of all stubbed pipes.

E. Provide record drawings per Section 01 3300.

PART 2 - PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Sustainable Design:
1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

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2.02 MATERIALS - GENERAL

A. Provide each item listed herein or shown on drawings of quality noted or approved equal. All material shall be new, full weight, standard in all respects and in first-class condition. Insofar as possible, all materials used shall be of same brand or manufacture throughout for each class of material or equipment. Materials shall be of domestic manufacture and shall be tested within Continental United States.

B. Grade or quality of materials desired is indicated by trade names or catalog numbers stated herein.

C. Dimensions, sizes, and capacities shown are minimum and shall not be changed without permission of Architect.

D. All materials in this section used for any public water system or domestic water for human consumption shall be lead free.
   1. For the purposes of this section, “lead free” means not more than 0.2 percent lead when used with respect to solder and flux and not more than 8 percent when used with respect to pipes and pipe fittings.
   2. All pipe, pipe or plumbing fitting or fixtures, solder, or flux shall be certified by an independent American National Standards Institute (ANSI) accredited third party, including, but not limited to, NSF International, as being in compliance with this section.

E. All materials used for fire system piping shall be UL and FM approved.

2.03 VALVE BOXES

A. Provide at each valve or cock in ground a Christy, Brooks, or equal to Christy G05CT, concrete valve box with cover marked for service, domestic water shall be marked “Water” and fire supply shall be marked “Fire”. Furnish extension handles for each size square nut valve, and provide “fork” handle for each size of “wheel handle” valve as required. Do not locate valve boxes in walk, or covered passages, curbs, or curb & gutters, unless necessary. If valve location is within concrete or asphalt paved surface valve box shall be as detailed on plans for such condition. Provide valve box extensions as required to set bottom of valve box to bottom of piping in which valve is installed. Provide Owner with set of special wrenches and/or tools as required for operation of valves.

2.04 PIPES AND FITTINGS

A. Sanitary Sewer: PVC sewer pipe and fittings with Ring-Tite joints, ASTM D3034 SDR35.

B. Domestic water Lines 3 1/2” and smaller: Type K copper tubing, hard temper, with wrought copper fittings. Schedule 80 PVC, ASTM D 1784, ASTM D 1785.

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C. Water lines 4" and larger: AWWA C-900 Class 150/DR18 with rubber gasket joints.

D. Fire lines 4" and larger: AWWA C-900 Class 200/DR14 with rubber gasket joints.

E. Solder: Lead Free. 95/5; 95% Tin / 5% Antimony.

F. Ductile Iron Pipe; AWWA Class 51, Cement Lined

G. Ductile Iron Pipe Fittings; AWWA C110, C153, Ebba Iron, Star Romac, Sigma, or approved equal.

H. PVC Mechanical Fittings; Ebba Iron, Star; Romac; Sigma or approved equal.

I. Ductile Iron Pipe/PVC C-900 Pipe Restrained Fittings; Ebba Iron # 3800 Mega Coupling, Ebba Iron 1100CH Split Restrained Harness for pipe couplings. StarGrip Series 4000.

J. Ductile Iron Pipe/PVC C900, C905 Restrained Degreedand Blind Cap Fittings,;

K. Mega Lug; Sigma; Romac; or an approved equal

L. Mechanical Fitting Bolts; Bolts and nuts shall be carbon steel with a minimum 60,000 psi tensile strength conforming to ASTM A 307, Grade A. Bolts shall be standard ANSI B1.1 Class 2A course threads. Nuts shall conform to ASTM A 563 and be standard ANSI B1.1, Class 2A course thread. All bolts and nuts shall be zinc coated.

M. Fasteners Anti-Rust Coatings; After assembly, coat all fasteners with an Asphaltic Bituminous coatings conforming to 2022 edition NFPA 24.

N. Ductile Iron Pipe Wrap; 8 mil polyethylene pipe wrap conforming to ANSI/AWWA C105/A21.5 standards.

O. Pipe Insulation; Pipe exposed to atmospheric conditions ½" thru 4" NPT; Johns Manville rigid fiberglass insulation, Micro Lok HP; Owens Corning Fiberglas SSL II; Conforming to ASTM C 612, Type 1A or type 1B.

P. Aluminum field applied pipe insulation jacket; comply with ASTM B209, ASTM C1729, ASTM C1371 Manufacturers; Childers Metals; ITW Insulation Systems Aluminum Jacketing; or an approved equal.
   1. Finish shall be flat mill finish
   2. Factory Fabricated Fitting Covers; 45 and 90 degree elbows, tee's, valve covers, end caps, unions, shall be of the same thickness and finish of jacket.
   3. The fittings shall be composed of 2-pieces
   4. Adhesives; per the manufacturers requirements
   5. Joint Sealant; shall be silicone, and shall be aluminum in color.

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Q. Sewer Forced Main; HDPE, DR 11, color gray with green stripe by JM Eagle or approved equal.

2.05 SANITARY SEWER MANHOLES

A. Shall be constructed as shown on plan details.

2.06 CLEANOUTS

A. Cleanouts of same diameter as pipe up to 8" in size shall be installed in all horizontal soil and waste lines where indicated and at all points of change in direction. Cleanouts shall be located not less than 18" from building so as to provide sufficient space for rodding. No horizontal run over 100 feet shall be without cleanout whether shown on drawings or not.

B. All cleanout boxes shall be traffic rated with labeled lid, Christy G05CT or approved equal. Lid shall be vandal proof with stainless steel screws

2.07 UNIONS

A. Furnish and install one union at each threaded or soldered connection to equipment and 2 unions, one on each side of valves on pipes ½" to 3".

B. Locate unions so that piping can be easily disconnected for removal of equipment or valve. Provide type specified in following schedule:

Type of Pipe Union

Steel Pipe:	150 lb. Screwed malleable ground joint, brass, brass-to-iron seat, black or galvanized to match pipe.
Copper tubing:	Brass ground joint with sweat connections.
PVC Sch 80 pipe:	PVC union, FIPT X FIPT

2.08 VALVES

A. Provide valves as shown and other valves necessary to segregate branches or units. Furnish valves suitable for service intended. Valves shall be properly packed and lubricated. Valves shall be non-rising stem. Place unions adjacent to each threaded or sweat fitting valve. Install valves with bonnets vertical. All valves shall be lead free.

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B. Valves ½" thru 2"; shall be made of bronze, full size of pipe and lead free. Nibco S-113-FL Series; American G-300 Series; Matco 511 FL Series; Apollo 102T-FL Series. Brass valves of brass parts within valves will not be accepted.

C. Valves, 2 ½" thru 3" shall be class 150; Shall be made of bronze, full size of pipe; Jenkins Fig. 2310 J; Lunkinheimer Fig. 2153; Crane Fig. 437; Stockham Fig. B-128.

D. Valves, Flanged; 4" thru 12" Ductile Iron Resilient Wedge Gate Valve; Nibco F 609 RW; American 2500 Series; Kennedy 8561; Mueller 2360 Series.

2.09 TAPPING SLEEVE

A. Shall be used on pipe sizes 6" thru 12" and shall be made with stainless steel material including stainless steel bolts. Flanges shall be ductile iron or high carbon steel. Gaskets shall seal full circumference of pipe. Shall be manufactured for operating pressure of 200 psi, and shall pass test pressure of 300 psi. Romac SST series; Smithblair 662; Mueller H304; Ford "FAST" tapping sleeve.

2.10 SERVICE SADDLES

A. Shall be used on pipe size 2" thru 4". Body shall be made from ductile iron with epoxy coating or bronze. Cascade Style CSC-1; A.Y. McDonald model 3891 AWWA/3892 FNPT; Smith-Blair #317; Ford S70, S71, S90, (style B).

2.11 TRACER WIRE

A. No. 10 THW solid copper wire. Solder all joints

PART 3 - EXECUTION

3.01 DRAWINGS AND COORDINATION

A. General arrangement and location of piping, etc., are shown on Drawings or herein specified. Install work in accord therewith, except for minor changes that may be necessary on account of other work or existing conditions. Before excavation, carefully examine other work that may conflict with this work. Install this work in harmony with other craft and at proper time to avoid delay of work.

B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.

C. In advance of construction, work out minor changes if conflicts occur with electrical or mechanical. Relocate services to suit actual conditions and work of other trades to avoid

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conflict therewith. Any adjustments or additional fittings to make adjustments shall not be cause for additional costs to the owner.

D. Execute any work or apparatus shown on drawings and not mentioned in specifications, or vice versa. Omission from Drawings or Specifications of any minor details of construction, installation, materials, or essential specialties does not relieve Contractor of furnishing same in place complete.

E. Graded pipes shall take precedence. If conflict should occur while placing the domestic water and fire service piping, the contractor shall provide any and all fittings necessary to route the water lines over such conflicting pipes at no additional costs to the owner.

3.02 ACCESS

A. Continuously check for clearance and accessibility of equipment or materials specified herein to be placed. No allowance of any kind shall be made for negligence on part of Contractor to foresee means of installing his equipment or materials into proper position.

3.03 EXCAVATING AND BACKFILLING

A. Excavation and Bedding:
1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities or rock points. Trench width to be a minimum of 12" wider than outside diameter of pipe. Follow manufacturer's recommendations for use of each kind and type of pipe.
2. Bedding: Provide a bedding as noted on drawing details for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, which ever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
3. If the trenches for the site utilities falls within areas to be lime treated, the piping shall be installed prior to any lime treatment operations, providing the elevation of the piping is below the treatment section.
    a. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base, with minimum section equal to the lime treated section and compacted to 95%.

B. Laying of Pipe:
1. General: Inspect pipe prior to placing. Sun damaged pipe will be rejected. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe bell upgrade, true to line and grade.
    a. Sewer pipe shall be laid in strict conformity to the prescribed line and grade, with grade bars set and each pipe length checked to the grade line. Three consecutive points on the same rate of slope shall be used at all times to detect any variation from a straight grade. In any case of discrepancy, work

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shall be stopped and the discrepancy immediately reported to the Owner's Representatives. In addition, when requested by the Owner's Representative, a string line shall be used in the bottom of the trench to insure a straight alignment of the sewer pipe between manholes. The maximum deviation from grade shall not be in excess of 1/4 inch. In returning the pipe to grade, no more than ¼" depression shall result.

b. The Contractor shall expose the end of existing pipe to be extended, for verification of alignment and elevation, prior to trenching for any pipe which may be affected. All costs of such excavation and backfill shall be included in the price paid for the various items of work.

c. A temporary plug, mechanical type shall be installed on sewer pipe at the point of connection to existing facilities. If connecting to a public facility the plug shall conform to the requirements of the local jurisdiction. This plug shall remain in place until the completion of the balling and flushing operation.

2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.

C. Backfilling:

1. General: Do not start backfill operations until required testing has been accomplished.
2. Compaction and Grading: Remainder of backfill shall be in accordance with Section 31 2333 – TRENCHING AND BACKFILLING.
3. If trenching in area previously lime or cement treated backfill top of trench section, same depth as lime or cement treatment with Class 2 Aggregate Base compacted to 95% minimum relative compaction.

3.04 INSTALLATION OF WATER PIPING

A. Immediately cap or plug ends of, and opening in, pipe and fittings to exclude dirt until final connections made. Use reducing fittings where any change in pipe size occurs. Bushings shall not be used.

B. General: Should existing conditions or other work prevent the running of pipes or the setting of equipment at the points indicated by drawings, changes as authorized by the Architect shall be made without additional cost to the Owner.

C. All bolts used on mechanical fittings shall be thoroughly coated with an asphaltic bituminous coating conforming to 2007 NFPA (National Fire Protection Association) 10.3.5.2 and 10.8.3.5, CBC chapter 35 and CFC chapter 80.

D. All buried metal shall be incased with 8 mil polyethylene wrap so that no soil is in contact with metal. Ends of polyethylene wrap shall be taped to provide seal with pipe.

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E. Do not install water lines in same trench with non-metallic sewer lines unless bottom of water pipe at all points is at least 12" above top of sewer line and water line is placed on solid shelf excavated at one side of common trench with a minimum of 12 inch horizontal separation.

F. Under no circumstance shall a fitting be located directly under a structural footing without prior approval from the Architect.

G. In locations where existing domestic pipe is rerouted, the new pipe shall be assembled using restrained fittings at all joints including factory pipe joints. Tapped restrained blind flanges shall be temporarily installed at each end of the assembled pipes until testing and chlorination is completed and approved.

3.05 CLOSING IN OF UNINSPECTED WORK

A. Do not allow or cause work installed to be covered up or enclosed before it has been inspected, tested, and approved. Should work be enclosed or covered up before it has been approved, uncover work at own expense. After it has been inspected, tested and approved, make repairs necessary to restore work of other contractors to condition in which it was found at time of cutting.

3.06 CARE AND CLEANING

A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in new condition satisfactory to Architect. At completion, carefully clean and adjust equipment, fixtures and trim that are installed as part of this work. Leave systems and equipment in satisfactory new operating condition.

B. Drain and flush piping to remove grease and foreign matter.

C. Sewer piping shall be balled and flushed.

D. Clean out and remove surplus materials and debris resulting from the work, including surplus excavated material.

E. Flush fire service piping in the presence of the project inspector. Flushing shall be continued for a sufficient time as necessary to ensure all foreign material has been removed. Flow rate shall be equal to site fire flow requirements.

3.07 SEWER INTERNAL INSPECTIONS

A. Upon completion of construction and prior to final inspection, the Contractor shall clean the entire new pipeline of all dirt and debris. Any dirt or debris in previously existing pipes or ditches in the area, which resulted from the new installation, shall also be removed. Pipes shall be cleaned by the controlled balling and flushing method.

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Temporary plugs shall be installed and maintained during cleaning operations at points of connection to existing facilities to prevent water, dirt, and debris from entering the existing facility.

3.08 TEST OF PIPING

A. Pressure Test piping at completion of roughing-in, in accord with following schedule, and show no loss in pressure or visible leaks after minimum duration or four (4) hours at test pressures indicated.

B. Chlorination tests shall be performed after all fixtures and any required mechanical devices are installed and the entire system is complete and closed up.

C. In cases where new domestic water piping is assembled for re-routing of existing domestic water pipe, the contractor shall perform the following testing prior to connecting the new water pipe to the existing system.
1. The pipe shall be pressure tested and per the test schedule.
2. The pipe shall be pressure tested down within the trench.
3. The contractor shall dig a temporary ditch below the existing pipe to drain to a sump that is lower than the bottom of the trench and to the side of the trench. The sump shall be 30% larger than the total volume of water within the testing pipe assembly.
4. After pressure testing and chlorination has taken place and accepted, the contractor shall drain the pipe into the sump and pump the sump out as it is filling.
5. The temporary test fittings at each end of the pipe assembly shall be removed and the final restrained couplings installed.
6. The existing piping shall be cut and the water within the pipe shall drain below the pipe to the temporary sump. Pump the sump as it is being filled up. Take extreme caution not to contaminate the existing pipe with any contaminates within the trench.
7. Before making the final coupling connections, the restrained couplings at each end of the new pipe shall be thoroughly swabbed inside the fitting with a solution of chlorine mixed with water at a rate of 1part chlorine to 4 parts potable water.
8. After final connections are made, a visual inspection shall be made after fittings are wiped off. If after 1 hr, no noticeable drips are noted the pipe can be backfilled.
9. The contractor shall flush all water piping affected by chlorination until it is within acceptable levels approved by certified testing lab.

TEST SCHEDULE

System Tested	Test Pressure PSIG Test With
Public Water Mains	Per local jurisdiction requirements.
Private Domestic Water Piping:	150 Lbs. Water 4 hrs.

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Fire Protection Piping:	200 Lbs. Water pressure, 4 hrs duration with no pressure loss.
Sanitary Sewer Piping:	Sewer system shall be tested for leakage per local jurisdiction requirements.

D. Testing equipment, materials, and labor shall be furnished by contractor.

3.09 WATER SYSTEM STERILIZATION

A. Public Water Mains: Shall be flushed and disinfected per the local jurisdiction requirements

B. Clean and disinfect all site water systems connected to the domestic water systems in accordance with AWWA Standard C651 and as required by the local Building and Health Department Codes, and EPA.
   1. Clean and disinfect industrial water system in addition to the domestic water system.
   2. Disinfect existing piping systems as required to provide continuous disinfection upstream to existing valves. At Contractors option, valves may be provided to isolate the existing piping system from the new piping system.

C. Domestic water sterilization shall be performed by a licensed “qualified applicator” as required by CAL-EPA Pesticide Enforcement Branch for disinfecting and sterilizing drinking water.

D. Disinfecting Agent: Chlorine product that is a registered product with Cal-EPA for use in California potable water lines, such as Bacticide, CAL-EPA Registration No. 37982-20001.

E. Contractor to provide a 1” service valve connected to the system at a point within 2’-0” of its junction with the water supply line. After sterilization is complete Contractor to provide cap at valve.

F. Sterilization Procedure to be as follows:
   1. Flush pipe system by opening all outlets and letting water flow through the system until clear water flows from all outlets.
   2. Inject disinfecting agent to provide a minimum chlorine residual concentration of at least 50 parts per million (ppm) of free chlorine at each outlet.
   3. Provide sign at all outlets which reads “Water Sterilization in Progress – Do not operate”. Remove signs at conclusion of test.
   4. Close all outlets and valves, including valve connecting to water supply line and 1” service valve. Retain treated water in pipe for a minimum of twenty-four hours. Should chlorine residual at pipe extremities be less than 50 PPM at this time, pipe

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shall be re-chlorinated. As an option, the water systems may be filled with a water-chlorine solution containing a minimum of 200 PPM of chlorine and allowed to stand for three hours.

5. After chlorination, flush lines of chlorinated water and refill from domestic supply. Continue flushing until residual chlorine is less than or equal to 0.2 ppm, or a residual the same as that of the test water.

G. Chemical and bacteriological tests shall be conducted by a state-certified laboratory and approved by the local authorities having jurisdiction.

H. Submit written report to Health Department as required by State Regulations. Provide a copy of report to Architect prior to completion of project.

I. The costs of sterilization and laboratory testing shall be paid for by the contractor.

3.10 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

END OF SECTION

ADDENDUM "A"

SECTION 33 40 00 – STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Summary Includes:
   1. Storm drainage piping systems.

1.02 RELATED REQUIREMENTS

A. Section 01 5000, Construction Facilities and Controls.

B. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.

C. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.

D. Section 31 0000, Earthwork.

E. Section 31 2333, Trenching and Backfilling.

F. Section 32 1200, Asphalt Concrete Paving.

G. Section 32 1600, Site Concrete

1.03 REFERENCES AND STANDARDS

A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. California Plumbing Code, (CPC), edition as noted on the Drawings.

D. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

E. ASTM International (ASTM):
   1. D 422-63 Test Method for Particle Size Analysis of Soil.

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2. D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
3. D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.
4. D1557-02 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
5. D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
6. D 4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

F. CALTRANS Standard Specifications.

G. CAL-OSHA, Title 8, Section 1590 (e).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:
1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

1.05 ACTION SUBMITTALS

A. Provide supplier’s descriptive literature for all products to demonstrate compliance with specified attributes.

B. Substitution: Provide all data of proposed material being submitted as a substitution. Provide comparison with specified product data and identify all differences. Failure to provide comparison will be reason for rejection.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: Contractor / installer.

B. Provide sieve analysis from accredited testing lab on pipe bedding material. Analysis shall have a current date not older than project contract signing date.

C. Sustainable Design:
1. General:
a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
b. Sustainable design submittals are in addition to other submittals.
2. The following information shall be provided:

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a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

1.07 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

1.08 QUALITY ASSURANCE

A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

B. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction are the responsibility of the contractor.

C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.

D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
1. Sun damaged or discolored PVC pipe will be rejected.

E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

1.09 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction and manufacturer's written recommendations

B. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.

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B. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

1.11 PROTECTION

A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

D. Provide shoring, sheeting, sheet piles and/or bracing to prevent caving, erosion or gullying of sides of excavation.

E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.

F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

H. Trees: Carefully protect existing trees that are to remain.

1.12 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

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1.13 TESTING

A. General: Refer to Section 01 4523 – Testing and Inspection Services, and Structural Tests and Inspections List, DSA-103.

B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be paid by Owner and backcharged to Contractor.

1.14 RECORD DRAWINGS

A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.

B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.

C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.

D. Properly identify all stubs for future connections, as to location and use, by setting of concrete marker at finished grade in the manner suitable to Architect.

PART 2 - PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Sustainable Design:
1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

2.02 MATERIALS

A. Pipe: Use one of the following, unless noted on the Drawings otherwise.
1. Polyvinyl Chloride Pipe (PVC): SDR35 conforming to ASTM D3034 with elastomeric joints conforming to ASTM D3212 for pipe to 12". Sun damaged pipe will be rejected.
2. High density polyethylene pipe (HDPE): The pipe shall be corrugated exterior/smooth interior pipe. 12” to 60" maximum diameter shall conform to AASHTO M294, water tight per ASTM D3212 with water tight gasket fittings.

ADDENDUM "A"

B. Perforated Pipe (for subdrains): Shall be ADS N12 pipe, 3 hole, ASTM F 405, AASHTO M 252; PCV ASTM D3034 SDR-35 storm drain pipe

C. Manhole: Shall be as shown on the drawing details.

D. Drop Inlet: Shall be as shown on the drawing details.

E. Curb Inlet: Shall be as shown on the drawing details.

F. Mortar: For pipe connections to concrete drainage structures, conform to ASTM C270 type N mortar. Place within one half hour after adding water.

G. Crushed Rock: Imported washed crushed rock. Minimum 100% passing 3/4 inch sieve.

H. Trench drain: Polycast, Polydrain or equal and as shown on drawings.

I. Area Drains: Shall be as shown on the drawing details.

J. Floor Drains: Shall be as shown on the drawing details.

K. Clean-outs: Shall be as shown on the drawing details.

L. Planter drains: Shall be as detailed on the drawing details.

M. Filter Fabric: Mirafi 140N.

PART 3 - EXECUTION

3.01 INSPECTION LAYOUT AND PREPARATION

A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point were this installation may properly commence

B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.

C. Verify that specified items may be installed in accordance with the approved design.

D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

ADDENDUM "A"

3.02 EXCAVATION AND BACKFILLING

A. General: Installation shall be in strict conformance with referenced standards, the manufacturer's written directions, as shown on the drawings and as herein specified.

B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.

C. Excavation and Bedding:
1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities or rock points. Trench width in accordance with pipe manufacturer's recommendations and as per the drawings. Follow manufacturer's recommendations for use of each kind and type of pipe.
2. Bedding: Provide bedding as detailed on plans for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, which ever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
3. If the trenches for the site drainage fall within areas to be lime treated, the piping shall be installed prior to any lime treatment operations.
   a. If additional piping is added to previously lime treated areas, the contractor shall backfill the trench with class 2 aggregate base and compact to 95%.

D. Laying of Pipe:
1. General: Inspect pipe prior to placing. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe upgrade, true to line and grade.
2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution or as recommended by manufacture. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.
3. Pipe shall be bedded uniformly throughout its length.
4. Pipe elevation shall be within 0.02 feet of design elevation as shown on plans.
5. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the governing agency.

E. Backfilling:
1. General: Do not start backfill operations until required testing has been accomplished.
2. Trenches and Excavations: Backfill with material as detailed on plans, filling both sides of the pipe at the same time, carefully tamping to hold pipe in place without movement. Refer to Section 31 2333 – TRENCHING AND BACKFILLING for fill above this layer.

F. Grouting of Pipes: Grout pipes smooth and water tight at drop inlet, manholes, and curb inlets. Grout back side of hood at curb inlets all grouting shall be smooth and consistent.

ADDENDUM "A"

G. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the local agency.

H. Cutting and Patching: Remove and replace existing surface features per applicable specification section (i.e. asphaltic concrete or concrete paving) where pipe is installed in areas of existing improvements.

3.03 TOLERANCES

A. Storm Drain structure grates
1. In landscape and lawn areas +- 0.05'.
2. In sidewalk and asphalt pavement +-0.025'.
3. In curb and gutter application +-0.0125'.

B. Cleanout Boxes and Lids
1. In landscape areas; 0.10 higher than surrounding finish grade, +-0.05'.
2. In sidewalks and asphalt pavement; Flush with surrounding finish grade, +-0.025'.

3.04 DEWATERING

A. Contractor to provide trench dewatering as necessary, no matter what the source is, at no additional cost to the owner.

3.05 FLUSHING

A. The Contractor shall thoroughly ball and flush the storm drain system to remove all dirt and debris. Discharge water to an approved location.

3.06 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

B. Clean the dirt, rocks, and debris from the drop inlets and storm drain manholes.

END OF SECTION

ADDENDUM "A"