MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

DATE:	July 10, 2019
MAI NO.:	1901
DSA APPL. NO.:	02-117736
PTN:	75523-65

PROJECT MANUAL FOR:

ALTERNATIVE EDUCATION COMPLEX

PORTERVILLE UNIFIED SCHOOL DISTRICT
PORTERVILLE, TULARE COUNTY, CALIFORNIA

LICENSED ARCHITECT — CHRISTOPHER D. McLAIN — No. C-29566 — REN. 10-31-21 — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — RYAN W. CARLSON — M34846 — REN. 6-30-2020 — MECHANICAL — STATE OF CALIFORNIA

Christopher D. McLain **C-29566**
ARCHITECT
MANGINI ASSOCIATES INC.
4320 W. Mineral King Avenue, Visalia, CA 93291
PHONE: (559) 627-0530 FAX: (559) 627-1926

Ryan W. Carlson **M-34846**
MECHANICAL ENGINEER
LAWRENCE NYE CARLSON ASSOCIATES
7084 N. Maple Ave., Suite 101, CA 93720
PHONE: (559) 431-0101 FAX: (559) 431-1362

REGISTERED PROFESSIONAL ENGINEER — THEODORE W. ROSE — No. E14920 — Exp. 6/30/21 — ELECTRICAL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — WA VANG — R.C.E. 73146 — CIVIL — STATE OF CALIFORNIA

Theodore W. Rose **E-14920**
ELECTRICAL ENGINEER
ROSE SING AND ASSOCIATES INC.
131 S. Dunworth Avenue, Visalia, CA 93292
PHONE: (559) 733-2671 FAX: (559) 733-0372

Wa Vang **C-73146**
CIVIL ENGINEER
LANE ENGINEERS INC.
979 N. Blackstone Street, Tulare, CA 93274
PHONE: (559) 688-5263 FAX: (559) 688-8893

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP. 02-117736 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/13/2020

SET NUMBER

TABLE OF CONTENTS

Not Used

DIVISION 13 - SPECIAL CONSTRUCTION

Not Used

DIVISION 14 - CONVEYING SYSTEMS

Not Used

DIVISION 21 - FIRE SUPPRESSION

DIVISION 22 - PLUMBING

DIVISION 23 - MECHANICAL

DIVISION 26 - ELECTRICAL

DIVISION 27 - COMMUNICATION SYSTEMS

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

DIVISION 31 - EARTHWORK

DIVISION 32 - EXTERIOR IMPROVEMENTS

DIVISION 33 - UTILITIES

END OF TABLE OF CONTENTS

SECTION 00 2410 - SCOPES OF BIDS

1. **GENERAL:** This Section is intended as clarification of the bids required in the Bid Form. Should bidders not understand the requirements of the bid, it is their responsibility to contact the Architect within seven calendar days prior to the bid opening to obtain a clarification of such items. The address and telephone numbers of the Architect and each of the Consultants are on the cover sheet for your convenience.

2. **BIDS REQUIRED:** Bids for this project shall include all labor, materials, tax, freight, permits, fees, etc., required to complete the project as specified and indicated in the Drawings and Specifications, including the General and Supplemental Conditions to the Contract.

   A. **BASE BID WORK:** All work required to satisfactorily complete the work indicated in the Drawings and Project Manual approved by the Division of the State Architect, excluding the Alternate Bids.

END OF SECTION 00 2410

SECTION 00 3100 - AVAILABLE PROJECT INFORMATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes information available to the bidders and the use of such information.

1.2 SOILS INVESTIGATION REPORT

A. A soils investigation report has been prepared for the site by CTL-See's Inc., Report No. 1578-16, dated December 23, 2016 and a geological hazard report has been prepared for the site by Enviro Assessment, PC, Report No. 2016-12-024, dated January 9, 2017.
   1. The soils investigation report may be inspected at the office of the Architect.
   2. Copies may be obtained upon request.

B. Use of Data:
   1. This report was obtained only for the Architect's guidance in the design of this Project and is not a part of the Contract Documents.
   2. The report is available to bidders, for information only, so that bidders have full disclosure of all information available to the Owner and Architect with respect to subsurface conditions at the Site. The report is not a warranty of subsurface conditions. Information is site specific as related to the boring locations noted.
   3. Bidders should visit the site and acquaint themselves with existing conditions.
   4. Prior to bidding, bidders may make their own subsurface investigations to satisfy themselves as to site and subsurface conditions, but such investigations may be performed only under time schedules and arrangements approved in advance by the Architect and the Owner.

C. Cautions to Contractor:
   1. The report of subsurface conditions represents only those points where soil borings and other investigations were made in locations indicated in the report. The report does not reflect specific variations that may occur between these data collection points.
   2. Information indicated relative to soil moisture content and water table elevations represent conditions which existed at the time of the testing only and are subject to daily and/or seasonal variations. The Contractor shall not use this information as a fixed basis for bidding as the the Contractor is expected to anticipate fluctuations in these areas and anticipate adjustments in his procedures to accommodate such.

D. A geotechnical engineer will be retained by the Owner to observe performance of work in connection with excavating, trenching, filling, backfilling, and grading, and to perform compaction tests.

1.3 OWNER'S RECORD DRAWINGS

A. The Owner is in possession of record drawings of existing site improvements and buildings. These drawings may be inspected at the office of the Owner.

B. Use of Owner's Record Drawings:
   1. These drawings, along with visual observations, were used for the Architect's guidance in the design of this Project, and are not a contract document.
   2. These drawings are available to bidders, for information only, so that bidders have full disclosure of all information available to the Owner and Architect with respect to existing improvements at the Site. These drawings are not a warranty of subsurface or hidden conditions.
   3. Bidders should visit the site and acquaint themselves with existing conditions.

4. Prior to bidding, bidders may make their own investigations to satisfy themselves as to existing conditions, but such investigations may be performed only under time schedules and arrangements approved in advance by the Architect and the Owner.

C. Cautions to Contractor: These drawings represent only those conditions existing at the time the drawings were prepared and may not reflect changes or construction subsequent to preparation of the drawings.

END OF SECTION 00 3100

SECTION 00 3110 - PRELIMINARY SCHEDULES

1. **START OF WORK:** Do not start work until receipt of written notice from Architect to proceed.

2. **PROJECT SCHEDULE:**
   - .1 **Anticipated Award Date:** April 1, 2020. This date is for preliminary scheduling only; Owner does not guarantee this date
   - .2 **Anticipated Notice to Proceed Date:** April 13, 2020. This date is for preliminary scheduling only; Owner does not guarantee this date.
   - .3 **Time for Completion:** Complete all Work **within 120 calendar days,** commencing with the date established in the written notice from Owner to proceed.

3. **OWNER OCCUPANCY**
   - .1 The schedule is intended as a maximum time frame and should the Contractor be able to expedite the Work, the Owner and Architect will assist in advancing within the terms of the Contract.
   - .2 The project will be in progress while students and staff are on site.

END OF SECTION 00 3110

SECTION 00 5210 - FORM OF AGREEMENT

1. **GENERAL:** Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division I - Specification Sections, apply to this Section.

2. **AGREEMENT FORM:** The Agreement Form to be used for this project between the Owner and the Contractor is included in this Section.

3. **EXECUTION:** The selected Bidder/Contractor shall execute the Agreement Form as noted in the Bid Form included in this Section.

END OF SECTION 00 5210

AGREEMENT BETWEEN OWNER AND CONTRACTOR

This Agreement effective _____, _____, by and between Porterville Unified School District, Tulare County, California, hereinafter called the "Owner" and _____, hereinafter called the "Contractor."

WITNESSETH: That the Contractor and the Owner for the consideration hereinafter named agree as follows:

ARTICLE I. SCOPE OF WORK. The Contractor agrees to furnish all labor, equipment and materials, including tools, implements, and appliances required, and to perform all the work in a good and workmanlike manner, free from any and all liens and claims from mechanics, material suppliers, subcontractors, artisans, machinists, teamsters, freight carriers, and laborers required for:

ALTERNATIVE EDUCATION COMPLEX
914 West Pioneer Avenue, Porterville, California

Bid Package Number _____, _____ [Bid Package description]

all in strict compliance with the plans, drawings and specifications therefore prepared by:

Mangini Associates Inc.,
4320 West Mineral King Avenue, Visalia, CA 93291, (559) 627-0530

and other contract documents relating thereto.

ARTICLE II. CONTRACT DOCUMENTS. The Contractor and the Owner agree that all of the documents listed in Article 1.1.1 of the General Conditions form the Contract Documents which form the Contract.

ARTICLE III. TIME TO COMPLETE AND LIQUIDATED DAMAGES.

Time of completion for this Bid Package shall be One Hundred and Twenty (120) calendar days from (a) the date of commencement of the Work as established in the Owner's Notice to Proceed, or (b) if no other date is established in a Notice to Proceed from Owner, the date One Hundred and Twenty (120) calendar days after full execution of the Agreement.

Failure to complete the Project within the time and in the manner provided for by the Contract Documents shall subject the Contractor to liquidated damages. For purposes of liquidated damages, the concept of substantial completion shall not constitute completion and is not part of the Contract Documents. The actual occurrence of damages and the actual amount of the damages which the Owner would suffer if the Project were not

completed within the specified times set forth are dependent upon many circumstances and conditions which could prevail in various combinations and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which the Owner would suffer in the event of delay include, but are not limited to, loss of the use of the Project, disruption of activities, costs of administration, supervision and the incalculable inconvenience and loss suffered by the public.

Accordingly, the parties agree that the amount herein set forth shall be the amount of damages which the Owner shall directly incur upon failure of the Contractor to complete the Project within the time specified: $ 1,000.00 , for each calendar day by which completion of the Project is delayed beyond the completion date as adjusted by change orders.

If the Contractor becomes liable under this section, the Owner, in addition to all other remedies provided by law, shall have the right to withhold any and all retained percentages of payments and/or progress payments, and to collect the interest thereon, which would otherwise be or become due the Contractor until the liability of the Contractor under this section has been finally determined. If the retained percentages and withheld progress payments appear insufficient to discharge all liabilities of the Contractor incurred under this Article, the Contractor and its sureties shall continue to remain liable to the Owner for such liabilities until all such liabilities are satisfied in full.

If the Owner accepts any work or makes any payment under this Agreement after a default by reason of delays, the payment or payments shall in no respect constitute a waiver or modification of any Agreement provisions regarding time of completion and liquidated damages.

ARTICLE IV. PAYMENT AND RETENTION. The Owner agrees to pay the Contractor in current funds _____ ($_____) for work satisfactorily performed after receipt of properly documented and submitted Applications for Payment and to make payments on account thereof as provided in the General Conditions.

The retention amount on this Project is Five percent (_5%). [*See Notice to Bidders for the basis for the finding.]*

ARTICLE V. CHANGES. Changes in this Agreement or in the Work to be done under this Agreement shall be made as provided in the General Conditions.

ARTICLE VI. TERMINATION. The Owner or Contractor may terminate the Contract as provided in the General Conditions.

ARTICLE VII. PREVAILING WAGES. The Project is a public work, the Work shall be performed as a public work and pursuant to the provisions of Section 1770 et seq. of the Labor Code of the State of California, which are hereby incorporated by reference and made a part hereof, the Director of Industrial Relations has determined the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime

work in the locality in which the work is to be performed, for each craft, classification or type of worker needed to execute this Contract. Per diem wages shall be deemed to include employer payments for health and welfare, pension, vacation, apprenticeship or other training programs, and similar purposes. Copies of the rates are on file at the Owner's principal office. The rate of prevailing wage for any craft, classification or type of workmanship to be employed on the Project is the rate established by the applicable collective bargaining agreement which rate so provided is hereby adopted by reference and shall be effective for the life of this Agreement or until the Director of the Department of Industrial Relations determines that another rate be adopted. It shall be mandatory upon the Contractor and on any subcontractor to pay not less than the said specified rates to all workers employed in the execution of this Agreement.

The Contractor and any subcontractor under the Contractor as a penalty to the Owner shall forfeit not more than Two Hundred Dollars ($200.00) for each calendar day or portion thereof for each worker paid less than the stipulated prevailing rates for such work or craft in which such worker is employed. The difference between such stipulated prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the stipulated prevailing wage rate shall be paid to each worker by the Contractor.

The Contractor and each Subcontractor shall keep or cause to be kept an accurate record for work on this Project showing the names, addresses, social security numbers, work classification, straight time and overtime hours worked and occupations of all laborers, workers and mechanics employed by them in connection with the performance of this Contract or any subcontract thereunder, and showing also the actual per diem wage paid to each of such workers, which records shall be open at all reasonable hours to inspection by the Owner, its officers and agents and to the representatives of the Division of Labor Law Enforcement of the State Department of Industrial Relations. The Contractor and each subcontractor shall furnish a certified copy of all payroll records directly to the Labor Commissioner.

Public works projects shall be subject to compliance monitoring and enforcement by the Department of Industrial Relations. A contractor or subcontractor shall not be qualified to submit a bid or to be listed in a bid proposal subject to the requirements of Public Contract Code section 4104 unless currently registered and qualified under Labor Code section 1725.5 to perform public work as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code. A contractor or subcontractor shall not be qualified to enter into, or engage in the performance of, any contract of public work (as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code) unless currently registered and qualified under Labor Code section 1725.5 to perform public work.

ARTICLE VIII. WORKING HOURS. In accordance with the provisions of Sections 1810 to 1815, inclusive, of the Labor Code of the State of California, which are hereby incorporated and made a part hereof, the time of service of any worker employed by the Contractor or a Subcontractor doing or contracting to do any part of the Work contemplated by this Agreement is limited and restricted to eight hours during any one calendar day and forty hours during any one calendar week, provided, that work may be

performed by such employee in excess of said eight hours per day or forty hours per week provided that compensation for all hours worked in excess of eight hours per day, and forty hours per week, is paid at a rate not less than one and one-half (1½) times the basic rate of pay. The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by them in connection with the Work. The records shall be kept open at all reasonable hours to inspection by representatives of the Owner and the Division of Labor Law Enforcement. The Contractor shall as a penalty to the Owner forfeit Twenty-five Dollars ($25.00) for each worker employed in the execution of this Agreement by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any one calendar day, and forty hours in any one calendar week, except as herein provided.

ARTICLE VIII. WORKING HOURS. In accordance with the provisions of Sections 1810 to 1815, inclusive, of the Labor Code of the State of California, which are hereby incorporated and made a part hereof, the time of service of any worker employed by the Contractor or a Subcontractor doing or contracting to do any part of the Work contemplated by this Agreement is limited and restricted to eight hours during any one calendar day and forty hours during any one calendar week, provided, that work may be performed by such employee in excess of said eight hours per day or forty hours per week provided that compensation for all hours worked in excess of eight hours per day, and forty hours per week, is paid at a rate not less than one and one-half (1½) times the basic rate of pay. The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by them in connection with the Work. The records shall be kept open at all reasonable hours to inspection by representatives of the Owner and the Division of Labor Law Enforcement. The Contractor shall as a penalty to the Owner forfeit Twenty-five Dollars ($25.00) for each worker employed in the execution of this Agreement by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any one calendar day, and forty hours in any one calendar week, except as herein provided.

ARTICLE IX. APPRENTICES. The Contractor agrees to comply with Chapter 1, Part 7, Division 2, Sections 1777.5 and 1777.6 of the California Labor Code, which are hereby incorporated and made a part hereof. These sections require that contractors and subcontractors employ apprentices in apprenticeable occupations in a ratio of not less than one hour of apprentice's work for each five hours of work performed by a journeyman (unless an exemption is granted in accordance with Section 1777.5) and that contractors and subcontractors shall not discriminate among otherwise qualified employees as indentured apprentices on any public works solely on the ground of sex, race, religious creed, national origin, ancestry or color. Only apprentices as defined in Labor Code Section 3077, who are in training under apprenticeship standards and who have signed written apprentice agreements, will be employed on public works in apprenticeable occupations. The responsibility for compliance with these provisions is fixed with the Contractor for all apprenticeable occupations.

ARTICLE X. DSA OVERSIGHT PROCESS. The Contractor must comply with the

applicable requirements of the Division of State Architect ("DSA") Construction Oversight Process ("DSA Oversight Process"), including but not limited to (a) notifying the Owner's Inspector of Record/Project Inspector ("IOR") upon commencement and completion of each aspect of the work as required under DSA Form 156; (b) coordinating the work with the IOR's inspection duties and requirements; (c) submitting verified reports under DSA Form 6-C; and (d) coordinating with the Owner, Owner's Architect, any Construction Manager, any laboratories, and the IOR to meet the DSA Oversight Process requirements without delay or added costs to the Project.

Contractor shall be responsible for any additional DSA fees related to review of proposed changes to the DSA-approved construction documents, to the extent the proposed changes were caused by Contractor's wrongful act or omissions. If inspected work is found to be in non-compliance with the DSA-approved construction documents or the DSA-approved testing and inspection program, then it must be removed and corrected. Any construction that covers unapproved or uninspected work is subject to removal and correction, at Contractor's expense, in order to permit inspection and approval of the covered work in accordance with the DSA Oversight Process.

ARTICLE XI. INDEMNIFICATION AND INSURANCE. The Contractor will defend, indemnify and hold harmless the Owner, its governing board, officers, agents, trustees, employees and others as provided in the General Conditions.

By this statement the Contractor represents that it has secured the payment of Workers' Compensation in compliance with the provisions of the Labor Code of the State of California and during the performance of the work contemplated herein will continue so to comply with said provisions of said Code. The Contractor shall supply the Owner with certificates of insurance evidencing that Workers' Compensation Insurance is in effect and providing that the Owner will receive thirty (30) days' notice of cancellation.

Contractor shall provide the insurance set forth in the General Conditions. The amount of general liability insurance shall be $_____ per occurrence for bodily injury, personal injury and property damage and the amount of automobile liability insurance shall be $_____ per accident for bodily injury and property damage combined single limit.

ARTICLE XII. **ENTIRE AGREEMENT.** The Contract constitutes the entire agreement between the parties relating to the Project, and supersedes any prior or contemporaneous agreement between the parties, oral or written, including the Owner's award of the Project to Contractor, unless such agreement is expressly incorporated herein. The Owner makes no representations or warranties, express or implied, not specified in the Contract. The Contract is intended as the complete and exclusive statement of the parties' agreement pursuant to Code of Civil Procedure section 1856.

ARTICLE XIII. EXECUTION OF OTHER DOCUMENTS. The parties to this Agreement shall cooperate fully in the execution of any and all other documents and in the completion of any additional actions that may be necessary or appropriate to give full force and effect to the terms and intent of the Contract.

ARTICLE XIIV. EXECUTION IN COUNTERPARTS. This Agreement may be executed in counterparts such that the signatures may appear on separate signature pages. A copy, or an original, with all signatures appended together, shall be deemed a fully executed Agreement.

ARTICLE XV. BINDING EFFECT. Contractor, by execution of this Agreement, acknowledges that Contractor has read this Agreement and the other Contract Documents, understands them, and agrees to be bound by their terms and conditions. The Contract shall inure to the benefit of and shall be binding upon the Contractor and the Owner and their respective successors and assigns.

ARTICLE XVI. SEVERABILITY; GOVERNING LAW; CHOICE OF FORUM. If any provision of the Contract shall be held invalid or unenforceable by a court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof. The Contract shall be governed by the laws of the State of California. Any action or proceeding seeking any relief under or with respect to this Agreement shall be brought solely in the Superior Court of the State of California for the County of Merced, subject to transfer of venue under applicable State law, provided that nothing in this Agreement shall constitute a waiver of immunity to suit by Owner.

ARTICLE XVII. AMENDMENTS. The terms of the Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever except by written agreement signed by the parties and approved or ratified by the Governing Board.

ARTICLE XVIII. ASSIGNMENT OF CONTRACT. The Contractor shall not assign or transfer by operation of law or otherwise any or all of its rights, burdens, duties or obligations without the prior written consent of the surety on the payment bond, the surety on the performance bond and the Owner.

ARTICLE XIX. WRITTEN NOTICE. Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified or overnight mail to the last business address known to the person who gives the notice.

(CONTRACTOR) **(OWNER)**

[Name]_____ _____

_____ _____

SIGNED BY (Contractor)

_____(Title) _____(Title)

_____

CALIFORNIA CONTRACTOR'S
LICENSE NO.

_____

LICENSE EXPIRATION DATE

NOTE: Contractor must give the full business address of the Contractor and sign with Contractor's usual signature. Partnerships must furnish the full name of all partners and the Agreement must be signed in the partnership name by a general partner with authority to bind the partnership in such matters, followed by the signature and designation of the person signing. The name of the person signing shall also be typed or printed below the signature. Corporations must sign with the legal name of the corporation, followed by the name of the state of incorporation and by the signature and designation of the chairman of the board, president or any vice president, and then followed by a second signature by the secretary, assistant secretary, the chief financial officer or assistant treasurer. All persons signing must be authorized to bind the corporation in the matter. The name of each person signing shall also be typed or printed below the signature. Satisfactory evidence of the authority of the officer signing on behalf of a corporation shall be furnished.

J:\wdocs\90005\007\agt\00351012.DOC

This is a fiduciary account created by statute, Public Contract Code section 22300. The funds deposited in this account shall not be released to Contractor or any other person or entity, other than Owner, including pursuant to any purported lien or writ of attachment or execution, without the prior written, express approval of Owner.

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between the Porterville Unified School District, whose address is 600 W. Grand Avenue, Porterville, CA 93257 (hereinafter called "Owner"),_____whose address is _____ _____ (hereinafter called "Contractor"); and _____ _____, a state or federally chartered bank in California whose address is _____ _____(hereinafter called "Escrow Agent").

For the consideration hereinafter set forth, the Owner, Contractor, and Escrow Agent agree as follows:

l. Pursuant to section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by the Owner pursuant to the Contract entered into between the Owner and Contractor in the amount of_____ Dollars ($_____), and dated _____, ____, (the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the retention earnings directly to the Escrow Agent. When Contractor deposits the securities as a substitute for retention earnings, the Escrow Agent shall notify the Owner within ten (10) calendar days of the deposit. The market value of the securities at the time of the substitution, as valued by the Owner, shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the Owner and Contractor. If the Owner determines that the securities are not adequate it will notify Contractor and Escrow Agent, and Contractor shall deposit additional security as further determined by the Owner. Securities shall be held in the name of the Owner and shall designate the Contractor as the beneficial owner.

2. Thereafter, Owner shall make progress payments to the Contractor for such funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

3. Pursuant to Public Contract Code section 22300, as an alternative to the procedures set forth above, Contractor may request in writing that the Owner pay

retention amounts directly to Escrow Agent. When the Owner makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for benefit of the Contractor until such time as the escrow created under this Escrow Agreement is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

4. The Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor and Escrow Agent.

5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

7. The Owner shall have the right to draw upon the securities or any amount paid directly to Escrow Agent in the event of default by the Contractor. Upon seven (7) days written notice to the Escrow Agent from the Owner of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash, including any amounts paid directly to Escrow Agent pursuant to Section 3 above, as instructed by Owner. Escrow Agent shall not be concerned with the validity of any notice of default given by Owner pursuant to this paragraph, and shall promptly comply with Owner's instructions to pay over said escrowed assets. Escrow Agent further agrees to not interplead the escrowed assets in response to a conflicting demand and hereby waives any present or future opportunity of interpleader.

8. Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from the Owner and Contractor pursuant to Sections (4), (5), (6), (7) and (8) of this Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner, the Contractor and the Escrow Agent in connection with the foregoing, and exemplars of their respective signatures are as follows:

ON BEHALF OF OWNER:

_____
Signature

_____
Typewritten Name

_____
Title

ON BEHALF OF CONTRACTOR:

_____
Signature

_____
Typewritten Name

_____
Title

ON BEHALF OF ESCROW AGENT:

_____
Signature

_____
Typewritten Name

_____
Title

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

OWNER:

_____
Signature

_____
Typewritten Name

_____
Title

CONTRACTOR:

_____
Signature

_____
Typewritten Name

_____
Title

ESCROW AGENT:

_____
Signature

_____
Typewritten Name

_____
Title

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

NOTICE TO BIDDERS

Notice is hereby given that Porterville Unified School District (hereinafter referred to as "Owner") will receive bids prior to the date and time stated for:

ALTERNATIVE EDUCATION COMPLEX
914 West Pioneer Avenue, Porterville, California

as per drawings and specifications which may now be obtained from the Architect

Mangini Associates Inc.,
4320 West Mineral King Avenue, Visalia, CA 93291, (559) 627-0530

upon deposit of ($200.00) refundable when drawings and specifications are returned in good condition as indicated in the "Instruction to Bidders."

The Project will be bid as multiple prime contracts according to the list below:

Bid Package Number	**Bid Package Description**	
BID PACKAGE #1	SITE PREPARATION	
BID PACKAGE #2	SITE DEVELOPMENT	
BID PACKAGE #3	CONCRETE	
BID PACKAGE #4	SITE AND BUILDING PLUMBING	
BID PACKAGE #5	ELECTRICAL	

The lowest bid shall be determined:

1. On the amount of the base bid.

The Owner reserves the right to add or deduct any of the additive or deductive items after the lowest responsible and responsive bidder is determined.

All general contractors submitting bids must have been prequalified by the Owner pursuant to Public Contract Code section 20111.6, prior to submitting a bid. A bid submitted by a general contractor that is not prequalified will not be accepted and will not be considered by the Owner. To be prequalified for the Project, the contractor must have previously completed and returned the prequalification application, and the Owner must have deemed the contractor qualified. Additionally, any subcontractors listed on the subcontractor designation form for work requiring C-4, C-7, C-10, C-16, C-20, C-34, C-

36, C-38, C-42, C-43, or C-46 licenses must have current prequalified status with the Owner. The list of prequalified subcontractors is posted on the Owner's website.

Public works projects shall be subject to compliance monitoring and enforcement by the Department of Industrial Relations. A contractor or subcontractor shall not be qualified to submit a bid or to be listed in a bid proposal subject to the requirements of Public Contract Code section 4104 unless currently registered and qualified under Labor Code section 1725.5 to perform public work as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code. A contractor or subcontractor shall not be qualified to enter into, or engage in the performance of, any contract of public work (as defined by Division 2, Part 7, Chapter 1 (§§1720 et seq.) of the Labor Code) unless currently registered and qualified under Labor Code section 1725.5 to perform public work.

Time of completion for this Bid Package shall be One Hundred and Twenty (120) calendar days from (a) the date of commencement of the Work as established in the Owner's Notice to Proceed, or (b) if no other date is established in a Notice to Proceed from Owner, the date One Hundred and Twenty (120) calendar days after full execution of the Agreement.

The retention amount on this Project is (5%).

Bids will be received and submitted electronically through the District's **Vendor Registry.** If you have any questions please contact the Director of Facilities, Owen Fish at (559)-740-9075 or email: ofish@portervilleschools.org.

on _**March 31, 2020, before 10:00 a.m. PST** on the clock designated by the Owner or its representative as the bid clock. The bid package number and description shall be stated on the bid packet cover.

An optional pre-bid conference will be held on _**March 11, 2020, at 10:00 a.m**. at the project site, 914 West Pioneer Ave., Porterville CA. Whether or not bidders attend the optional pre-bid conference, which will include the opportunity to inspect the site and may include dissemination of additional information in response to questions or otherwise, all bidders will be deemed to have notice of all conditions and information which bidders could have obtained by attending the optional pre-bid conference, including but not limited to any conditions in, at, and about the site, the building or buildings, if any, and any work that may have been done thereon.

The Owner will require the successful Bidder to achieve the minimum goal of 3% DVBE (Disabled Veteran Business Enterprises) established in the bidding documents or to provide acceptable evidence of good faith efforts to do so. The DVBE documents must be sealed and filed with the bid package at the time the bids are due, and at which time the bids (including the DVBE forms) will be opened in public.

Bids must be accompanied by a bidder's bond for at least ten percent (10%) of the amount of the base bid, or cashier's check, or certified check for at least five percent (5%) of the amount of the base bid and made payable to the Owner. If a bid bond is used, it must be issued by an Admitted Surety (an insurance organization authorized by the

Insurance Commissioner to transact surety insurance in the State of California during this calendar year), which shall be given as a guarantee that the bidder will enter into a Contract if awarded the Work and will be declared forfeited, paid to, or retained by the Owner as liquidated damages if the bidder refuses or neglects to enter into the Contract provided by the Owner after being requested to do so. The surety insurer must, unless otherwise agreed to by Owner in writing, at the time of issuance of the bond, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurer selected by Contractor and to require Contractor to obtain a bond from a surety insurer satisfactory to the Owner.

Bids must be accompanied by an executed Fingerprinting Notice and Acknowledgment.

Pursuant to the Contract Documents, the successful bidder will be required to furnish a Payment (Labor and Material) Bond in the amount of one hundred percent (100%) of the Contract Sum, and a Faithful Performance Bond in the amount of one hundred percent (100%) of the Contract Sum, said bonds to be secured from Admitted Surety insurers (an insurance organization authorized by the Insurance Commissioner to transact business of insurance in the State of California during this calendar year). The surety insurers must, unless otherwise agreed to by Owner in writing, at the time of issuance of the bond, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurers selected by the successful bidder and to require the successful bidder to obtain bonds from surety insurers satisfactory to the Owner. The bidder will be required to furnish insurance as set forth in the Contract Documents.

The successful bidder will be allowed to substitute securities or establish an escrow in lieu of retainage, pursuant to Public Contract Code Section 22300, and as described in the Agreement Between Owner and Contractor and General Conditions.

The Owner will not consider or accept any bids from contractors who are not licensed to do business in the State of California, in accordance with the California Public Contract Code, providing for the licensing of contractors. In accordance with Section 3300 of said Code, the bidder shall have a Class license as required for their respective trade and shall maintain that license in good standing through Project completion and all applicable warranty periods. Bidder shall state the California contractor license number on the Designation of Subcontractors form for all subcontractors doing more than one-half of one percent (0.5%) of the bidder's total bid. An inadvertent error in listing a California contractor's license number shall not be grounds for filing a bid protest or for considering the bid nonresponsive if the bidder submits the corrected contractor's license number to the Owner within 24 hours after the bid opening, or any continuation thereof, so long as the corrected contractor's license number corresponds to the submitted name and location for that subcontractor.

Subcontractors shall maintain their licenses in good standing through Project completion and all applicable warranty periods. Owner reserves the right to reject any bid as nonresponsive if bidder or any subcontractor is not licensed in good standing from the time the bid is submitted to Owner up to award of the Contract, whether or not the bidder listed the subcontractor inadvertently, or if a listed subcontractor's license is suspended

or expires prior to award of the Contract. Owner also reserves the right to reject any bid as nonresponsive if a listed subcontractor's license is not in good standing to perform the work for which it is listed from the time of submission of the bidder's bid to award of the Contract.

The Director of Industrial Relations of the State of California, in the manner provided by law, has ascertained the general prevailing rate of per diem wages and rate for legal holidays and overtime work. The Contractor must pay for any labor therein described or classified in an amount not less than the rates specified. Copies of the required rates are on file at the Owner's business office and are available to any interested party on request.

The Owner reserves the right to waive any irregularity and to reject any or all bids.

Unless otherwise required by law, no bidder may withdraw its bid for a period of sixty (60) days after the date set for the opening thereof or any authorized postponement thereof. The Owner reserves the right to take more than sixty (60) days to make a decision regarding the rejection of bids or the award of the Contract.

Advertise: 1st Publication Date: March 6, 2020
2nd Publication Date: March 13, 2020

_____

By:_____
Its:_____

J:\wdocs\90005\007\agt\00351011.DOC

INSTRUCTIONS TO BIDDERS

SECURING DOCUMENTS:

Drawings and Specifications are available at:

Mangini Associates Inc.,
4320 West Mineral King Avenue, Visalia, CA 93291, (559) 627-0530

DEPOSIT:

A deposit of ($200.00) is required of each bidder securing Contract Documents. This deposit is a guarantee that the Contract Documents will be returned in good condition within fifteen (15) days from the bid date. If the Contract Documents have not been returned within fifteen (15) days of the bid date, the bidder's deposit will be forfeited.

BID FORMAT:

Bids shall be on a lump sum basis.

PREQUALIFICATION:

This Project is subject to prequalification and all general contractors submitting bids must have been prequalified by the Owner. If a bidder was not prequalified to bid on the Project, Owner will not accept the bid. Any subcontractors the bidder lists for work requiring *C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, and C-43* licenses must have current pre-qualified status with the Owner.

REGISTRATION:

The Owner shall not accept any bid or enter into any contract without proof of the bidder's current registration to perform public work under Labor Code section 1725.5.

The bidder shall not accept any subbid or enter into any subcontract without proof of the subcontractor's current registration to perform public work under Labor Code section 1725.5.

BIDS:

Bids to receive consideration shall be made in accordance with the following instructions:

1. Bids shall be made on a form therefor, obtained from the Architect or Owner. Bids not made on the proper form shall be disregarded. Numbers must be stated in words and figures, and the signatures of all individuals must be in longhand.

2. No bid will be considered which makes exceptions, changes, or in any manner makes reservations to the terms of the drawings or specifications.

3. Questions regarding documents, discrepancies, omissions, or doubt as to meanings shall be referred immediately to the Architect, who will send written instructions clarifying such questions to each bidder. Oral responses will not be binding on the Owner or Architect.

4. Each bid must give the full business address of the bidder and be signed by bidder with bidder's usual signature. Bids by partnerships must furnish the full name of all partners and must be signed in the partnership name by a general partner with authority to bind the partnership in such matters, followed by the signature and designation of the person signing. The name of the person signing shall also be typed or printed below the signature. Bids by corporations must be signed with the legal name of the corporation, followed by the name of the state of incorporation and by the signature and designation of the chairman of the board, president or any vice president, and then followed by a second signature by the secretary, assistant secretary, the chief financial officer or assistant treasurer. All persons signing must be authorized to bind the corporation in the matter. The name of each person signing shall also be typed or printed below the signature. Satisfactory evidence of the authority of the officer signing on behalf of a corporation shall be furnished.

5. Pursuant to the provisions of Sections 4100 to 4114, inclusive, of the Public Contract Code of the State of California, which are hereby incorporated and made a part hereof and these Instructions to Bidders, every bidder shall set forth in its bid:

   A. The name and location of the place of business and the California contractor license number of each subcontractor who will perform work or labor or render service to the bidder in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the bidder, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half (½) of one percent (1%) of the bidder's total bid. An inadvertent error in listing a California contractor's license number shall not be grounds for filing a bid protest or for considering the bid nonresponsive if the bidder submits the corrected contractor's license number to the Owner within 24 hours after the bid opening, or any continuation thereof, so long as the corrected contractor's license number corresponds to the submitted name and location for that subcontractor.

   B. The portion of the Work which will be done by each such subcontractor. If the bidder fails to specify a subcontractor for any portion of the Work to be performed under the Contract in excess of one-half (½) of one percent

(1%) of the bidder's total bid, the bidder agrees to perform that portion itself. The successful bidder shall not, without the consent of the Owner:

1) Substitute any person as subcontractor in place of the subcontractor designated in the original bid.

2) Permit any subcontract to be assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the bid.

3) Sublet or subcontract any portion of the Work in excess of one-half (½) of one percent (1%) of the total bid as to which the original bid did not designate a subcontractor.

6. The Director of Industrial Relations of the State of California, in the manner provided by law, has ascertained the general prevailing rate of per diem wages and the rate for legal holidays and overtime work. The Contractor must pay for any labor therein described or classified in an amount not less than the rates specified. Copies of the required rates are on file at the Owner's business office and are available to any interested party on request.

7. All bids must be accompanied by a completed Noncollusion Declaration and Sufficient Funds Declaration (Labor Code § 2810). All bids must be accompanied by an executed Fingerprinting Notice and Acknowledgment.

8. Bids must be accompanied by a certified check or cashier's check an amount not less than five percent (5%) of the amount of the base bid, or bidder's bond, for an amount not less than ten percent (10%) of the amount of the base bid, made payable to the order of the Owner. If a bidder's bond accompanies the bid, said bond shall be secured by an Admitted Surety (an insurance organization authorized by the Insurance Commissioner to transact business of insurance in the State of California during this calendar year). The surety insurer must, unless otherwise agreed to by Owner in writing, at the time of issuance of the bond, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurer selected by Contractor and to require Contractor to obtain a bond from a surety insurer satisfactory to the Owner. Said check or bond shall be given as a guarantee that the bidder will enter into the Contract if awarded the Work, and in case of refusal or failure to enter into said Contract, the check or bond, as the case may be, shall be payable to the Owner and retained as liquidated damages.

9. Bids shall be submitted electronically through the District's Vendor Registry as indicated in the Notice to Bidders.

10. **THIS CONTRACT IS SUBJECT TO THE DVBE REQUIREMENTS OF EDUCATION CODE SECTION 17076.11.**

WITHDRAWAL OF BIDS:

Bids may be withdrawn by bidders prior to the time fixed for the submittal of bids or any authorized postponement thereof. A successful bidder shall not be relieved of the bid unless by consent of the Owner or bidder's recourse to Public Contract Code §5100 et seq.

EXAMINATION OF CONTRACT DOCUMENTS AND SITE:

Before submitting a bid, bidders shall examine the drawings, read the specifications, the form of Agreement between Contractor and Owner, and the other Contract Documents. Bidders shall visit the site of the proposed Work, examine the building, or buildings, if any, and any work that may have been done thereon. Bidders shall fully inform themselves of all conditions, in, at, and about the site, the building or buildings, if any, and any work that may have been done thereon.

Pursuant to Public Contract Code section 1104: 1) bidders shall not be required to assume responsibility for the completeness and accuracy of architectural or engineering plans and specifications, except on clearly designated design build projects; 2) however, bidders shall be required to review architectural or engineering plans and specifications prior to submission of their bids and to report any errors and omissions to the Architect; and 3) the review shall be confined to the bidder’s capacity as a bidder and not as a licensed design professional.

FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:

The form of Agreement between Owner and Contractor which the successful bidder will be required to execute, if awarded the Work, is a part of this Bid Package.

ADDENDA OR BULLETINS:

Any addenda or bulletins, issued during the time of bidding, shall form a part of the drawings and specifications loaned to the bidder for the preparation of its bid, shall be covered in the bid, and shall be made a part of the Contract Documents. All addenda or bulletins shall be signed by the Architect and approved by the Division of State Architect.

EVIDENCE OF RESPONSIBILITY:

Upon the request of Owner, a bidder shall submit promptly satisfactory evidence showing the bidder's financial resources, the bidder's experience in the type of work required by the Owner, the bidder's organization available for the performance of the Contract, and any other required evidence of the bidder's or its subcontractor's qualifications to perform the proposed Contract. The Owner may consider such evidence before making its

decision awarding the proposed Contract. Failure to submit evidence of the bidder's or its subcontractors' responsibility to perform the proposed Contract may result in rejection of the bid.

AWARD OF CONTRACT:

Rejection of any or all bids, to contract work with whomever and in whatever manner, to abandon work entirely, and/or to waive any informality in receiving of bids is reserved as the right of the Owner. Before the Contract is awarded, the Owner may at its sole discretion, require from the proposed Contractor further evidence of the reasonable qualifications of such contractor to faithfully, capably, and reasonably perform such proposed Contract and may consider such evidence before making its decision on the award of such proposed Contract.

The Contract shall be awarded to the lowest responsible and responsive bidder as interpreted by the Owner under California law and as specified herein and shall be entered into by the successful bidder within ten (10) days after mailing, faxing or delivery of the Notice of Award of Contract. Owner reserves the right, without any liability, to cancel the award of any bid for any reason at any time before the full execution of the Agreement between Owner and Contractor.

EXECUTION OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:

The Agreement between Owner and Contractor shall be signed by the successful bidder in as many originals as the Owner deems necessary and returned, together with the required Contract bonds, insurance certificates, additional insured endorsement, declarations page, a Public Contract Code section 3600(a) Roof Project Certification, if required, and Independent Contractor Student Contact Form, within ten (10) days after the mailing, faxing or delivering of the Notice of Award of Contract. If the ten (10) day period would expire after the date for commencement of the Work, Contractor must submit the documents before the date of commencement of the Work. If the successful bidder does not comply with this paragraph, Owner may revoke and/or cancel the award to the successful bidder and award the Contract to the next lowest bidder, or may otherwise proceed as allowed by law. A Roof Project Certification is not required if (1) the Owner has ADA (average daily attendance) of 2,500 or less, or (2) the Project involves repair of 25% or less of the roof, or costs $21,000 or less.

CONTRACT BONDS:

As required by the Contract Documents, two bonds, as itemized below and in the forms presented in these Contract Documents, shall be furnished by the successful bidder at the time of entering into the Contract and filed with the Owner before the successful bidder commences any work. They shall be in the form of surety bonds issued by Admitted Surety insurers (an insurance organization authorized by the Insurance Commissioner to transact business of insurance in the State of California during this calendar year). The surety insurers must, unless otherwise agreed to by Owner in writing, at the time of

issuance of the bond, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurers selected by Contractor and to require Contractor to obtain bonds from surety insurers satisfactory to the Owner.

Performance Bond in the amount of one hundred percent (100%) of the Contract Sum to insure Owner during construction and for one year after completion and during any warranty or guaranty period against faulty or improper materials or workmanship and to assure Owner of full and prompt performance of the Contract.

Payment Bond (Labor and Material) in the amount of one hundred percent (100%) of the Contract Sum in accordance with the laws of the State of California to secure payment of any and all claims for labor and materials used or consumed in performance of this Contract.

DRAWINGS, SPECIFICATIONS AND ADDENDA OR BULLETINS:

Return by each bidder of all drawings, specifications and addenda or bulletins in an unmutilated condition and without any marks or annotations is demanded within the time limit indicated under **DEPOSIT** in this section.

SUBSTITUTION OF MATERIALS:

The Contractor must ensure that the proposed substitutions by the Contractor or its subcontractors are submitted to the Architect a minimum of fourteen (14) calendar days prior to the Bid Opening for the Architect's review and possible approval of any equipment or materials thought to be equal to or better than those specified in the drawings or specifications. An addendum will be issued seven (7) calendar days prior to Bid Opening, including all equipment and materials deemed equivalent to those specified and approved by the Architect. Submittals shall include comparative spec-data of the specified equipment or material and the proposed substitution as set forth in the Contract Documents. Submittals without this information will be automatically rejected.

PAYMENTS:

Payments to the Contractor on account of the Contract shall be made in accordance with the terms of the Contract Documents.

TAXES:

The Owner is generally exempt from payment of Federal Excise Tax on materials. The Owner will furnish exemption certificates to the Contractor to be used to obtain materials ordinarily subject to Federal Excise Tax without payment of the tax. Bidder shall deduct Federal Excise Taxes from their bid prices before submitting bids, so that such taxes will not be included in the Contract Sum.

EARLY TERMINATION:

Notwithstanding any provision herein to the contrary, if for any fiscal year of this Contract the governing body of the Owner fails to appropriate or allocate funds for future periodic payments under the Contract after exercising reasonable efforts to do so, the Owner may upon thirty (30) days' notice, order work on the Project to cease. The Owner will remain obligated to pay for the work already performed but shall not be obligated to pay the balance remaining unpaid beyond the fiscal period for which funds have been appropriated or allocated and for which the work has not been done.

TIME OF COMPLETION AND LIQUIDATED DAMAGES:

Time of completion for this Bid Package shall be One Hundred and Twenty (120) calendar days from (a) the date of commencement of the Work as established in the Owner's Notice to Proceed, or (b) if no other date is established in a Notice to Proceed from Owner, the date One Hundred and Twenty (120) calendar days after full execution of the Agreement.

Liquidated damages will accrue and may be assessed as provided in the Contract Documents. Should said Work not be completed within the time limit as may be extended as herein provided, damages will be sustained by the Owner. It is understood and agreed that it is and will be impracticable or extremely difficult to determine the actual amount of damages which the Owner will sustain in the event of and by reason of such delay, and it is therefore agreed that the Contractor will pay the Owner the sum of **($1,000.00) per calendar day** for each and every day's delay beyond the time specified as and for liquidated damages, during or as a result of each calendar day by which completion of the Project is delayed beyond the completion date; in case the Contractor fails to make such payment, the Owner may deduct the amount thereof from any money due or that may become due the Contractor under the Contract. Should such money not be sufficient, the Owner shall have the right to recover the balance from the Contractor or its sureties.

BID FORM

_____, California
_____, _____

600 W. Grand Avenue
Porterville, CALIFORNIA 93257

Dear Board Members:

The undersigned doing business under the firm name of:

_____
hereby propose and agree to enter into a Contract, to furnish any and all labor, materials, applicable taxes, equipment and services for the completion of Work included in Bid Package Number____,_____ [Bid Package description] as described hereinafter and in the Contract Documents:

ALTERNATIVE EDUCATION COMPLEX
914 West Pioneer Avenue, Porterville, California

prepared by:

Mangini Associates Inc.,
4320 West Mineral King Avenue, Visalia, CA 93291, (559) 627-0530

BASE BID: Lump Sum price for construction of the Base Bid portion of the Project (in accordance with the Contract Documents):

_____**Dollars**

($_____)

If written notice of the Award of Contract is mailed, faxed, or delivered to the undersigned at any time before this bid is withdrawn, the undersigned shall, within ten (10) days after the date of such mailing, faxing, or delivering of such notice, execute and deliver an agreement in the form of agreement present in these Contract Documents and give Performance and Payment Bonds in accordance with the specifications and bid as accepted.

The undersigned hereby designates as the office to which such Notice of Award of Contract may be mailed, faxed, or delivered:

_____

_____

Our Public Liability and Property Damage Insurance is placed with:

_____

_____

Our Workers' Compensation Insurance is placed with:

_____

_____

Circular letters, bulletins, addenda, etc., bound with the specifications or issued during the time of bidding are included in the bid, and, in completing the Contract, they are to become a part thereof.

The receipt of the following addenda to the specifications is acknowledged:

Addendum No. _____ Date _____ Addendum No. _____ Date _____

Addendum No. _____ Date _____Addendum No. _____ Date _____

Addendum No. ____ Date _____Addendum No. _____ Date _____

This bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

A bidder shall not submit a bid unless the bidder's California contractor's license number appears clearly on the bid, the license expiration date and class are stated, and the bid contains a statement that the representations made therein are made under penalty of perjury. Any bid submitted by a contractor who is not licensed pursuant to Business and Professions Code section 7028.15 shall be considered nonresponsive and shall be rejected. Any bid not containing the above information may be considered nonresponsive and may be rejected.

NOTE: Each bid must give the full business address of the bidder and be signed by bidder with bidder's usual signature. Bids by partnerships must furnish the full name of all partners and must be signed in the partnership name by a general partner with

authority to bind the partnership in such matters, followed by the signature and designation of the person signing. The name of the person signing shall also be typed or printed below the signature. Bids by corporations must be signed with the legal name of the corporation, followed by the name of the state of incorporation and by the signature and designation of the chairman of the board, president or any vice president, and then followed by a second signature by the secretary, assistant secretary, the chief financial officer or assistant treasurer. All persons signing must be authorized to bind the corporation in the matter. The name of each person signing shall also be typed or printed below the signature. Satisfactory evidence of the authority of the officer signing on behalf of a corporation shall be furnished.

The undersigned declares under penalty of perjury under the laws of the State of California that the representations made in this bid are true and correct.

Print or Type Name: _____

Title: _____

Name of Company as Licensed in California: _____

Business Address: _____

Telephone Number: _____

California Contractor License No.: _____

Class and Expiration Date: _____

State of Incorporation, if Applicable: _____

( ) Evidence of authority to bind corporation is attached.

Dated: _____,_____

Signed: _____

J:\wdocs\90005\007\agt\00327896.DOC

DESIGNATION OF SUBCONTRACTORS

Each bidder shall set forth below the name and the location of the place of business of each subcontractor and the California contractor license number of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the Work or improvement, or to a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent (0.5%) of the bidder's total bid, and the portion of the Work which will be done by each subcontractor. An inadvertent error in listing a California contractor's license number shall not be grounds for filing a bid protest or for considering the bid nonresponsive if the bidder submits the corrected contractor's license number to the Owner within 24 hours after the bid opening, or any continuation thereof, so long as the corrected contractor's license number corresponds to the submitted name and location for that subcontractor.

If the Contractor fails to specify a subcontractor for any portion of the Work to be performed under the Contract in excess of one-half of 1 percent (0.5%) of the Contractor's total bid, the Contractor shall be deemed to have agreed to perform such portion itself, and shall not be permitted to subcontract that portion of the Work except under the conditions hereinafter set forth.

Subletting or subcontracting of any portion of the Work as to which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the legislative body of the Owner.

As of March 1, 2015, for any bid proposal submitted, and as of April 1, 2015, for any contract for public work entered into, an inadvertent error in listing a subcontractor who is not registered under Labor Code section 1725.5 shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, provided that either: the subcontractor is registered prior to the bid opening; or the subcontractor is registered and has paid the penalty registration fee specified in Labor Code section 1725.5(a)(2)(E), if applicable, within 24 hours after the bid opening; or the subcontractor is replaced by another registered subcontractor under Public Contract Code section 4107. Failure of a listed subcontractor to be registered shall be grounds under Public Contract Code section 4107 for the Contractor, with the Owner's consent, to substitute a registered subcontractor for the unregistered subcontractor.

Failure to provide this information in a legible manner may result in the rejection of an otherwise acceptable bid.

NOTE: *Reproduce page two of this section for additional listings needed beyond the length of this form.*

Portion of Work	Name of Subcontractor & Phone No.	Location of Subcontractor	California Contractor License Number

Portion of Work	Name of Subcontractor & Phone No.	Location of Subcontractor	California Contractor License Number

Portion of Work	Name of Subcontractor & Phone No.	Location of Subcontractor	California Contractor's License Number

I am the authorized representative of the Bidder submitting this Designation of Subcontractors and I declare that each subcontractor listed holds a valid and current contractor license in good standing in California to perform the portion of work for which the subcontractor is listed.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, 20___, at _____[city],_____[state].

Signature: _____

Print Name: _____

Title: _____

J:\wdocs\90005\007\agt\00351018.DOC

WORKERS' COMPENSATION CERTIFICATE

Labor Code Section 3700, in relevant part, provides:

> "Every employer except the state shall secure the payment of compensation in one or more of the following ways:
>
> (a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.
>
> (b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer or as one employer in a group of employers. Said certificate may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees, … "

I am aware of the provisions of the Labor Code Section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract. I shall supply the Owner with certificates of insurance evidencing that Workers' Compensation Insurance is in effect and providing that the Owner will receive thirty (30) days' notice of cancellation.

_____
Name of Contractor

_____
Signature

_____ _____
Print Name Date

(In accordance with Article 5 (commencing at Section 1860], Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any work under the contract.)

DRUG-FREE WORKPLACE CERTIFICATION

This Drug-Free Workplace Certification is required pursuant to Government Code Sections 8350 *et seq*., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or services from any State agency must certify that it will provide a drug-free workplace by doing certain specified acts. In addition, the Act provides that each contract awarded by a State agency may be subject to suspension of payments or termination of the contract, or both, and the contractor may be subject to debarment from future contracting if the state agency determines that specified acts have occurred.

Pursuant to Government Code Section 8355, every person or organization awarded a contract or grant from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited in the person's or organization's workplace and specifying actions which will be taken against employees for violations of the prohibition;

(b) Establishing a drug-free awareness program to inform employees about all of the following:

(1) The dangers of drug abuse in the workplace;
(2) The person's or organization's policy of maintaining a drug-free workplace;
(3) The availability of drug counseling, rehabilitation and employee-assistance programs;
(4) The penalties that may be imposed upon employees for drug abuse Violations;

(c) Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by subdivision (a) and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code Section 8355 listed above and will publish a statement notifying employees concerning (a) the prohibition of controlled substance at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by Section 8355(a) and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the Owner determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of Section 8355, that the contract or grant awarded herein is subject to suspension of payments, termination, or both. I further understand that should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of Section 8350 *et seq*.

I acknowledge that I am aware of the provisions of Government Code Section 8350 *et seq*. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

_____
Name of Contractor

_____ Date: _____
Print Name

NONCOLLUSION DECLARATION
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

Owner:_____
Project: _____

The undersigned declares:

I am the _____of _____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, 20__,

at _____ [*city*], _____ [*state*].

_____
Signature

_____
Print Name

BID BOND

KNOW ALL MEN BY THESE PRESENTS that we the undersigned _____ as Principal and _____ as Surety, are hereby held and firmly bound unto the _____ "Owner" in the sum of _____ Dollars ($_____) for payment of which sum, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the Owner a certain bid, attached hereto and hereby made a part hereof, to enter into a Contract in writing for the construction of

_____

Bid Package Number _____, _____[Bid Package description]

in strict accordance with Contract Documents.

NOW, THEREFORE,

a. If said bid shall be rejected, or, in the alternative;

b. If said bid shall be accepted and the Principal shall execute and deliver a contract in the form of agreement attached hereto and shall execute and deliver Performance and Payment Bonds in the forms attached hereto (all properly completed in accordance with said bid), and shall in all other respects perform the agreement created by the acceptance of said bid;

Then this obligation shall be void, otherwise the same shall remain in full force and effect, it being expressly understood and agreed that the liability of the Surety for any and all default of the Principal hereunder shall be the amount of this obligation as herein stated.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract on the call for bids, or to the Work to be performed hereunder, or the specifications accompanying the same, shall in any way affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of said Contract or the call for bids, or to the Work, or to the specifications.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under several seals this _____ day of _____, _____, the name and corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body. In the presence of:

(Notary Seal)

_____
(Principal)

_____
(Business Address)

_____

_____
(Corporate Surety)

_____
(Business Address)

By:_____

_____

The rate or premium of this bond is _____ per thousand, the total amount of premium charged, $_____.

(The above must be filled in
by Corporate Surety).

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that we _____ _____ as Principal and _____ _____ as Surety, are held and firmly bound unto _____ _____, in the County of _____, State of California, hereinafter called the "Owner", in the sum of _____ Dollars ($_____) for the payment of which sum well and truly made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, to the Owner for the full performance of a certain contract with the Owner, the terms of which are incorporated herein by reference, dated _____, 20___ for construction of:

ALTERNATIVE EDUCATION COMPLEX
914 West Pioneer Avenue, Porterville, California

Bid Package Number ____, _____
[Bid Package description]

The condition of this obligation is such that, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Owner, with or without notice to the Surety, and for the period of time specified in the Contract after completion for correction of faulty or improper materials and workmanship and during the life of any guaranty or warranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreement of any and all duly authorized modifications of said Contract that may hereafter be made, then this obligation is to be void, otherwise to remain in full force and virtue.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder or the specifications accompanying the same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the Work, or to the specifications.

No further agreement between Surety and Owner shall be required as a prerequisite to the Surety performing its obligations under this bond.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this _____ day of _____, _____ hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(To be signed by)
(Principal and Surety,)
(and acknowledged and)
(Notarial Seal attached)

(Affix Corporate Seal)

_____
(Individual Principal)

_____
(Business Address)

(Affix Corporate Seal)

_____

(Corporate Principal)

_____
(Business Address)

(Affix Corporate Seal)

_____

(Corporate Surety)

_____
(Business Address)

_____

By:_____

_____

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged is _____.

The above must be filled in by Corporate Surety.

PAYMENT BOND
(Labor and Material)

KNOW ALL MEN BY THESE PRESENTS:

That WHEREAS, _____
(the "Owner" of the public works project described below) and _____
_____, hereinafter designated as the "Principal," have entered into a Contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to construct:

ALTERNATIVE EDUCATION COMPLEX
914 West Pioneer Avenue, Porterville, California

Bid Package Number ____, _____
[Bid Package description]

Which said agreement dated _____, _____, and all of the Contract Documents are hereby referred to and made a part hereof;

and

WHEREAS, the Principal is required, before entering upon the performance of the work, to file a good and sufficient bond with the body by whom the Contract is awarded to secure the claims arising under said agreement.

NOW, THEREFORE, THESE PRESENTS WITNESSETH:

That the said Principal and the undersigned _____
("Surety") are held and firmly bound unto all laborers, material men, and other persons, and bound for all amounts due, referred to in Civil Code section 9554, subdivision (b), in the sum of _____ Dollars ($_____) which sum well and truly be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the said Principal or any of its subcontractors, or the heirs, executors, administrators, successors, or assigns of any, all, or either of them, shall fail to pay any of the persons named in Civil Code section 9100, or any of the amounts due as specified in Civil Code section 9554, subdivision (b), that said Surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay costs and reasonable attorney's fees to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect.

And the said Surety, for value received, thereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of said contract or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety this _____ day of _____, _____.

(To be signed by)
(Principal and Surety,)
(and acknowledged and)
(Notarial Seal attached)

_____
Principal

_____

_____
Surety

_____

By:_____
Attorney-in-Fact

_____

The above bond is accepted and approved this _____ day of _____.

FINGERPRINTING NOTICE AND ACKNOWLEDGMENT
(Education Code Section 45125.2(a))

Note: This document must be executed and submitted with the bid.

Business entities entering into contracts with the Owner for the construction, reconstruction, rehabilitation or repair of a facility must comply with Education Code sections 45125.1 and 45125.2. Such entities are responsible for ensuring full compliance with the law and should therefore review all applicable statutes and regulations. The following information is provided simply to assist such entities with compliance with the law.

1. If the District determines your employee(s)will have more than limited contact with students, then you must take one or more of the following steps:

   a. Install a physical barrier at the worksite to limit contact with pupils.

   b. Have an employee, who the Department of Justice has ascertained has not been convicted of a violent or serious felony, continually monitor and supervise employees. The entity shall verify in the Independent Contractor Student Contact Form to the Owner that the employee charged with monitoring and supervising its employees has no such convictions. (See attached.)

   c. Arrange for surveillance of employees by personnel, with Owner approval.

   If one or more of these steps is taken, you are not required to comply with Education Code section 45125.1.

2. If you are providing the services in an emergency or exceptional situation, you are not required to comply with Education Code section 45125.2. An "emergency or exceptional" situation is one in which pupil health or safety is endangered or when repairs are needed to make a facility safe and habitable. Owner shall determine whether an emergency or exceptional situation exists.

I have read the foregoing and agree to comply with the requirements of Education Code §§ 45125.1 and 45125.2 as applicable.

Dated: _____ _____
Signature

Name: _____ Title: _____

ATTACHMENT

Under Education Code section 45125.1, no employee of a contractor or subcontractor who has been convicted of or has criminal proceedings pending for a violent or serious felony may come into contact with any student. A violent felony is any felony listed in subdivision (c) of Section 667.5 of the Penal Code. Those felonies are presently defined as:

(1) Murder or voluntary manslaughter.

(2) Mayhem.

(3) Rape as defined in paragraph (2) or (6) of subdivision (a) of Section 261 or paragraph (1) or (4) of subdivision (a) of Section 262.

(4) Sodomy as defined in subdivision (c) or (d) of Section 286.

(5) Oral copulation as defined in subdivision (c) or (d) of Section 288a.

(6) Lewd or lascivious act as defined in subdivision (a) or (b) of Section 288.

(7) Any felony punishable by death or imprisonment in the state prison for life.

(8) Any felony in which the defendant inflicts great bodily injury on any person other than an accomplice which has been charged and proved as provided for in Section 12022.7, 12022.8, or 12022.9 on or after July 1, 1977, or as specified prior to July 1, 1977, in Sections 213, 264, and 461, or any felony in which the defendant uses a firearm which use has been charged and proved as provided in subdivision (a) of Section 12022.3, or Section 12022.5 or 12022.55.

(9) Any robbery.

(10) Arson, in violation of subdivision (a) or (b) of Section 451.

(11) Sexual penetration as defined in subdivision (a) or (j) of Section 289.

(12) Attempted murder.

(13) A violation of Section 18745, 18750, or 18755.

(14) Kidnapping.

(15) Assault with the intent to commit a specified felony, in violation of Section 220.

(16) Continuous sexual abuse of a child, in violation of Section 288.5.

(17) Carjacking, as defined in subdivision (a) of Section 215.

(18) Rape, spousal rape, or sexual penetration, in concert, in violation of Section 264.1.

(19) Extortion, as defined in Section 518, which would constitute a felony violation of Section 186.22 of the Penal Code.

(20) Threats to victims or witnesses, as defined in Section 136.1, which would constitute a felony violation of Section 186.22 of the Penal Code.

(21) Any burglary of the first degree, as defined in subdivision (a) of Section 460, wherein it is charged and proved that another person, other than an accomplice, was present in the residence during the commission of the burglary.

(22) Any violation of Section 12022.53.

(23) A violation of subdivision (b) or (c) of Section 11418.

A serious felony is any felony listed in subdivision (c) Section 1192.7 of the Penal Code. Those felonies are presently defined as:

(1) Murder or voluntary manslaughter; (2) Mayhem; (3) Rape; (4) Sodomy by force, violence, duress, menace, threat of great bodily injury, or fear of immediate and unlawful bodily injury on the victim or another person; (5) Oral copulation by force, violence, duress, menace, threat of great bodily injury, or fear of immediate and unlawful bodily injury on the victim or another person; (6) Lewd or lascivious act on a child under the age of 14 years; (7) Any felony punishable by death or imprisonment in the state prison for life; (8) Any felony in which the defendant personally inflicts great bodily injury on any person, other than an accomplice, or any felony in which the defendant personally uses a firearm; (9) Attempted murder; (10) Assault with intent to commit rape, or robbery; (11) Assault with a deadly weapon or instrument on a peace officer; (12) Assault by a life prisoner on a non-inmate; (13) Assault with a deadly weapon by an inmate; (14) Arson; (15) Exploding a destructive device or any explosive with intent to injure; (16) Exploding a destructive device or any explosive causing bodily injury, great bodily injury, or mayhem; (17) Exploding a destructive device or any explosive with intent to murder; (18) Any burglary of the first degree; (19) Robbery or bank robbery; (20) Kidnapping; (21) Holding of a hostage by a person confined in a state prison; (22) Attempt to commit a felony punishable by death or imprisonment in the state prison for life; (23) Any felony in which the defendant personally used a dangerous or deadly weapon; (24) Selling,

furnishing, administering, giving, or offering to sell, furnish, administer, or give to a minor any heroin, cocaine, phencyclidine (PCP), or any methamphetamine-related drug, as described in paragraph (2) of subdivision (d) of Section 11055 of the Health and Safety Code, or any of the precursors of methamphetamines, as described in subparagraph (A) of paragraph (1) of subdivision (f) of Section 11055 or subdivision (a) of Section 11100 of the Health and Safety Code; (25) Any violation of subdivision (a) of Section 289 where the act is accomplished against the victim's will by force, violence, duress, menace, or fear of immediate and unlawful bodily injury on the victim or another person; (26) Grand theft involving a firearm; (27)carjacking; (28) any felony offense, which would also constitute a felony violation of Section 186.22; (29) assault with the intent to commit mayhem, rape, sodomy, or oral copulation, in violation of Section 220; (30) throwing acid or flammable substances, in violation of Section 244; (31) assault with a deadly weapon, firearm, machine gun, assault weapon, or semiautomatic firearm or assault on a peace officer or firefighter, in violation of Section 245; (32) assault with a deadly weapon against a public transit employee, custodial officer, or school employee, in violation of Sections 245.2, 245.3, or 245.5; (33) discharge of a firearm at an inhabited dwelling, vehicle, or aircraft, in violation of Section 246; (34) commission of rape or sexual penetration in concert with another person, in violation of Section 264.1; (35) continuous sexual abuse of a child, in violation of Section 288.5; (36) shooting from a vehicle, in violation of subdivision (c) or (d) of Section 26100; (37) intimidation of victims or witnesses, in violation of Section 136.1; (38) criminal threats, in violation of Section 422; (39) any attempt to commit a crime listed in this subdivision other than an assault; (40) any violation of Section 12022.53; (41) a violation of subdivision (b) or (c) of Section 11418; and (42) any conspiracy to commit an offense described in this subdivision.

INDEPENDENT CONTRACTOR STUDENT CONTACT FORM

Contractor Name: _____
Supervisor/Foreman Name: _____
Start Date: _____
Completion Date: _____
Location of Work: _____
Hours of Work: _____
Length of Time on Grounds: _____
Number of Employees on the Job: _____

Yes No

[ ] [ ] Employees will have more than limited contact with students as determined by District, or if by Contractor, please explain: _____
_____

If yes, the following steps will be taken to ensure student safety (check):

[ ] A physical barrier will be installed at the worksite to limit contact with pupils.

[ ] Employees will be continually monitored and supervised by an employee who has not been convicted of a violent or serious felony.

Name of Supervising Employee:_____

Date of Department of Justice verification that supervising employee has not been convicted of a violent or serious felony: _____

Name of employee who is the custodian of the Department of Justice verification information: _____

[ ] Employees will be surveilled by Owner's personnel.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Dated: _____ _____
Signature

Typed Name: _____
Title: _____

Note: This document must be executed and submitted with the executed Agreement between Owner and Contractor.

Sufficient Funds Declaration
(Labor Code section 2810)
To Be Executed by Bidder and Submitted with Bid

Owner: _____
Project: _____

I, _____, declare that I am the _____ of _____, the entity making and submitting the bid for the above Project that accompanies this Declaration, and that such bid includes sufficient funds to permit _____ [insert name of entity] to comply with all local, state or federal labor laws or regulations during the Project, including payment of prevailing wage, and that _____[the entity] will comply with the provisions of Labor Code section 2810(d) if awarded the Contract.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and executed on _____20__, at _____[city], _____[state].

Date:_____ _____
Signature
Print Name: _____
Print Title: _____

J:\wdocs\90005\007\agt\00327891.DOC

PRIME BIDDER CERTIFICATION OF DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION

To be completed by the Prime Bidder

PART I – IDENTIFICATION INFORMATION		
BIDDER'S NAME	BUSINESS ADDRESS	TELEPHONE NUMBER
SCHOOL DISTRICT	COUNTY	APPLICATION NO.

PART II – METHOD OF COMPLIANCE WITH DVBE PARTICIPATION GOALS – Include this form and any other applicable documents listed in this table with your bid/proposal. Read the three columns in the table below as sentences from left to right. Check the appropriate box to indicate your method of committing the contract dollar amount.

NOTE: *Architectural, engineering, environmental, land surveying or construction management firms must indicate their method of compliance by marking the appropriate box A, B, C, or D after selection by the District and before the contract is signed.*

YOUR BUSINESS ENTERPRISE	**AND YOU**	**AND YOU**
A. ☐ *is Disabled Veteran owned and your forces, will perform at least 3 percent of this contract*	*will include a copy of your DVBE letter from the Office of Small Minority Business (OSBCR).*	
B. ☐ *is Disabled Veteran owned* ***but is unable*** *to perform the 3 percent of this contract with your forces*	*will use DVBE subcontractors/ suppliers to bring the contract participation to at least 3 percent*	*will include a copy of each DVBE's letter from OSBCR (including yours, if applicable).*
C. ☐ *is* ***not*** *Disabled Veteran owned*	*will use DVBE subcontractors/ suppliers for at least 3 percent of this contract*	
D. ☐ *is unable to meet the required participation goals*	*will complete a Good Faith Effort to obtain DVBE participation*	*will include the Prime Bidder's Good Faith Effort Worksheet.*

Note: An Office of Small Business, Certification and Resources (OSBCR) letter must be attached for each DVBE participating in the contract. The DVBE letter is obtained by application through the OSBCR and must be provided at the time of bid opening. If the letter is not provided, the bid may be deemed nonresponsive and may be ineligible for award of the contract.

Continued on reverse side

PART III – DVBE DOLLAR PARTICIPATION OF BID/PROPOSAL – *Architectural, engineering, environmental, land surveying or construction management firms complete this part* ***after*** *selection by the district and before the contract is signed.*

Show deductive alternate(s) in parenthesis. For more alternates/base bids, use a separate page to show items.

A. If your business enterprise is a DVBE, list in the appropriate column the total dollar amount of your bid to be performed by your own participation.

B. List all your DVBE subcontractors/suppliers. Enter in the appropriate column the dollar amount for each of your subcontractors/suppliers.

C. Enter the total of Lines A and B for each column.

D. Enter the dollar amount of the bid/proposal to be performed by **non**-DVBE firms. Note: This line is the sum of the prime and subcontractor(s) **non**-DVBE dollar participation.

E. Enter the sum of the column totals from Line C and Line D. Note: Please be aware that the final determination of DVBE compliance is made based on the contract amount resulting from the district's acceptance or rejection of alternates.

	BASE BID/PROPOSAL	**ALTERNATE #1**	**ALTERNATE #2**	**ALTERNATE #3 OR BASE BID B**	**ALTERNATE #4 OR BASE BID C**	**ALTERNATE #5** (Modernization or Reconstruction Only)
A. Prime Bidder, *if DVBE (own participation)*	$	$	$	$	$	$
B. DVBE Subcontractor or Supplier						
1.						
2.						
3.						
4.						
C. Subtotal (A & B)						
D. Non-DVBE						
E. Total Bid						

PRIME BIDDER GOOD FAITH EFFORT WORKSHEET

This worksheet is to be used to assist the Prime Bidder in meeting the 3% DVBE participation goal

BIDDER'S NAME	BUSINESS ADDRESS	CONTACT PERSON
TELEPHONE NUMBER	OWNER	COUNTY

GENERAL INSTRUCTIONS:

This worksheet is to be used to assist you in meeting the 3 percent DVBE participation goal. If specific information is not provided for Parts I through III, you do not meet the test of the "Good Faith Effort" and cannot so certify. If you are qualifying based on a "Good Faith Effort" you must include this form with your bid/proposal to the Owner.

PART I – CONTACTS

To identify DVBE subcontractors/suppliers for participation in your bid/proposal, contact must be made with each of the following categories. It is recommended that you contact several DVBE organizations.

CATEGORY	TELEPHONE NUMBER	DATE CONTACTED	PERSON CONTACTED
1. Owner			
2. Office of Small Business, Certification and Resources (OSBCR). OSBCR publishes a list of Disabled Veteran Business Enterprises Internet address – http://www.dgs.ca.gov/osbcr	(916) 323-5478 (916) 322-5060		
3. DVBE Organizations (*List*):			
4. Write "recorded message" in this column, if applicable.			

PART II – ADVERTISEMENTS *You must make at least two (2) advertisements, one (1) in a paper that focuses on DVBE and one (1) in a trade paper. Advertisements should be published at least 14 days prior to bid/proposal opening; if you cannot advertise 14 days prior, advertise as soon as possible and provide an explanation. (Advertisements must be published in time to allow for a reasonable response). Advertisements must include that your firm is seeking DVBE participation, the project name and location, your firm's name, your firm's contact person, and phone number.*

Attach copies of advertisements to this form.

FOCUS/TRADE PAPER NAME	CHECK ONE		DATE OF ADVERTISEMENT
	TRADE	FOCUS	

PART III – DVBE SOLICITATIONS *List DVBE subcontractors/suppliers that were invited to bid. Use the following instructions to complete the remainder of this section (read the three columns as a sentence from left to right). If you need additional space to list DVBE solicitations, please use a separate page and attach to this form.*

IF THE DVBE…..	THEN…..	AND…..
Was selected to participate	Check "yes" in the "SELECTED" column, include the applicable dollar amount in Part III of the Prime Bidder Certification	Include a copy of their DVBE letter from OSBCR.
Was **not** selected to participate	Check "no" in the "SELECTED" column	State why in the "REASON NOT SELECTED" column.
Did not respond to your solicitation	Check the "NO RESPONSE" column	

DISABLED VETERANS BUSINESS ENTERPRISES CONTACTED	SELECTED		REASON NOT SELECTED *This section must be completed*	NO RESPONSE
	YES	NO		

IMPORTANT NOTE:

Please be aware that certification of the "Good Faith Effort" may only be made if you fully complete Parts I, II, and III on both sides of this form. A copy of this form must be retained by you and may be subject to a future audit.

CERTIFICATION

I, _____ certify that I am the bidder's Chief Executive Officer and that I have made a diligent effort to ascertain the facts with regard to the representations made herein. In making this certification, I am aware of Section 12650 et seq. of the Government Code providing for the imposition of treble damages for making false claims.

SIGNATURE OF CHIEF EXECUTIVE OFFICER	DATE

IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code sections 2202-2208)
(To be Executed by Bidder and Submitted With Bid)

As required by Public Contract Code ("PCC") section 2204 for contracts of $1,000,000 or more, please insert bidder's or financial institution's name and Federal ID Number (if available) and complete **one** of the options below. Please note that California law establishes penalties for providing false certifications, including civil penalties equal to the greater of $250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (PCC §2205.)

OPTION #1 - CERTIFICATION

I, the official named below, certify I am duly authorized to execute this certification on behalf of the bidder/financial institution identified below, and the bidder/financial institution identified below is **not** on the current list of persons engaged in investment activities in Iran created by California Department of General Services ("DGS") and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person/bidder, for 45 days or more, if that other person/bidder will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS. (PCC §2204(a).)

Bidder Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	
Printed Name and Title of Person Signing	
Date Executed	*Executed in*

OPTION #2 – EXEMPTION

Pursuant to Public Contract Code sections 2203(c) and (d), a public entity may permit a bidder/financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enters into or renews, a contract for goods and services. If you have obtained an exemption from the certification requirement under the Iran Contracting Act, please fill out the information below, and attach documentation demonstrating the exemption approval.

Bidder Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	
Printed Name and Title of Person Signing	*Date Executed*

GENERAL CONDITIONS

for

CONTRACT OF CONSTRUCTION

ALTERNATIVE EDUCATION COMPLEX
Bid Package Number _____, _____
[Bid Package Description]

Porterville Unified School District [OWNER]

_____
(date)

TABLE OF CONTENTS

ARTICLE 1

GENERAL CONDITIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to bid, Instructions to Bidders, Notice to Bidders, the Bid Form, Payment Bond, Performance Bond, required insurance certificates, additional insured endorsement and declarations page, Designation of Subcontractors, Noncollusion Declaration, Roof Project Certification (where applicable), Sufficient Funds Declaration (Labor Code section 2810) and the Fingerprinting Notice and Acknowledgment and Independent Contractor Student Contact Form, other documents referred to in the Agreement, and Modifications issued after execution of the Agreement. A Modification is a written amendment to the Contract signed by both parties, a Change Order, a Construction Change Directive, or a written order for a minor change in the Work issued by the Owner. The Contract Documents are complementary, and each obligation of the Contractor, Subcontractors, material or equipment suppliers in any one shall be binding as if specified in all.

1.1.2 THE CONTRACT

The Contract Documents form the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect and Contractor, between the Construction Manager and Contractor, between the Owner and any Subcontractor or Sub-subcontractor, or between any persons or entities other than the Owner and the Contractor. The terms of the Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever except by written agreement signed by the parties and approved or ratified by the Governing Board.

1.1.3 THE WORK

The "Work" shall include all labor, materials, services and equipment necessary for the Contractor to fulfill all of its obligations pursuant to the Contract Documents, including but not limited to punch list items. It shall include the initial obligation of any Contractor or Subcontractor, who performs any portion of the Work, to visit the Site of the proposed Work with Owner's representatives, a continuing obligation after the commencement of the Work to fully acquaint and familiarize itself with the conditions as they exist and the character of the operations to be carried on under the Contract Documents, and make such investigation as it may

see fit so that it shall fully understand the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Each such Contractor or Subcontractor shall also thoroughly examine and become familiar with the Drawings, Specifications, and associated bid documents. The "Site" refers to the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work. The Work shall constitute a "work of improvement" under Civil Code section 8050 and Public Contract Code section 7107.

1.1.4 THE PROJECT

The Project is the total construction of the Work performed in accordance with the Contract Documents in whole or in part and which may include construction by the Owner and includes construction by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are graphic and pictorial portions of the Contract Documents prepared for the Work and approved changes thereto, wherever located and whenever issued, showing the design, location, and scope of the Work, generally including plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is the volume usually assembled for the Work which may include, without limitation, the bidding requirements, sample forms, Agreement, Conditions of the Contract, and Specifications.

1.1.8 OR

"Or" shall include "and/or."

1.1.9 COMPLETION

Statutory definitions of "completion" and "complete" shall apply for those statutory purposes. For accrual of liquidated damages, Claim and warranty purposes, "completion" and "complete" mean the point in the Work where (1) Contractor has fully and correctly performed all work in all parts and requirements, including corrective and punch list work, and (2) Owner's representatives have conduced a final inspection that confirmed this performance. Substantial, or any other form of partial or non-compliant, performance of the Work shall not constitute "completion" or "complete" under the Contract Documents.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 CORRELATION AND INTENT

1.2.1.1 ***Documents Complementary and Inclusive.*** The Contract Documents are complementary and are intended to include all items required for the proper execution and completion of the Work. Any item of work mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both.

1.2.1.2 ***Coverage of the Drawings and Specifications.*** The Drawings and Specifications generally describe the work to be performed by Contractor. Generally, the Specifications describe work which cannot be readily indicated on the Drawings and indicate types, qualities, and methods of installation of the various materials and equipment required for the Work. It is not intended to mention every item of Work in the Specifications, which can be adequately shown on the Drawings, or to show on the Drawings all items of Work described or required by the Specifications even if they are of such nature that they could have been shown. All materials or labor for Work, which is shown on the Drawings or the Specifications (or is reasonably inferable therefrom as being necessary to complete the Work), shall be provided by the Contractor whether or not the Work is expressly covered in the Drawings or the Specifications. It is intended that the Work be of sound, quality construction, and the Contractor shall be responsible for the inclusion of adequate amounts to cover installation of all items indicated, described, or implied in the portion of the Work to be performed by Contractor.

1.2.1.3 ***Conflicts.*** Without limiting Contractor's obligation to identify conflicts for resolution by the Owner, it is intended that the more stringent, higher quality, and greater quantity of Work shall apply.

1.2.1.4 ***Conformance With Laws.*** Each and every provision of law required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon application of either party the Contract shall be amended in writing to make such insertion or correction.

Before commencing any portion of the Work, Contractor shall check and review the Drawings and Specifications for such portion for conformance and compliance with all laws, ordinances, codes, rules and regulations of all governmental authorities and public utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with any such restrictions or special requirements of the Contract Documents, Contractor shall promptly notify Construction Manager in writing of same and shall ensure that any such violation or inconsistency shall be corrected in the manner provided hereunder prior to the construction of that portion of the Work. Where requirements of the Contract Documents

exceed those of the applicable building codes and ordinances, the Contract Documents shall govern. Contractor shall comply with all applicable Federal, State and local laws.

If, as and to the extent that Public Contract Code section 1104 is deemed to apply after the Award of the Contract, Contractor shall not be required to assume responsibility for the completeness and accuracy of architectural or engineering plans and specifications, notwithstanding any other provision in the Contract Documents, except to the extent that Contractor discovered or should have discovered and reported any errors and omissions to the Construction Manager, including but not limited to as the result of any review of the plans and specifications by Contractor required by the Instructions to Bidders or other Contract Documents, whether or not actually performed by Contractor.

1.2.1.5 ***Ambiguity.*** Before commencing any portion of the Work, Contractor shall carefully examine all Drawings and Specifications and other information given to Contractor as to materials and methods of construction and other Work requirements. Contractor shall immediately notify Construction Manager in writing of any perceived or alleged error, inconsistency, ambiguity, or lack of detail or explanation in the Drawings and Specifications in the manner provided herein. If the Contractor or its Subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any Work under the Contract Documents, which it knows or should have known to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof without increase or adjustment to the Contract Sum or the time for performance. If Contractor performs, permits, or causes the performance of any Work under the Contract Documents prepared by or on behalf of Contractor which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction, without increase to or adjustment in the Contract Sum or the time for performance. In no case shall any Subcontractor proceed with the Work if uncertain without the Contractor's written direction and/or approval.

1.2.1.6 ***Execution.*** Execution of the Agreement Between Owner and Contractor by the Contractor is a representation that the Contractor has visited the Site, become familiar with the local conditions under which the Work is to be performed and has correlated personal observations with the requirements of the Contract Documents.

1.2.2 **ADDENDA AND DEFERRED APPROVALS**

1.2.2.1 ***Addenda.*** Subsequent addenda issued shall govern over prior addenda only to the extent specified. In accordance with Title 24, California Code of Regulations, addenda shall be approved by the Division of the State Architect ("DSA").

1.2.2.2 ***Deferred Approvals.*** The requirements approved by the DSA on any item submitted as a deferred approval in accordance with Title 24, California Code of Regulations, shall take precedence over any previously issued addenda, drawing or specification.

1.2.3 **SPECIFICATION INTERPRETATION**

1.2.3.1 ***Titles.*** The Specifications are separated into titled sections for convenience only and not to dictate or determine the trade or craft involved. Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of work to be performed by any trade.

1.2.3.2 ***As Shown, Etc.*** Where "as shown," "as indicated," "as detailed," or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where "as directed," "as required," "as permitted," "as authorized," "as accepted," "as selected," or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by Architect is intended unless otherwise stated.

1.2.3.3 ***Provide.*** "Provide" means "provided complete in place," that is, furnished, installed, tested, and ready for operation and use.

1.2.3.4 ***General Conditions.*** The General Conditions and any supplementary general conditions are a part of each and every section of the Specifications.

1.2.3.5 ***Abbreviations.*** In the interest of brevity, the Specifications are written in an abbreviated form and may not include complete sentences. Omission of words or phrases such as "Contractor shall," "shall be," etc., are intentional. Nevertheless, the requirements of the Specifications are mandatory. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings.

1.2.3.6 ***Plural.*** Words in the singular shall include the plural whenever applicable or the context so indicates.

1.2.3.7 ***Metric.*** The Specifications may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1" (25 mm), the U. S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the "International System of Units" (SI) and generally follow ASTM E 380, "Standard for Metric Practice."

1.2.3.8 ***Standard Specifications.*** Any reference to standard specifications of any society, institute, association, or governmental authority is a reference to the organization's standard specifications, which are in effect as of the date the Notice to Bidders is first published. If applicable specifications are revised prior to completion of any part of the Work, the Contractor may, if acceptable to Owner and Architect, perform such Work in accordance with the revised specifications. The standard specifications, except as modified in the Specifications for the Work, shall have full force and effect as though printed in the Specifications. Architect will furnish, upon request, information as to how copies of the standard specifications referred to may be obtained.

1.2.3.9 ***Absence of Modifiers.*** In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.3 **OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS.** The Drawings, Specifications, and other documents prepared on behalf of the Owner are instruments of the services of the Architect and its consultants and are the property of the Owner. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor, or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by the Architect, and unless otherwise indicated the Architect shall be deemed the author of them. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Construction Manager, upon request upon completion of the Work. The Drawings, Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Work. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner and the Architect. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications, and other documents prepared by the Architect appropriate to and for use in the execution of their Work under the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Work is not to be construed as publication in derogation of the Owner's property interest or other reserved right. All copies made under this license shall bear appropriate attribution and the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect.

ARTICLE 2

OWNER

2.1 DEFINITION

The term "Owner" means the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Owner" means the Owner and/or the Owner's authorized representative, including but not limited to architects and construction managers. To the extent the Contract Documents indicate that Owner has assigned duties to particular representatives of the Owner (such as the Architect, or Construction Manager), Owner reserves the right at all times to reassign such duties to different Owner representatives.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 INTENTIONALLY LEFT BLANK

2.2.2 SITE SURVEY

When required by the scope of the Work, the Owner will furnish, at its expense, a legal description or a land survey of the Site, giving, as applicable, grades and lines of streets, alleys, pavements, adjoining property, rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries, and contours of the Site. Surveys to determine locations of construction, grading, and Site work shall be provided by the Contractor.

2.2.3 SOILS

2.2.3.1 ***Owner Furnished Services.*** When required by the scope of the Work, the Owner will furnish, at its expense, the services of geotechnical engineers or consultants when reasonably required or as required by local or state codes. Such services with reports and appropriate professional recommendations shall include test boring, test pits, soil bearing values, percolation tests, air and water pollution tests, and ground corrosion and resistivity tests, including necessary operations for determining subsoil, air, and water conditions.

2.2.3.2 ***Contractor Reliance.*** Test borings and soils reports for the Project have been made for the Owner to indicate the subsurface materials that might be encountered at particular locations on the Project. The Owner has made these documents available to the Contractor and the Contractor has studied the results of such test borings and information that it has as to the subsurface conditions and Site geology as set forth in the test borings and soils reports. The Owner does not assume any responsibility whatsoever with respect to the sufficiency or accuracy of the borings made, or of the logs of the test borings, or of other investigations, or of the soils reports furnished pursuant hereto, or of the interpretations to be made beyond the location or depth of the borings. There is no warranty or guarantee, either express or implied that the conditions indicated by such investigations, borings, logs, soil reports or other information are representative of those existing throughout the Site of the Project, or any part thereof, or that unforeseen developments may not occur. At the Owner's request, the Contractor shall make available to the Owner the results of any Site investigation, test borings, analyses, studies or other tests conducted by or in the possession of the Contractor of any of its agents. Nothing herein contained shall be deemed a waiver by the Contractor to pursue any available legal right or remedy it may have at any time against any third party who may have prepared any report and/or test relied upon by the Contractor.

2.2.4 UTILITY SURVEY

When required by the scope of the Work, the Owner will furnish, at its expense, all information regarding known existing utilities on or adjacent to the Site, including location, size, inverts, and depths.

2.2.5 INFORMATION

Upon the request of the Contractor, Owner or Construction Manager will make available such existing information regarding utility services and Site features, including existing construction, related to the Work as is available from Owner's records. The Contractor may not rely upon the

accuracy of any such information, other than that provided under Sections 2.2.2 and 2.2.4 (except that the Contractor may not rely upon and must question in writing to the Owner and the Construction Manager any information which appears incorrect based upon Contractor's Site inspection, knowledge of the Work, and prior experience with similar projects), unless specifically stated in writing that the Contractor may rely upon the designated information.

2.2.6 EXISTING UTILITY LINES; REMOVAL, RELOCATION

2.2.6.1 ***Removal, Relocation.*** Pursuant to Government Code section 4215, the Owner assumes the responsibility for removal, relocation, and protection of utilities located on the Site at the time of commencement of construction under this Contract with respect to any such utility facilities which are not identified in the drawings and specifications made part of the invitation to bid. The Contractor shall not be assessed for liquidated damages for delay in completion of the Work caused by failure of the Owner to provide for removal or relocation of such utility facilities. Owner shall compensate the Contractor for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, removing or relocating such utility facilities, and for equipment necessarily idle during such work.

2.2.6.2 ***Assessment.*** These subparagraphs shall not be construed to preclude assessment against the Contractor for any other delays in completion of the Work. Nothing in these subparagraphs shall be deemed to require the Owner to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the Site can be inferred from the presence of other visible facilities, such as buildings, or meter junction boxes on or adjacent to the Site.

2.2.6.3 ***Notification.*** If the Contractor, while performing work under this Contract, discovers utility facilities not identified by the Owner in the Contract plans or specifications, Contractor shall immediately notify the Owner and the utility in writing.

2.2.6.4 ***Underground Utility Clearance.*** It shall be Contractor's sole responsibility to timely notify all public and private utilities serving the Site prior to commencing work. The Contractor shall notify and receive clearance from any cooperative agency, such as Underground Service Alert, in accordance with Government Code section 4216, et seq. Contractor shall promptly provide a copy of all such notifications to the Construction Manager and the Owner.

2.2.7 EASEMENTS

Owner shall secure and pay for easements for permanent structures or permanent changes in existing facilities, if any, unless otherwise specified in the Contract or Contract Documents.

2.2.8 REASONABLE PROMPTNESS

Information or services under Owner's control will be furnished by the Owner with reasonable promptness. The Owner shall not be liable for any delays caused by factors beyond the Owner’s control including but not limited to DSA's or any other local, State or federal agency's review of bids, change order requests, RFI's or any other documents.

2.2.9 COPIES FURNISHED

The Contractor will be furnished such copies of Drawings and Project Manuals as are stated in the Contract Documents.

2.2.10 DUTIES CUMULATIVE

The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein, and especially those in Article 6 (Construction by Owner or by Separate Contractors), Article 9 (Payments and Completion), and Article 11 (Insurance and Bonds).

2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents, or persistently fails to carry out Work in accordance with the Contract Documents, the Owner, after providing Notice pursuant to paragraph 2.4, may order the Contractor to stop the Work or any portion thereof, until the Contractor corrects the deficiencies. The right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Article 6.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor fails or refuses to carry out the Work in accordance with the Contract Documents, the Owner may correct such deficiencies by whatever reasonable method the Owner may deem expedient without prejudice to other remedies the Owner may have, including but not limited to having another contractor perform some or all of the Work without terminating the Contract with Contractor. Owner may exercise this right at any time during the Contractor's Work.

Owner shall first provide written notice to Contractor of Contractor's failure or refusal to perform. The notice will provide the time period within which Contractor must begin correction of the failure or refusal to perform. If the Contractor fails to begin correction within the stated time, or fails to continue correction, the Owner may proceed to correct the deficiencies. In the event the Owner bids the work, Contractor shall not be eligible for the award of the contract. The Contractor may be invoiced the cost to Owner of the work, including compensation for additional professional and internally generated services and expenses made necessary by Contractors' failure or refusal to perform. Owner may withhold that amount from the retention or progress payments due the Contractor pursuant to Section 9.5. If retention and payments withheld then or thereafter due the Contractor are not sufficient to cover that amount, the Contractor shall pay the difference to the Owner.

ARTICLE 3

THE CONTRACTOR

3.1 DEFINITION

The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative. To the extent that any portion of the Work is provided with the Contractor's own forces, any reference to Subcontractors shall be equally applicable to the Contractor.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 CONTRACTOR

The Contractor shall supervise and direct the Work using the Contractor's best skill and attention, which shall meet or exceed the standards in the industry. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures, and coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters. If any of the Work is performed by contractors retained directly by the Owner, Contractor shall be responsible for the coordination and sequencing of the Work of those other contractors so as to avoid any impact on the Work and Project Schedule pursuant to the requirements of Article 6. Construction Manager shall schedule and coordinate the activities of Contractor with the other contractors and Owner. Contractor agrees to accept the Construction Manager's construction schedules, schedule updates, overall sequence and coordination of construction for the Project. Contractor realizes that work by other contractors or Owner will occur simultaneously in any given area. Contractor is responsible for its own sequences that may occur within a given activity or set of activities. Contractor shall not commit or permit any act which will adversely affect the work of any other contractor or Owner. Contractor shall provide layout of Contractor's work at the request of any other contractor or Owner. Specific duties of the Contractor shall be in accordance with Title 24 of the California Code of Regulations. Contractor shall fully comply with any and all reporting requirements of Education Code sections 17309 and 81141 in the manner prescribed by Title 24.

3.2.2 CONTRACTOR RESPONSIBILITY

The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors, material and equipment suppliers, and their agents, employees, invitees, and other persons performing portions of the Work under direct or indirect contract with the Contractor or any of its Subcontractors.

3.2.3 OBLIGATIONS NOT CHANGED BY ARCHITECT'S OR CONSTRUCTION MANAGER'S ACTIONS

The Contractor shall not be relieved of obligations to perform the Work in accordance with the

Contract Documents by the activities or duties of the Owner's representatives, including but not limited to the Construction Manager, the Architect, or the Inspector of Record, or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.2.4 CONTRACTOR RESPONSIBILITY FOR READINESS FOR WORK

The Contractor shall be responsible for inspection of Work already performed under the Contract Documents to determine that such portions are in proper condition to receive subsequent work.

3.2.5 PROJECT MEETINGS

Contractor shall attend Owner's Project meetings as scheduled by the Contract Documents, or as otherwise instructed by Owner, to discuss the current status of the Project and the Work and the future progress of the Work. Contractor shall have five (5) days after receipt of Owner's Project meeting minutes to provide written objections and suggested corrections.

3.3 SUPERINTENDENT

3.3.1 FULL TIME SUPERINTENDENT

The Contractor shall provide a competent superintendent and assistants as necessary, all of whom shall be reasonably proficient in speaking, reading and writing English and, who shall be in attendance at the Project Site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

3.3.2 STAFF

The Contractor and each Subcontractor shall: furnish a competent and adequate staff as necessary for the proper administration, coordination, supervision, and superintendence of its portion of the Work; organize the procurement of all materials and equipment so that the materials and equipment will be available at the time they are needed for the Work; and keep an adequate force of skilled workers on the job to complete the Work in accordance with all requirements of the Contract Documents.

3.3.3 RIGHT TO REMOVE

Owner shall have the right, but not the obligation, to require the removal from the Work of any superintendent, staff member, agent, or employee of any Contractor, Subcontractor, material or equipment supplier, etc., for cause.

3.4 LABOR AND MATERIALS

3.4.1 CONTRACTOR TO PROVIDE

Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for

labor, material, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4.2 QUALITY

Unless otherwise specified, all materials and equipment to be permanently installed in the Work shall be new and shall be of such quality as required to satisfy the standards of the Contract Documents. The Contractor shall, if requested, promptly furnish satisfactory evidence as to kind and quality of all materials and equipment. All labor shall be performed by workers skilled in their respective trades, and the quality of their work shall meet whichever is the higher standard for their work: the standard in the industry or the standard in the Contract Documents.

3.4.3 REPLACEMENT

Any work, materials, or equipment, which does not conform to these standards may be disapproved and rejected by the Owner, in which case, they shall be removed and replaced by the Contractor at no cost to the Owner.

3.4.4 DISCIPLINE

The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract in accordance with paragraph 5.5.1 including, but not limited to, Subcontractors, and material or equipment suppliers retained for the Work.

3.5 WARRANTY

For the period of one (1) year after completion of the Work (see Sections 9.7.1 and 12.2.5), the Contractor warrants to the Owner that material and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty does not cover damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

Contractor will pay all applicable Federal, State, and local taxes on all materials, labor, or services furnished by it, and all taxes arising out of its operations under the Contract Documents. Owner is exempt from Federal Excise Tax, and a Certificate of Exemption shall be provided upon request.

3.7 PERMITS, FEES AND NOTICES

3.7.1 PAYMENT

The Contractor shall secure and pay for all permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and are legally required by any authority having jurisdiction over the Project, except those required by the Division of the State Architect (DSA). Owner shall be responsible for all testing and inspection as required by the DSA on-Site or within the distance limitations set forth in paragraph 13.5.2, unless a different mileage range is specified in the Contract Documents.

3.7.2 COMPLIANCE

The Contractor shall comply with and give notices required by any law, ordinance, rule, regulation, and lawful order of public authorities bearing on performance of the Work.

3.7.3 CONTRACT DOCUMENTS

It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with any applicable law, statute, ordinance, building codes, rule, or regulation. However, if the Contractor knew, or should have known, or observes that portions of the Contract Document are at variance therewith, the Contractor shall promptly notify the Architect, the Construction Manager and Owner in writing, and necessary changes shall be accomplished by appropriate modification.

3.7.4 RESPONSIBILITY

If the Contractor performs Work that it knows, or should have known, is contrary to any law, statute, ordinance, building code, rule or regulation, the Contractor shall assume full responsibility for such Work, for all delays attributable thereto, and shall bear the attributable cost of correction or Work or Project delay.

3.8 ALLOWANCES

3.8.1 CONTRACT

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities against whom the Contractor makes reasonable and timely objection.

3.8.2 **SCOPE**

3.8.2.1 ***Prompt Selection.*** Materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay to the Work.

3.8.2.2 ***Cost.*** Allowances shall cover the cost to the Contractor of materials and equipment delivered at the Site and all required taxes, less applicable trade discounts, etc., as delineated in paragraph 7.7.4.

3.8.2.3 ***Cost Included in Contract Sum.*** Contractor's costs for unloading and handling at the Site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances.

3.8.2.4 ***Contract Sum Adjustment.*** Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect the difference between actual cost and the allowances under paragraph 3.8.2.2 and the change in the Contractor's costs under paragraph 3.8.2.3.

3.9 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.9.1 **REQUIREMENTS**

Before the Contractor's commencement of Work on the Project Site or within two (2) weeks of award of the Contract, whichever is earlier, Contractor shall prepare and submit for the Owner's, and Construction Manager's, information the construction schedule for the Work, which shall conform to the Contract Documents' requirements.

Contractor shall submit a monthly updated schedule that will include an accurate as-built schedule and the current as-planned schedule, both of which shall conform to the Contract Documents' requirements. Contractor shall submit its daily logs for the prior month with the updated schedule.

The schedule and updates shall conform, at a minimum, to industry standards for critical path scheduling and to facilitate Owner's Work and Project management and evaluation of Contractor Claims for additional money or time.

The schedule and updates shall not exceed time limits (including milestone deadlines) under the Contract Documents and shall comply with the Contract Documents scheduling requirements and with any scheduling requirements the Owner provides to the Contractor at the beginning of the Work. The original schedule and all updates shall accurately reflect work performed to date, all construction tasks (including procurement), the critical path schedule for completion of the remainder of the Work, and the percentage of the Work completed. The original schedule and updates shall include all delay days for weather not unusually severe, even though that weather will not entitle Contractor to additional time or money.

The construction schedule shall be in the form of either a tabulation, chart, or graph, unless otherwise stated in Division 1 of the Specifications, and shall be in sufficient detail to show the chronological relationship of all activities of the Work including, but not limited to, estimated starting and completion dates of various activities, (including early and late dates and reasonable

float for each activity), procurement of materials, the critical path, and scheduling of equipment. Float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity durations, or imposed dates shall be apportioned for the benefit of the Work. Whenever in the Contract Documents Contractor is required to provide a schedule and/or schedule updates, the Contractor shall provide the schedule and updates in electronic format as well as hard copy. Contractor shall be solely responsible for the accuracy, utility and reasonableness of all of its schedules. Owner's acceptance, approval or non-rejection of Contractor's schedules shall not affect Contractor's responsibility for its schedules.

The Contractor and Owner shall use any float on a "first come, first served" basis. The original schedule and updates shall reflect Contractor's and Owner's use of float. Float is not for the exclusive use or benefit of either Owner or Contractor, but it is a jointly owned expiring Work resource available to both parties as needed to meet schedule milestones. For the original schedule and updates, Contractor shall use a critical path network format with the critical paths clearly indicated. Contractor shall use an MS Project, Primavera, or an equivalent or better program. Contractor shall include reports that sort and list the activities in order of increasing float and by early and late start dates. Contractor shall endeavor to label ten to thirty percent (10-30%) of the tasks as critical, but shall not label less than five (5%) or more than fifty (50%) as critical. Contractor shall use calendar days.

If any change in Contractor's method of operations will cause a change in the construction schedule, Contractor shall submit to Owner, Architect and Construction Manager, a revised construction schedule within seven (7) days of the change, unless a different time period is stated in Division 1 of the Specifications.

If, in the Owner's opinion, the Contractor is not prosecuting the Work at a rate sufficient to meet the Work schedule, a contractual milestone or the Work completion date (as adjusted by change orders) or if the Contractor's actual progress falls behind the Work schedule or it is apparent to Owner or Contractor that Contractor will not meet contractual milestones or the Work completion date (as adjusted by change orders), the Owner may require that the Contractor prepare and submit a recovery plan. Contractor must submit a recovery plan within seven (7) days of a demand for the plan, unless a different time period is stated in Division 1 of the Specifications. At a minimum, the recovery plan must include a revised schedule that gets the Work back on schedule and completes all Work by the contractual milestones and Work completion date (as adjusted by change orders) or by other dates Owner specifies in the demand for a recovery plan. The recovery plan shall state the corrective actions Contractor will undertake to implement it. The recovery plan shall also list any additional money that Contractor believes it should receive if Owner orders Contractor to fully or partially implement the recovery plan. If the Owner orders Contractor to implement the recovery plan, Contractor shall do so, but the order shall not act constitute an admission by Owner that Contractor is entitled to additional money. To recover additional money, Contractor must comply with General Conditions Articles 4.5, 7 and 8.

All schedules Contractor submits shall be certified as true and correct, as follows:

> I, [name of declarant], declare the following:
>
> [Contractor company name] has contracted with [public entity name] for the [name of project and bid package]. [Contractor company name] authorized

me to prepare schedules for [public entity name] for this Work, and I prepared the attached schedule. I am the most knowledgeable person at [contractor company name] regarding the scheduling of this Work.

The attached schedule does not breach the Contract between [contractor company name] and [public entity name] for this Work, does not violate any applicable law, satisfies all provisions of the Contract applicable to submission of the Claim, only contains truthful and accurate as-built and as-planned dates of work on the Work (including supporting data), and is not a false claim.

The attached schedule is submitted in compliance with all laws applicable to submission of a Claim, including but not limited to California Penal Code section 72 (Fraudulent Claims), Government Code sections 12650 et seq. (False Claims Act; for example, Government Code section 12651(a)(7)), and Business and Professions Code sections 17200 et seq. (Unfair Business Practices Act). I am aware that submission or certification of false claims, or other Claims that violate law or the Contract, may lead to fines, imprisonment, and/or other serious legal consequences for myself and/or [contractor company name].

While preparing this declaration and schedule I consulted with others (including attorneys, consultants, or others who work for [contractor company name]) when necessary to ensure that the statements were true and correct.

I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed _____, 20__, at _____, California.

_____
[name of declarant]

3.9.2 DSA OVERSIGHT PROCESS

In connection with the DSA Construction Oversight Process which includes inspection cards and review of changes to the DSA-approved construction documents, the Contractor must (a) include specific tasks in its baseline schedule to take into account these procedures since they are critical path issues; and (b) include a reasonable amount of float in the baseline schedule to accommodate the additional time required by these DSA procedures.

3.9.3 FAILURE TO MEET REQUIREMENTS

Failure of the Contractor to provide proper schedules may, at the sole discretion of Owner, constitute either grounds to withhold, in whole or in part, progress payments to the Contractor, or a breach of contract allowing Owner to terminate the Contract.

3.10 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the Site for the Owner and Construction Manager one applicable copy of Titles 19 and 24 and record copy of the Drawings, Specifications, Addenda, Change Orders, and other Modifications, in good order and marked currently to record changes and selections made during construction. In addition, the Contractor shall maintain at the Site approved Shop Drawings, Product Data, Samples, and similar required submittals. These documents shall be available to the Owner and Construction Manager and shall be delivered to the Construction Manager for delivery to the Owner upon completion of the Work.

3.11 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

3.11.1 SUBMITTALS DEFINED

3.11.1.1 ***Shop Drawings.*** The term "shop drawings" as used herein means drawings, diagrams, schedules, and other data, which are prepared by Contractor, Subcontractors, manufacturers, suppliers, or distributors illustrating some portion of the Work, and includes: illustrations; fabrication, erection, layout and setting drawings; manufacturer's standard drawings; schedules; descriptive literature, instructions, catalogs, and brochures; performance and test data including charts; wiring and control diagrams; and all 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 their position conform to the requirements of the Contract Documents. The Contractor shall obtain and submit with the shop drawings all seismic and other calculations and all product data from equipment manufacturers. "Product data" as used herein are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work. As used herein, the term "manufactured" applies to standard units usually mass-produced, and "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements. Shop drawings shall: establish the actual detail of all manufactured or fabricated items, indicate proper relation to adjoining work, amplify design details of mechanical and electrical systems and equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions.

3.11.1.2 ***Samples.*** The term "samples" as used herein are physical examples furnished by Contractor to illustrate materials, equipment, or quality and includes natural materials, fabricated items, equipment, devices, appliances, or parts thereof as called for in the Specifications, and any other samples as may be required by the Owner to determine whether the kind, quality, construction, finish, color, and other characteristics of the materials, etc., proposed by the Contractor conform to the required characteristics of the various parts of the Work. All Work shall be in accordance with the approved samples.

3.11.1.3 ***Contractor's Responsibility.*** Contractor shall obtain and shall submit to Construction Manager all required shop drawings and samples in accordance with Contractor's "Schedule for Submission of Shop Drawings and Samples" provisions in Division 1 of the

Specifications with such promptness as to cause no delay in its own Work or in that of any other contractor, Owner or subcontractor but in no event later than ninety (90) days after the execution of the Agreement. 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 Contractor or any Subcontractor because of its failure to have shop drawings and samples submitted in accordance with the Schedule. Each Subcontractor shall submit all shop drawings, samples, and manufacturer's descriptive data for the review of the Owner, the Contractor, the Architect, and Construction Manager through the Contractor. By submitting shop drawings, product data, and samples, the Contractor or submitting party (if other than Contractor) represents that it has determined and verified all materials, field measurements, field conditions, catalog numbers, related field construction criteria, and other relevant data in connection with each such submission, and that it has checked, verified, and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. At the time of submission, any deviation in the shop drawings, product data, or samples from the requirements of the Contract Documents shall be narratively described in a transmittal accompanying the submittal. However, submittals shall not be used as a means of requesting a substitution, the procedure for which is defined in paragraph 3.11.4, "Substitutions." Review by Owner, Construction Manager and Architect shall not relieve the Contractor or any Subcontractor from its responsibility in preparing and submitting proper shop drawings in accordance with the Contract Documents. Contractor shall stamp, sign, and date each submittal indicating its representation that the submittal meets all of the requirements of the Contract Documents. Any submission, which in Owner's or Architect's opinion is incomplete, contains numerous errors, or has been checked only superficially by Contractor will be returned unreviewed for resubmission by the Contractor.

3.11.1.4 ***Extent of Review.*** In reviewing shop drawings, the Owner will not verify dimensions and field conditions. The Architect will review and approve shop drawings, product data, and samples for aesthetics and for conformance with the design concept of the Work and the information given in the Contract Documents. The Architect's review shall neither be construed as a complete check nor relieve the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission and the Architect has given specific written approval. The Architect's review shall not relieve the Contractor or Subcontractors from responsibility for errors of any sort in shop drawings or schedules, for proper fitting of the Work, or from the necessity of furnishing any Work required by the Contract Documents, which may not be indicated on shop drawings when reviewed. Contractor and Subcontractors shall be solely responsible for determining any quantities, whether or not shown on the shop drawings.

3.11.2 **DRAWING SUBMISSION PROCEDURE**

3.11.2.1 ***Transmittal Letter and Other Requirements.*** All shop drawings must be properly identified with the name of the Project and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as

well as "clouding" on the submissions, all qualifications, departures, or deviations from the Contract Documents, if any. Shop drawings, for each section of the Work, shall be numbered consecutively, and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor. Only shop drawings required to be submitted by the Contract Documents shall be reviewed.

3.11.2.2 ***Copies Required.*** Each submittal shall include one (1) legible, reproducible sepia and five (5) legible prints of each drawing, including fabrication, erection, layout and setting drawings, and such other drawings as required under the various sections of the Specifications until final acceptance thereof is obtained. Subcontractor shall submit copies, in an amount as requested by the Contractor, of: manufacturers' descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; wiring diagrams and controls; schedules; all seismic calculations and other calculations; and other pertinent information as required.

3.11.2.3 ***Corrections.*** The Contractor shall make any corrections required by Architect and shall resubmit as required by Architect the required number of corrected copies of shop drawings or new samples until approved. Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than one (1) re-review of required submittals of shop drawings, product data, or samples are subject to charge to the Contractor pursuant to paragraph 4.4.

3.11.2.4 ***Approval Prior to Commencement of Work.*** No portion of the Work requiring a shop drawing or sample submission shall be commenced until the submission has been reviewed by Owner and approved by Architect unless specifically directed in writing by the Owner. All such portions of the Work shall be in accordance with approved shop drawings and samples.

3.11.3 **SAMPLE SUBMISSIONS PROCEDURE**

3.11.3.1 ***Samples Required.*** In case a considerable range of color, graining, texture, or other characteristics may be anticipated in finished products, a sufficient number of samples of the specified materials shall be furnished by the Contractor to indicate the full range of characteristics, which will be present in the finished products; and products delivered or erected without submittal and approval of full range samples shall be subject to rejection. Except for range samples, and unless otherwise called for in the various sections of the Specifications, samples shall be submitted in duplicate. All samples shall be marked, tagged, or otherwise properly identified with the name of the submitting party, the name of the Project and Bid Package, the purpose for which the samples are submitted, and the date and shall be accompanied by a letter of transmittal containing similar information, together with the Specification section number for identification of each item. Each tag or sticker shall have clear space for the review stamps of Contractor and Architect.

3.11.3.2 ***Labels and Instructions.*** Samples of materials, which are generally furnished in containers bearing the manufacturers' descriptive labels and printed application instructions, shall, if not submitted in standard containers, be supplied with such labels and application instructions.

3.11.3.3 ***Architect's Review.*** The Architect will review and, if appropriate, approve submissions and Construction Manager will return them to the Contractor with the Architect's stamp and signature applied thereto, indicating the appropriate action in compliance with the Architect's standard procedures.

3.11.3.4 ***Record Drawings and Annotated Specifications.*** The Contractor will prepare and maintain on a current basis an accurate and complete set of Record Drawings showing clearly all changes, revisions, and substitutions during construction, including, without limitation, field changes and the final location of all mechanical equipment, utility lines, ducts, outlets, structural members, walls, partitions, and other significant features, and Annotated Specifications showing clearly all changes, revisions, and substitutions during construction. A copy of such Record Drawings and Annotated Specifications will be delivered to Construction Manager in accordance with the Schedule prepared by Contractor. In the event of a specification that allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished. The Contractor will update the Record Drawings and Annotated Specifications as often as necessary to keep them current but no less often than weekly. The Record Drawings and Annotated Specifications shall be kept at the Site and available for inspection by the Owner, Inspector of Record, Construction Manager and the Architect. On completion of the Contractor's portion of the Work and prior to Application for Final Progress Payment, the Contractor will provide one complete set of Record Drawings and Annotated Specifications to the Construction Manager, certifying them to be a complete and accurate reflection of the actual construction conditions of the Work.

3.11.3.5 ***Equipment Manuals.*** Contractor shall obtain and furnish to the Owner through the Construction Manager three (3) complete sets of manuals containing the manufacturers' instructions for maintenance and operation of each item of equipment and apparatus furnished under the Contract Documents and any additional data specifically requested under the various sections of the Specifications for each division of the Work. The manuals shall be arranged in proper order, indexed, and placed in three-ring binders. At the completion of its Work, the Contractor shall certify, by endorsement thereon, that each of the manuals is complete, accurate, and covers all of its Work. Prior to submittal of Contractor's Application for Final Progress Payment, and as a further condition to its approval by the Architect, each Subcontractor shall deliver the manuals, arranged in proper order, indexed, endorsed, and placed in three-ring binders, to the Contractor, who shall assemble these manuals for all divisions of the Work, review them for completeness, and submit them to the Owner through the Construction Manager.

3.11.3.6 ***Owner's Property.*** All shop drawings and samples submitted shall become the Owner's property.

3.11.4 **SUBSTITUTIONS**

3.11.4.1 ***One Product Specified.*** Unless the Specifications state that no substitution is permitted, whenever in the Contract Documents any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction is indicated or specified by name, make, trade name, or catalog number, with or without the words "or equal," such specification shall be deemed to be used for the purpose of facilitating description of material, process, or article desired and shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer any material, process, or article, which shall be substantially equal or better in every respect to that so indicated or specified and will completely accomplish the purpose of the Contract Documents.

3.11.4.2 ***Two or More Products Specified.*** When two or more acceptable products are specified for an item of the Work, the choice will be up to the Contractor. Contractor shall utilize the same product throughout the Work. If a timely substitution request as set forth in Section 3.11.4.3 is not provided and an "or equal" substitution is requested, the Owner may consider the substitution if the product specified is no longer commercially available. If the Owner allows the substitution to be proposed pursuant to such an untimely request, the Contractor will be responsible for the professional fees incurred by the Architect or Architect's consultants in reviewing the proposed substitution which fees may be withheld from progress payments and/or retention.

3.11.4.3 ***Substitution Request Form.*** Requests for substitutions of products, materials, or processes other than those specified must be made on the Substitution Request form available from the Construction Manager prior to the date of the bid opening. Any Requests submitted less than fourteen (14) days prior to the date of the bid opening will not be considered, except as noted in paragraph 3.11.4.2. A Substitution Request must be accompanied by evidence as to whether or not the proposed substitution: is equal in quality and serviceability to the specified item; will entail no changes in detail and construction of related work; will be acceptable in consideration of the required design and artistic effect; will provide no cost disadvantage to Owner; and will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts. The burden of proof of these facts shall be upon the Contractor. The Contractor shall furnish with its request sufficient information to determine whether the proposed substitution is equivalent including but not limited to all drawings, specifications, samples, performance data, calculations, and other information as may be required to assist the Architect and the Owner in determining whether the proposed substitution is acceptable. The final decision shall be the Owner's. The written approval of the Owner, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. Owner may condition its approval of the substitution upon delivery to Owner through Construction Manager of an extended warranty or other assurances of adequate performance of the substitution. All risks of delay due to the Division of the State Architect's, or any other governmental agency having jurisdiction, approval of a requested substitution shall be on the requesting party.

3.11.4.4 ***List of Manufacturers and Products Required.*** The Subcontractor shall prepare and submit to the Contractor within thirty (30) days of execution of the Subcontract

comprehensive lists, in quadruplicate, of the manufacturers and products proposed for the Work, including information on materials, equipment, and fixtures required by the Contract Documents, as may be required for Contractor's or Architect's preliminary approval. Approval of such lists of products shall not be construed as a substitute for the shop drawings, manufacturer's descriptive data, and samples, which are required by the Contract Documents, but rather as a base from which more detailed submittals shall be developed for the final review of the Contractor and the Architect.

3.11.5 DEFERRED APPROVALS

Deferred approvals shall be submitted and processed pursuant to the requirements of Division 1 of the Specifications. All risks of delay due to the Division of the State Architect's, or any other governmental agency having jurisdiction, approval of a deferred approval shall be on the requesting party.

3.12 CUTTING AND PATCHING

3.12.1 SCOPE

The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

3.12.2 CONSENT

The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or separate contractors except with written consent of the Owner and of such separate contractors; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work. All cutting shall be done promptly, and all repairs shall be made as necessary.

3.12.3 STRUCTURAL MEMBERS

New or existing structural members and elements, including reinforcing bars and seismic bracing, shall not be cut, bored, or drilled except by written authority of the Architect. Work done contrary to such authority is at the Contractor's risk, subject to replacement at its own expense and without reimbursement under the Contract. Agency approvals shall be obtained by the Architect, not by the Contractor.

3.12.4 SUBSEQUENT REMOVAL

Permission to patch any areas or items of the Work shall not constitute a waiver of the Owner's or the Architect's right to require complete removal and replacement of the areas of items of the Work if, in the opinion of the Architect or the Owner, the patching does not satisfactorily restore quality and appearance of the Work or does not otherwise conform to the Contract Documents. Any costs caused by defective or ill-timed cutting or patching shall be borne by the person or entity responsible.

3.13 CLEANING UP

3.13.1 CONTRACTOR'S RESPONSIBILITY

The Contractor shall keep the Site and surrounding area free from accumulation of waste material or rubbish caused by operations under the Contract. The Site shall be maintained in a neat and orderly condition. All crates, cartons, paper, and other flammable waste materials shall be removed from Work areas and properly disposed of at the end of each day. The Contractor shall continuously remove from and about the Site the waste materials, rubbish, tools, construction equipment, machinery, and materials no longer required for the Work.

3.13.2 FAILURE TO CLEANUP

If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so, without prior notice to the Contractor and the cost thereof shall be invoiced to the Contractor and withheld from progress payments and/or retention. Each Subcontractor shall have the responsibility for the cleanup of its own Work. If the Subcontractor fails to clean up, the Contractor must do so.

3.13.3 CONSTRUCTION BUILDINGS

When directed by the Owner or the Architect, Contractor and Subcontractor shall dismantle temporary structures, if any, and remove from the Site all construction and installation equipment, fences, scaffolding, surplus materials, rubbish, and supplies belonging to Contractor or Subcontractor. If the Contractor does not remove the tools, equipment, machinery, and materials within fifteen (15) days after completion of its Work, then they shall be deemed abandoned, and the Owner can dispose of them for its own benefit in whatever way it deems appropriate. Contractor shall pay for any costs to dispose of the items.

3.14 ACCESS TO WORK

The Contractor shall provide the Owner, Architect, Construction Manager, Inspector of Record, and separate contractors access to the Work in preparation and progress wherever located.

3.15 ROYALTIES AND PATENTS

3.15.1 PAYMENT AND INDEMNITY

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims of infringement of patent rights and shall hold the Owner and the Architect harmless and indemnify them, to the extent not caused by the Owner's active negligence, sole negligence or willful misconduct, from loss on account thereof but shall not be responsible for such defense or loss when a particular design, process, or product of a particular manufacturer is required by the Contract Documents. However, if the Contractor has reason to believe the required design, process, or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect and Owner through the Construction Manager.

3.15.2 REVIEW

The review by the Owner or Architect of any method of construction, invention, appliance, process, article, device, or material of any kind shall be for its adequacy for the Work and shall not be an approval for the use by the Contractor in violation of any patent or other rights of any person or entity.

3.16 INDEMNIFICATION

3.16.1 SCOPE: CONTRACTOR

To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Owner, the Construction Manager, Architect, Architect's consultants, the Inspector of Record, the State of California, and their respective agents, employees, officers, volunteers, Boards of Trustees, members of the Boards of Trustees, and directors ("Indemnitees"), from and against claims, actions, damages, liabilities, losses (including but not limited to injury or death of persons, property damage, and compensation owed to other parties), and expenses (including but not limited to attorneys' fees and costs including fees of consultants) alleged by third parties against Indemnitees arising out of or resulting from the following: Contractor's, its Subcontractors', or its suppliers' performance of the Work, including but not limited to the Contractor's or its Subcontractors' use of the Site; the Contractor's or its Subcontractors' construction of the Work, or failure to construct the Work, or any portion thereof; the use, misuse, erection, maintenance, operation, or failure of any machinery or equipment including, but not limited to, scaffolds, derricks, ladders, hoists, and rigging supports, whether or not such machinery or equipment was furnished, rented, or loaned by any of the Indemnitees; or any act, omission, negligence, or willful misconduct of the Contractor or its Subcontractors or their respective agents, employees, material or equipment suppliers, invitees, or licensees but only to the extent caused in whole or in part by the acts or omissions of the Contractor, its Subcontractors, its suppliers, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity, which would

otherwise exist as to a party, person, or entity described in this paragraph. The obligation to defend, indemnify and hold harmless includes any claims or actions by third parties arising out of or resulting from Labor Code section 2810. Contractor shall have no obligation to defend or indemnify the Indemnitees against claims, actions, damages, liabilities, losses, and expenses caused by the active negligence, sole negligence or willful misconduct of Indemnitees. This indemnification shall apply to all liability, as provided for above, regardless of whether any insurance policies are applicable, and insurance policy limits do not act as a limitation upon the amount of the indemnification to be provided by the Contractor.

3.16.2 **SCOPE: SUBCONTRACTORS**

3.16.2.1 ***Indemnity.*** The Subcontractors shall defend, indemnify, and hold harmless the Indemnitees from and against claims, actions, damages, liabilities, and losses (including but not limited to injury or death of persons, property damage, and compensation owed to other parties), and expenses (including but not limited to attorneys' fees and costs including fees of consultants) alleged by third parties against Indemnitees arising out of or resulting from the following: Subcontractors' performance of the Work, including but not limited to the Subcontractors' use of the Site; the Subcontractors' construction of the Work or failure to construct the Work or any portion thereof; the use, misuse, erection, maintenance, operation, or failure of any machinery or equipment, including, but not limited to, scaffolds, derricks, ladders, hoists, and rigging supports, whether or not such machinery or equipment was furnished, rented, or loaned by any of the Indemnitees; or any act, omission, negligence, or willful misconduct of the Subcontractors or their respective agents, employees, material or equipment suppliers, invitees, or licensees but only to the extent caused in whole or in part by the acts or omissions of the Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity, which would otherwise exist as to a party, person, or entity described in this paragraph. This obligation to defend, indemnify and hold harmless includes any claims or actions by third parties arising out of or resulting from Labor Code section 2810. Subcontractors shall have no obligation to defend or indemnify the Indemnitees against claims, actions, damages, liabilities, losses, and expenses caused by the active negligence, sole negligence or willful misconduct of Indemnitees. This indemnification shall apply to all liability, as provided for above, regardless of whether any insurance policies are applicable, and insurance policy limits do not act as a limitation upon the amount of the indemnification to be provided by the Subcontractors.

3.16.2.2 ***Joint and Several Liability.*** In the event more than one Subcontractor is connected with an accident or occurrence covered by this indemnification, then all such Subcontractors shall be jointly and severally responsible to each of the Indemnitees for indemnification, and the ultimate responsibility among such indemnifying Subcontractors for the loss and expense of any such indemnification shall be resolved without jeopardy to any Indemnitee. The provisions of the indemnity provided for herein shall not be construed to indemnify any Indemnitee for its own negligence if not permitted by law or to eliminate or reduce any other indemnification or right which any Indemnitee has by law or equity.

3.16.3 NO LIMITATION

The Contractor's and the Subcontractor's obligation to indemnify and defend the Indemnitees hereunder shall include, without limitation, any and all claims, damages, and costs: for injury to persons and property (including loss of use), and sickness, disease or death of any person; for breach of any warranty, express or implied; for failure of the Contractor or the Subcontractor to comply with any applicable governmental law, rule, regulation, or other requirement; and for products installed in or used in connection with the Work.

3.17 OWNER AS INTENDED BENEFICIARY

The Owner is an intended beneficiary of any architectural or engineering work secured by, or performed by, the Contractor to fulfill its obligations under the Contract. Contractor shall state in its contracts with architectural or engineering consultants that their work is for the intended benefit of the Owner.

3.18 NOTICE OF EXCUSE FOR NONPERFORMANCE

If Contractor believes that acts or omissions of Owner (including but not limited to Owner caused delay) have prevented Contractor from performing the Work as required by the Contract Documents and Contractor intends to rely on Owner's acts or omissions and Civil Code section 1511(1) as reasons to excuse Contractor's nonperformance or to support, among other things, Contractor's requests for time extensions under General Conditions section 4.5, Contractor shall provide written notice of the excuse within five (5) days of the Owner's acts or omissions. If Contractor fails to timely submit the written notice Contractor shall have waived any right to later rely on the acts or omissions as a defense to Contractor's nonperformance or as the basis for a time extension, regardless of the merits of the defense or time extension. Contractor will not have satisfied a condition precedent or exhausted administrative remedies. Contractor acknowledges that these written notices are of critical importance to the Owner's Work and Project management and the mitigation of Work and Project costs and delays.

ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 DEFINITION

The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative, and shall also refer to all consultants under the Architect's direction and control.

4.1.2 MODIFICATION

To the extent the Contract Documents indicate that Owner has assigned duties or responsibilities to the Architect, Owner reserves the right at all times to reassign such duties or responsibilities to different Owner representatives.

4.1.3 TERMINATION

In the case of the termination of the Architect, the Owner may appoint an architect or another construction professional or may perform such functions with its own licensed professional personnel. The status of the replacement Architect under the Contract Documents shall be that of the former architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 STATUS

The Architect will provide administration of the Contract and may be one of several Owner's representatives during construction, through release of all retention, and during the one (1) year period following the commencement of any warranties. The Architect will advise and consult with the Owner. The Architect will have authority to act on behalf of the Owner only to the extent set forth in the Owner/Architect agreement. The Architect will have all responsibilities and power established by law, including California Code of Regulations, Title 24, to the extent set forth in the Owner/Architect agreement.

4.2.2 SITE VISITS

The Architect will visit the Site at intervals necessary in the judgment of the Architect or as otherwise agreed by the Owner, Construction Manager, and the Architect in writing to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents.

4.2.3 LIMITATIONS OF CONSTRUCTION RESPONSIBILITY

The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract Documents, or by tests, inspections, or approvals required or performed by persons other than the Contractor.

4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

The Owner and the Contractor shall communicate through the Construction Manager or as the Owner otherwise directs. Communications between Owner and Subcontractors or material or equipment suppliers shall be through the Contractor. Communications with other contractors shall be through the Construction Manager.

4.2.5 PAYMENT APPLICATIONS

The Contractor shall submit payment applications to the Construction Manager or as the Owner directs otherwise.

4.2.6 REJECTION OF WORK

The Architect, Inspector of Record, Construction Manager and others may recommend to the Owner that the Owner reject Work which does not conform to the Contract Documents or that the Owner require additional inspection or testing of the Work in accordance with paragraph 13.5.5, whether or not the Work is fabricated, installed, or completed. However, no recommendation shall create a duty or responsibility to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.2.7 CHANGE ORDERS

The Architect will prepare change orders and construction change directives and may authorize minor changes in the Work.

4.2.8 WARRANTIES UPON COMPLETION

The Architect in conjunction with the Inspector of Record, or as otherwise directed by Owner, will conduct field reviews of the Work to determine the date of completion, shall receive and forward to the Construction Manager for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor. The handling by the Architect of such warranties, maintenance manuals, or similar documents shall not diminish or transfer to the Architect any responsibilities or liabilities required by the Contract Documents of the Contractor or other entities, parties, or persons performing or supplying the Work.

Except as may be otherwise directed by Owner, the Architect will conduct a field review of the Contractor's comprehensive list of items to be completed or corrected for development of a punch list and one (1) follow-up field review if required. The cost incurred by the Owner for further field reviews or the preparation of further punch lists by the Architect shall be invoiced to the Contractor and withheld from payment and/or retention.

4.2.9 INTERPRETATION

The Architect, Inspector of Record, Construction Manager, the Owner or any independent consultant of Owner, as Owner deems appropriate, will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of the Contractor. The Owner's response to such requests will be made with reasonable promptness, while allowing sufficient time to permit adequate review and evaluation of the request.

4.2.10 ADDITIONAL INSTRUCTIONS

4.2.10.1 ***Architect's Interpretations and Decisions.*** Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations of and decisions regarding the Contract Documents, the Architect will endeavor to secure faithful performance under the Contract Documents by both the Owner and the Contractor and will not show partiality to either. The Work shall be executed in conformity with, and the Contractor shall do no work without, approved drawings, Architect's clarifying instructions, and/or submittals.

4.2.10.2 ***Typical Parts and Sections.*** Whenever typical parts or sections of the Work are completely detailed on the Drawings, and other parts or sections which are essentially of the same construction are shown in outline only, the complete details shall apply to the Work which is shown in outline.

4.2.10.3 ***Dimensions.*** Dimensions of Work shall not be determined by scale or rule. Figured dimensions shall be followed at all times. If figured dimensions are lacking on Drawings, Architect shall supply them on request. The Owner's decisions on matters relating to aesthetic effect will be final if consistent with the Contract Documents.

4.3 INSPECTOR OF RECORD

4.3.1 GENERAL

One or more Project inspectors (“Inspector of Record”) employed by the Owner and approved by the Division of the State Architect will be assigned to the Work in accordance with the requirements of Title 24 of the California Code of Regulations. The Inspector of Record’s duties will be as specifically defined in Title 24.

4.3.2 INSPECTOR'S DUTIES

All Work shall be under the observation of or with the knowledge of the Inspector of Record. The Inspector of Record shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Inspector of Record and Construction Manager such information as may be necessary to keep the Inspector of Record fully informed regarding progress and manner of work and character of materials. Such observations shall not, in any way, relieve the Contractor from responsibility for full compliance with all terms and conditions of the Contract, or be construed to lessen to any degree the Contractor's responsibility for providing efficient and capable superintendence. The Inspector of Record is not authorized to make changes in the drawings or specifications nor shall the Inspector of Record's approval of the Work and methods relieve the Contractor of responsibility for the correction of subsequently discovered defects, or from its obligation to comply with the Contract Documents.

4.3.3 INSPECTOR'S AUTHORITY TO REJECT OR STOP WORK

The Inspector shall have the authority to reject work that does not comply with the provisions of the Contract Documents. In addition, the Inspector of Record may stop any work which poses a probable risk of harm to persons or property. The Contractor shall instruct its employees, Subcontractors, material and equipment suppliers, etc., accordingly. The absence of any Stop Work order or rejection of any portion of the Work shall not relieve the Contractor from any of its obligations pursuant to the Contract Documents.

4.3.4 INSPECTOR OF RECORD'S FACILITIES

Within seven (7) days after notice to proceed, the Contractor shall provide the Inspector of Record with the temporary facilities as required under Division 1 of the Specifications.

4.4 RESPONSIBILITY FOR ADDITIONAL CHARGES INCURRED BY THE OWNER FOR PROFESSIONAL SERVICES

If at any time prior to the completion of the requirements under the Contract Documents, through no fault of its own, the Owner is required to provide or secure additional professional services for any reason by any act or omission of the Contractor, the Contractor shall be invoiced by the Owner for any actual costs incurred for any such additional services, which costs may, among other remedies, be withheld from the progress payments and/or retention. Such invoicing shall be independent from any other Owner remedies, including but not limited to liquidated damages. If payments then or thereafter due to the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. Additional services shall include, but shall not be limited to, the following:

A. Services made necessary by the default of the Contractor.

B. Services made necessary due to the defects or deficiencies in the Work of the Contractor.

C. Services required by failure of the Contractor to perform according to any provision of the Contract Documents.

D. Services in connection with evaluating substitutions of products, materials, equipment, Subcontractors proposed by the Contractor, and making subsequent revisions to drawings, specifications, and providing other documentation required (except for the situation where the specified item is no longer manufactured or available).

E. Services for evaluating and processing Claims submitted by the Contractor in connection with the Work outside the established Change Order process.

F. Services required by the failure of the Contractor to prosecute the Work in a timely manner in compliance within the specified time of completion.

G. Services in conjunction with the testing, adjusting, balancing and start-up of equipment other than the normal amount customarily associated for the type of Work involved.

H. Services in conjunction with more than one (1) re-review of required submittals of shop drawings, product data, and samples.

4.5 NOTICES OF POTENTIAL CHANGE, CHANGE ORDER REQUESTS, AND CLAIMS

If the Contractor identifies the potential for extra work, delay in the critical path schedule, or the need for additional money or time, or if the Contractor requests additional money or time, or if the Contractor believes that Owner has failed to pay amounts due or otherwise breached the Contract, or otherwise believes that it is entitled to a modification of the Contract terms and conditions, then Contractor shall follow the procedures in this Section 4.5 and Article 7, otherwise Contractor shall have waived its rights to pursue those issues and any later attempts to recover money or obtain a modification shall be barred. Contractor specifically acknowledges the Owner's and public's interest in, and need to know of, potential changes and disputes as early as possible so Owner can investigate, mitigate and resolve adverse cost and time impacts, if any. It is Contractor's obligation to know and comply with the requirements of Section 4.5 and Article 7, and Owner has no obligation to notify Contractor of any failure to comply with those requirements.

4.5.1 NOTICE OF POTENTIAL CHANGE

Contractor shall submit a written Notice of Potential Change for extra work, critical path delay, or additional money or time. Contractor shall submit written Notices of Potential Change to Construction Manager within five (5) days of Contractor becoming aware of the issues creating the potential for change, unless the issues are, or may soon be, adversely affecting the costs or critical path of the Work, in which case the Contractor must submit the written notice without delay so the Owner may take immediate action to mitigate cost and schedule impacts of the change, if any. The written notice shall explain the nature of the potential change so the Owner may take action to mitigate costs and schedule impacts, if necessary.

When submitting a written Notice of Potential Change based on extra work, Contractor shall not perform the extra work until directed in writing to do so by Owner. When submitting a written Notice of Potential Change for an issue of critical path delay, Contractor shall proactively mitigate the effects of the alleged delay as much as reasonably possible so as to minimize any impact to the schedule, until otherwise directed by Owner. If Contractor intends to rely on Owner's acts or omissions in support of a request for a time extension, then Contractor must also provide the notice set forth in section 3.18, above.

Failure to timely submit a written Notice of Potential Change shall constitute a complete waiver by Contractor of any right to later submit a change order request or pursue a Claim on that issue, or to later pursue any additional money or time extensions in any manner related to that issue,

regardless of the merits. Contractor will not have satisfied a condition precedent or exhausted administrative remedies. Contractor acknowledges that these written notices are of critical importance to the Owner's Work and Project management and the mitigation of Work and Project costs and delays.

4.5.2 CHANGE ORDERS REQUESTS

If, after submitting a written Notice of Potential Change pursuant to Section 4.5.1, Contractor continues to believes that it is entitled to additional money or time (including but not limited to grant of a time extension; payment of money or damages arising from work done by, or on behalf of, the Contractor, payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to; or an amount the payment of which is disputed by the Owner) based on an issue, then Contractor shall submit a Change Order Request ("COR") to Construction Manager within twenty (20) days of (i) becoming aware of the issues creating a potential change, or (ii) the date by which it should have become aware of the issues creating a potential change. A rejection at any time or a lack of a rejection by Owner of a Notice of Potential Change does not affect the timeline for submitting a COR.

Failure to timely submit a COR related to an issue, or failure to comply with any of the COR requirements in the Contract shall constitute a complete waiver by Contractor of any right to later submit a COR or Claim on that issue, or to later pursue any additional money (including time extensions) in any manner related to that issue, regardless of the merits. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

The COR shall state the grounds for the additional money or time requested and the amount of money or time requested, and Contractor shall include all information supporting the COR.

Contractor shall certify the COR using the form set forth in Section 4.5.5.1, except that every reference to "Claim" shall be changed to "COR." If a COR is submitted without certification, a certification can still be submitted within the timelines set forth in the first paragraph of section 4.5.2. If the COR is not timely certified, Contractor will have completely waived its rights to any money or time for that issue. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

The Owner may accept the entire COR, accept part of the COR and reject the remainder, reject the entire COR, or request additional information. If the Owner does not respond within thirty (30) days by accepting the entire COR, accepting part of the COR and rejecting the remainder, or requesting additional information, the entire COR shall be deemed rejected as of the thirtieth (30th) day. If the Owner requests additional information, then the Contractor shall submit the information within fifteen (15) days of the date of the request and the Owner shall have fifteen (15) days after the receipt of the additional information to accept or reject (in whole or in part) the COR. If the Owner fails to respond within fifteen (15) days after the submission of additional information, the entire COR shall be deemed rejected as of the fifteenth (15th) day.

4.5.3 DEFINITION OF CLAIM

A "Claim" is a separate demand by the Contractor for (a) a time extension, (b) payment of money or damages arising from work done by, or on behalf of, the Contractor, payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (c) an amount the payment of which is disputed by the Owner. A claim includes any claim within the scope of Public Contract Code section 20104 et seq. Resubmittal in any manner of a COR which was previously rejected under Section 4.5.2 constitutes a Claim, whether the COR was rejected in whole or in part, and whether the COR was rejected expressly or deemed rejected by Owner inaction. A Claim includes any dispute Contractor may have with the Owner, including one which does not require a Notice of Potential Change or COR under Sections 4.5.1 and 4.5.2, and includes an alleged breach of contract by the Owner. A Claim under this Article 4.5 shall also constitute a claim for purposes of the California False Claims Act. In the event of a conflict between a Claims provision in Division 1 of the Specifications and Section 4.5, Section 4.5 shall take precedence.

The Notice of Potential Change and COR procedures above are less formal procedures which precede the more formal Claim. A Notice of Potential Change does not constitute a Claim. A COR does not constitute a Claim; **except that** if insufficient time remains before the Claim deadline (see Article 4.5.4) for Contractor to submit a COR and for Owner to process and reject the COR under Article 4.5.2, then either (1) Contractor may submit a COR which Owner shall treat as a Claim, but only if the COR complies with all requirements in this Article 4.5 and Article 7 for COR's and Claims, or (2) a COR is not required so long as a Claim complying with this Article 4.5 is timely submitted.

A Claim does not include vouchers, invoices, progress payment applications, or other routine or authorized forms of requests for progress payments on the Contract; however, those documents remain "claims" for purposes of the California False Claims Act. A Claim does not include a Government Code Claim. ("Government Code Claim" means a claim under Government Code sections 900 et seq. and 910 et seq.)

4.5.4 TIME FOR SUBMITTING CLAIM; WAIVER

Contractor shall submit a Claim to the Owner's Construction Manager on or before the date of the Final Progress Payment. Owner's rejection, or lack of rejection, of a COR at any time does not affect the deadline for filing a Claim.

In addition, on or before submitting its request for a final progress payment based on 100% completion of the work, Contractor shall submit to Construction Manager, in writing, a summary of all Claims for money or time extensions under or arising out of this Contract which were timely filed and which were fully compliant with the Contract's requirements for Claims. The submission of an Application for Payment for the Final Progress Payment shall constitute a complete waiver of all Claims against Owner under or arising out of this Contract, except those identified in the above summary. Contractor will not have satisfied a condition precedent or exhausted administrative remedies. This Claim summary requirement shall not extend the time for submitting a Claim.

Failure to timely submit a Claim, failure to include a Claim in the Claim summary, or failure to comply with any of the Claim requirements in the Contract, including but not limited to this Article 4, will act as a complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim for the money or time (see Section 4.5.6.4), and (c) initiate any action, proceeding or litigation for the money or time, regardless of the merits. Contractor will not have satisfied a condition precedent or exhausted administrative remedies. Owner does not have an obligation to reject the Claim for a failure to comply with any of the Claim requirements in the Contract, including the lack of certification, and any failure by Owner to reject, or any delay in rejecting, a Claim on that basis does not waive the Owner's right to reject the Claim on that basis at a later time. In no event may the Contractor reserve its rights to assert a Claim for a time extension or additional money beyond the timelines set forth in this provision unless the Owner agrees in writing to allow the reservation.

4.5.5 CONTENT OF CLAIM

4.5.5.1 *Claim Format; Waiver*

Every Claim shall be in writing. All money or time extensions sought must be stated and itemized in the Claim at the time submitted. The responsibility to substantiate Claims shall rest with the Contractor.
In addition, the Contractor shall include a certification with each and every Claim at the time of submission, as follows:

> I, [name of declarant], declare the following:
>
> [Contractor company name] has contracted with [public entity name] for the [name of project and bid package]. ([Contractor company name]) authorized me to prepare the attached Claim for money and/or time extension) for [public entity name] regarding this Project (dated _____, 20__, entitled _____, and requesting $_____ and/or ___ additional days), and I prepared the attached Claim. I am the most knowledgeable person at [contractor company name] regarding this Claim.
>
> The attached Claim complies with all laws applicable to submission of a Claim, including but not limited to California Penal Code section 72, Government Code sections 12650 et seq. (False Claims Act), and Business and Professions Code sections 17200 et seq. (Unfair Business Practices Act). I am aware that submission or certification of false claims, or other claims that violate law or the Contract, may lead to fines, imprisonment, and/or other serious legal consequences for myself or [contractor company name].
>
> The attached Claim does not breach the Contract between [contractor company name] and [public entity name] for this Work, is not a false claim, does not violate any applicable law, satisfies all provisions of the Contract

applicable to submission of the Claim, only contains truthful and accurate supporting data, and only requests money and/or time extensions that accurately reflect the adjustments to money and time for which I believe that [public entity name] is responsible under its Contract with [contractor company name].

While preparing this declaration and Claim I consulted with others (including attorneys, consultants, or others who work for [Contractor company name]) when necessary to ensure that the statements were true and correct.

Contractor understands and agrees that any Claim submitted without this certification does not meet the terms of the Contract Documents; that Owner, or Owner's representatives, may reject the Claim on that basis; and that unless Contractor properly and timely files the Claim with the certification, Contractor cannot further pursue the Claim in any forum and all rights to additional money or time for the issues covered by the Claim are waived due to a condition precedent not having been satisfied.

I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed _____, 2___, at _____, California.

_____
[name of declarant]

Contractor's failure to timely submit a certification will constitute a complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim (see Section 4.5.6.4) for the money or time, and (c) initiate any action, proceeding or litigation for the money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

4.5.5.2 ***Claims for Additional Money***

Each Claim for additional money (including but not limited to those described in (b) and (c) of the first paragraph of Section 4.5.3) must include all facts supporting the Claim, including but not limited to all supporting documentation plus a written analysis as to (a) why the claimed cost was incurred, (b) why Contractor could not mitigate its costs, (c) why the claimed cost is the responsibility of the Owner, and (d) why the claimed cost is a reasonable amount. In no event will the Contractor be allowed to reserve its rights to assert a Claim for money at a later time, unless the Owner expressly agrees in writing to allow the reservation. Any costs, direct or indirect, not asserted shall be waived. A Claim may not include any costs incurred in preparation of the Claim or in preparation of any underlying COR, including but not limited to costs of delay analysis.

4.5.5.3 ***Claims for Additional Time***

4.5.5.3.1 *Notice of Extent of Claim*

If the Contractor wishes to make a Claim for an increase in the Contract Time (including but not limited to Section 4.5.3(a)), the Claim shall include, but not be limited to, all facts supporting the Claim, all documentation of such facts, all information required by the Contract Documents, and a current schedule and delay analysis explaining (a) the nature of the delay, (b) the Owner's responsibility for the claimed delay, (c) the claimed delay's impact on the critical path, (d) the claimed delay's impact on completion date (including an analysis of any float still remaining and whether the alleged delay in work exceeds such remaining float), and (e) why Contractor could not mitigate the delay impacts.

In the case of a continuing delay, only one (1) initial Claim is necessary that is based on estimates of when the continuing delay will end, but within thirty (30) days of the end of the continuing delay an updated final Claim must be submitted, which shall also be certified. In no event will the Contractor be allowed to reserve its rights to assert a Claim for a time extension, unless the Owner expressly agrees in writing to allow the reservation. Any time extension not asserted shall be waived.

4.5.5.3.2 *Unusually Severe Weather Claims*

If unusually severe weather is the basis for a Claim for additional time, Contractor must provide Owner data and facts showing that the weather conditions were abnormal for the period of time, could not have been reasonably anticipated or mitigated, and had an adverse effect on the critical path of the scheduled construction.

4.5.5.4 *"Pass Through" Claims*

A Subcontractor or supplier to Contractor may not submit a request for additional time or money directly to the Owner. If a subcontractor or supplier submits a request for additional money or time to Contractor and Contractor wishes to pass it through to Owner, then Contractor must comply with all requirements of Section 4.5, including Notices of Potential Change, Change Order Requests, and Claims. Contractor must prepare and submit its own analysis of the Subcontractor's request, and the Claim must include a copy of the Subcontractor's request along with any other necessary supporting documentation.

The Contractor's analysis of the Subcontractor's request must include Contractor's detailed explanation as to why the Subcontractor or supplier's request is the Owner's responsibility, including Contractor's analysis of (a) why the amount of damages the Subcontractor or supplier requests is justified and appropriate, (b) how Contractor's breach of the subcontract caused the Subcontractor or supplier to incur these damages, and (c) how the Owner's breach of the Contract caused the Contractor's breach of the subcontract. Any Contractor Claim that fails to include the above information, or that states that Owner is responsible for the Subcontractor's request only in the event that Contractor is found to owe money to Subcontractor, shall act as a complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim (see Section 4.5.6.4) for the money or

time, and (c) initiate any action, proceeding or litigation for the money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

4.5.6 PROCEDURES FOR CLAIMS LESS THAN OR EQUAL TO $375,000 (PUBLIC CONTRACT CODE SECTION 20104.2)

Claims less than or equal to $375,000 are subject to this section 4.5.6, as well as the separate procedures and substantive provisions of Sections 4.5.1 through 4.5.5.

4.5.6.1 *Claims for Less Than $50,000*

For Claims of less than fifty thousand dollars ($50,000), the Owner shall respond in writing to any written Claim within 45 days of receipt of the Claim, or may request, in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the claim the Owner may have against the Contractor.

If additional information is thereafter required, it shall be requested and provided pursuant to this subsection, upon mutual agreement of the Owner and Contractor. If Owner and Contractor cannot reach mutual agreement, Contractor's failure to provide any reasonably-requested information within fifteen (15) days after the request, shall act as a complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim (see Section 4.5.6.4) for the money or time, and (c) initiate any action, proceeding or litigation for such money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

The Owner's written response to the Claim, as further documented, shall be submitted to the Contractor within 15 days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information, whichever is greater.

4.5.6.2 *Claims Over $50,000 and Less Than or equal to $375,000*

For claims over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the Owner shall respond in writing to all written Claims within 60 days of receipt of the Claim, or may request, in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the Claim the Owner may have against the Contractor.

If additional information is thereafter required, it shall be requested and provided pursuant to this subsection, upon mutual agreement of the Owner and Contractor. If Owner and Contract cannot reach mutual agreement, Contractor's failure to provide any reasonably-requested information within thirty (30) days after the request, shall act as a complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim (see Section 4.5.6.4) for such money or time, and (c) initiate any action, proceeding or litigation for such money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

The Owner's written response to the Claim, as further documented, shall be submitted to the Contractor within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

4.5.6.3 ***Meet and Confer***

If the Contractor disputes the Owner's written response, or the Owner fails to respond within the time prescribed, the Contractor may so notify the Owner, in writing, either within 15 days of receipt of the Owner's response or within 15 days of the Owner's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the Owner shall schedule a meet and confer conference for settlement of the dispute, which shall take place within 30 days of the demand. Upon written agreement of the Owner and Contractor, the conference may take place during regularly scheduled Project meetings.

If Contractor fails to timely notify the Owner that it wishes to meet and confer pursuant to the previous paragraph, then Contractor will have waived all rights to (a) recover money or time on the issues for which a Claim was required, (b) submit a Government Code Claim (see Section 4.5.6) for such money or time, and (c) initiate any action, proceeding or litigation for such money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

If a Claim, or any portion of a Claim, over $100,000 remains in dispute after the meet and confer and Contractor wishes to pursue it, Contractor must demand non-binding mediation in writing within fifteen (15) days. If Contractor fails to timely notify the Owner in writing that it wishes to mediate pursuant to this paragraph, Contractor will have waived all right to further pursue the Claim pursuant to section 4.5.4. The parties shall reasonably cooperate to schedule and attend a mediation as soon as reasonably possible.

4.5.6.4 ***Government Code Claim***

If the Claim or any portion remains in dispute after the meet and confer conference and Contractor wishes to pursue it, the Contractor **must** file a timely and proper Government Code Claim. The filing of a Government Code Claim is specifically required in addition to all contractual procedures described in Sections 4.5 through 4.5.6.3. The above contractual procedures do not act as a substitute for the Government Code Claim process, and the two sets of procedures shall be sequential with the contractual procedures coming first.

Failure to timely file a Government Code Claim shall act as complete waiver of Contractor's rights to (a) recover money or time on the issues for which a Government Code Claim was required, and (b) initiate any action, proceeding or litigation for such money or time. Contractor will not have satisfied a condition precedent or exhausted administrative remedies.

Owner and Contractor shall proceed with the Government Code Claim according to Government Code, Section 900 et seq., and as otherwise permitted by law. For purposes of the applicable Government Code provisions, and as provided in Public Contract Code section 20104.2(e), the running of the time period within which a Contractor must file a Government Code Claim shall be tolled from the time the Contractor submits a written Claim under Article 4.5 until the time that the Claim is denied, in whole or in part, as a result of the meet and confer process in Section 4.5.6.3, including any period of time utilized by the meet and confer process.

4.5.7 PROCEDURES FOR CLAIMS OVER $375,000

Contractor and Owner shall proceed with Claims over $375,000 pursuant to Section 4.5.6, except as follows: (a) Section 4.5.6.1, shall not be applicable; (b) for Section 4.5.6.2, Owner shall respond in writing to all written Claims within 90 days of receipt of the Claim, or may request, in writing, within 45 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the Claim the Owner may have against the Contractor; (c) for Section 4.5.6.2, Owner shall respond within 45 days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or documentation, whichever is greater; and (d) for Section 4.5.6.3, following the meet and confer conference, if the Claim or any portion of it remains in dispute and Contractor wishes to pursue it, Contractor must demand in writing within fifteen (15) days that the parties mediate (non-binding). If Contractor fails to timely notify the Owner in writing that it wishes to mediate pursuant to this paragraph, then Contractor will have waived all rights to further pursue the Claim pursuant to Section 4.5.4. The parties shall reasonably cooperate to schedule and attend a mediation as soon as reasonably possible.

4.5.8 CONTINUING CONTRACT PERFORMANCE

Despite submission or rejection of a Notice of Potential Change, COR or Claim, the Contractor shall proceed diligently with performance of the Contract as directed by Owner, and the Owner shall continue to make any undisputed payments in accordance with the Contract.

4.5.9 CLAIMS FOR CONCEALED OR UNKNOWN CONDITIONS

4.5.9.1 *Trenches or Excavations Less Than Four Feet Below the Surface*

If Contractor encounters conditions at the Site which are subsurface or otherwise concealed physical conditions, which differ materially from those indicated in the Contract Documents, or unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall give notice to the Owner promptly before conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. If Contractor believes that such conditions differ materially and will cause an increase in the Contractor's cost of, time required for, or performance of any part of the Work, Contractor must comply with the provisions above for Notice of Potential Change, Change Order Request, and Claims (beginning with Section 4.5.1).

4.5.9.2 *Trenches or Excavations Greater Than Four Feet Below the Surface*

Pursuant to Public Contract Code section 7104, when any excavation or trenching extends greater than four feet below the surface:

4.5.9.2.1 The Contractor shall promptly, and before the following conditions are disturbed, notify the public entity, in writing, of any:

(1) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law.

(2) Subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids.

(3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

4.5.9.2.2 The public entity shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the Contract.

4.5.9.2.3 In the event that a dispute arises between the public entity and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

4.5.10 **INJURY OR DAMAGE TO PERSON OR PROPERTY**

If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, any of the other party's employees or agents, or others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding ten (10) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. For a Notice of Potential Change, COR and Claim for additional cost or time related to this injury or damage, Contractor shall follow Section 4.5.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 SUBCONTRACTOR

A Subcontractor is a person or entity, who has a contract with the Contractor to perform a portion of the Work at the Site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor. To the extent that the term Trade Contractor is utilized in the Contract Documents, it shall have the same meaning as the term "Subcontractor."

5.1.2 SUB-SUBCONTRACTOR

A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the Site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.1.3 SPECIALTY CONTRACTORS

If a Subcontractor is designated as a "Specialty Contractor" as defined in section 7058 of the Business and Professions Code, all of the Work outside of that Subcontractor's specialty shall be performed in compliance with the Subletting and Subcontracting Fair Practices Act, Public Contract Code sections 4100, et seq.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 ASSIGNMENT OR SUBSTITUTION - CONSENT OF OWNER

In accordance with Public Contract Code sections 4107 and 4107.5, no Contractor whose bid is accepted shall, without the written consent of the Owner: substitute any person or entity as a Subcontractor in place of the Subcontractor designated in the original bid; permit any such Subcontract to be assigned or transferred, or allow it to be performed by any person or entity other than the original Subcontractor listed in the original bid; sublet or subcontract any portion of the Work in excess of one-half of one percent (0.5%) of the Contractor's total bid as to which its original bid did not designate a Subcontractor. Any assignment or substitution made without the prior written consent of the awarding authority shall be void, and the assignees shall acquire no rights in the Contract. Any consent, if given, shall not relieve Contractor or its Subcontractors from their obligations under the terms of the Contract Documents.

5.2.2 **GROUNDS FOR SUBSTITUTION**

Pursuant to Public Contract Code section 4107 and the procedure set forth therein, no Contractor whose bid is accepted may request to substitute any person or entity as a Subcontractor in place of a Subcontractor listed in the original bid except in the following instances:

A. When the Subcontractor listed in the bid after having a reasonable opportunity to do so, fails or refuses to execute a written Contract for the scope of work specified in the subcontractor's bid and at the price specified in the subcontractor's bid, when that written Contract, based upon the general terms, conditions, plans and specifications involved or the terms of that Subcontractor's written bid, is presented to the Subcontractor by the contractor;

B. When the listed Subcontractor becomes insolvent or the subject of an order for relief in bankruptcy;

C. When the listed Subcontractor fails or refuses to perform his or her Subcontract;

D. When the listed Subcontractor fails or refuses to meet the bond requirements of the prime contractor set forth in Public Contract Code section 4108.

E. When the Contractor demonstrates to the awarding authority, or its duly authorized officer, subject to the further provisions of Public Contract Code section 4107.5, that the name of the Subcontractor was listed as the result of inadvertent clerical error;

F. When the listed Subcontractor is not licensed pursuant to the Contractors License Law; or

G. When the awarding authority, or its duly authorized officer, determines that the Work being performed by the listed Subcontractor is substantially unsatisfactory and not in substantial accordance with the plans and specifications, or the Subcontractor is substantially delaying or disrupting the progress of the Work.

H. When the listed Subcontractor is ineligible to work on a public works project pursuant to Section 1777.1 of the Labor Code.

I. When the awarding authority determines that a listed Subcontractor is not a responsible contractor.

5.2.2.1 ***No Change in Contract.*** Any substitutions of Subcontractors shall not result in any increase in the Contract Sum or result in the granting of any extension of time for the completion of the Work.

5.2.2.2 ***Substitution Due to Clerical Error.*** The Contractor, as a condition of asserting a claim of inadvertent clerical error in the listing of a Subcontractor, shall, pursuant to

Public Contract Code section 4107.5, within two (2) working days after the time of the bid opening by the awarding authority, give written notice to the awarding authority and copies of such notice to both the Subcontractor it claims to have listed in error, and the intended Subcontractor who had bid to the Contractor prior to bid opening. Any listed Subcontractor who has been notified by the Contractor in accordance with the provisions of this section as to an inadvertent clerical error, shall be allowed six (6) working days from the time of the prime bid opening within which to submit to the awarding authority and to the Contractor written objection to the Contractor's claim of inadvertent clerical error.

In all other cases, the Contractor must make a request in writing to the awarding authority for the substitution of a subcontractor, giving reasons therefor. The awarding authority shall mail a written notice to the listed Subcontractor giving reasons for the proposed substitution. The listed Subcontractor shall have five (5) working days from the date of such notice within which to file with the awarding authority written objections to the substitution.

Failure to file written objections pursuant to the provisions of this section within the times specified herein shall constitute a complete waiver of objection to the substitution by the listed Subcontractor and, where the ground for substitution is an inadvertent clerical error, an agreement by the listed Subcontractor that an inadvertent clerical error was made.

If written objections are filed, the awarding authority shall give five (5) days notice to the Contractor and to the listed Subcontractor of a hearing by the awarding authority on the Contractor's request for substitution as provided in Public Contract Code section 4107. The determination by the awarding authority shall be final.

5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all obligations and responsibilities, which the Contractor, by the Contract Documents, assumes toward the Owner. Each subcontract agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Upon written request of the Subcontractor, the Contractor shall identify to the Subcontractor the terms and conditions of the proposed subcontract agreement, which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

A. Assignment is effective only after termination of the Contract with the Contractor by the Owner for cause pursuant to Article 14 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and

B. Assignment is subject to the prior rights of the surety, if any, obligated under any bond relating to the Contract.

5.5 SUBCONTRACTOR'S RESPONSIBILITIES

Every Subcontractor is bound to the following provisions, unless specifically noted to the contrary in the Subcontractor's contract subject to the limitations of section 5.3.

5.5.1 SUPERVISION BY SUBCONTRACTORS

Subcontractors shall efficiently supervise their Work, using their best skill and attention. Each of them shall carefully study and compare all Drawings, Specifications, and other instructions, shall at once report to Contractor any error or omission which any of them may discover, and shall subsequently proceed with the Work in accordance with instructions from the Contractor concerning such error or omission. Each Subcontractor shall be fully responsible for and shall bear the full risk of loss of all of its property.

5.5.2 DISCIPLINE AND ORDER

Each Subcontractor shall at all times enforce strict discipline and good order among its Subcontractors, material or equipment suppliers, or their agents, employees, and invitees, and shall establish and maintain surveillance over the activities of each of the foregoing to minimize any disturbance, damage, pollution, or unsightly conditions relative to property areas adjacent to or in the vicinity of the Site. The Contractor shall have the right to remove from the Work any employee of a Subcontractor for any reason including, without limitation, incompetence or carelessness.

5.5.3 DEFECTS DISCOVERED

Should the proper and accurate performance of the Work depend upon the proper and accurate performance of other work not included in its Contract, each Subcontractor shall use all necessary means to discover any defect in such other work and shall allow the Contractor, the Architect or other Subcontractors as Contractor elects a reasonable amount of time to remedy such defects. If the Subcontractor should proceed with its Work, it shall be considered to have accepted such other work, unless the Subcontractor shall have proceeded pursuant to instructions in writing by the Contractor over its written objection.

5.5.4 SUBCONTRACTOR INFORMATION

Each Subcontractor shall submit to the Owner, the Contractor, or the Architect, as the case may be, promptly when requested by any of the foregoing, information with respect to the names, responsibilities, and titles of the principal members of its staff, the adequacy of the Subcontractor's equipment and the availability of necessary materials and supplies. Subcontractor shall fully cooperate with Contractor in its periodic review of the adequacy of Subcontractor's supervision, personnel, and equipment, and the availability of necessary materials and supplies and shall promptly comply with the requirements of the Contractor with respect thereto.

5.5.5 TEMPORARY STRUCTURES

Each Subcontractor shall furnish at its expense its own temporary facilities and storage except those specifically agreed to be furnished to it by the Contractor in the Subcontract Agreement. Subcontractor's material storage rooms and field offices, etc., will be placed in locations designated by the Contractor. When it becomes necessary due to the progress of the Work for the Subcontractor to relocate its field operations, it will do so in an expeditious manner and at no additional cost to Contractor or Owner. The construction of material storage rooms and field offices, etc., will be of fire resistive material only, such as concrete or gypsum block, rated drywall, or sheet metal.

5.5.6 CHARGES TO SUBCONTRACTOR

Each Subcontractor may be subject to the Contractor's reasonable charges for hoisting, repair to other work caused
by the fault or negligence of Subcontractor, removal of Subcontractor's rubbish, and clean-up occasioned by Subcontractor.

5.5.7 FINES IMPOSED

Subcontractor shall comply with and pay any fines or penalties imposed for violation of any applicable law, ordinance, rule, regulation, Environmental Impact Report mitigation requirement, and lawful order of any public authority, including, without limitation, all OSHA and California OSHA requirements and those of other authorities having jurisdiction of the safety of persons or property.

5.5.8 PROJECT SIGNS

Each Subcontractor shall not display on or about the Work any sign, trademark, or other advertisement. The Owner will permit a single sign for Contractor, which shall be subject to the Owner's prior and sole discretion and approval, as to all matters including, without limitation, size, location, material, colors, style and size of printing, logos and trademarks (if any), text, and selection of names to be displayed.

5.5.9 REMEDIES FOR FAILURE TO PERFORM

Without limitation of any other right or remedy available to Contractor under the Contract Documents or at law, should: the Subcontractor fail to perform its portion of the Work in a skilled and expeditious manner in accordance with the terms of the Contract Documents with sufficient labor, materials, equipment, and facilities; delays the progress of the job or otherwise fail in any of its obligations; or either a receiver is appointed for the Subcontractor or the Subcontractor is declared to be bankrupt or insolvent, and such appointment, bankruptcy, or insolvency proceedings or declaration is not set aside within thirty (30) days, then the Contractor, upon three (3) days notice to the Subcontractor (subject to the requirements of Pub. Contracts Code, § 4107), may provide such labor, materials, or perform such work and recover the cost plus profit and overhead from monies due or to become due thereafter to the Subcontractor. The Contractor may terminate the employment of the Subcontractor, taking possession of its tools, materials, and equipment related to the Work and cause the entire portion of the Subcontractor's Work to be finished either by another Subcontractor or through the Contractor's own forces.

5.5.10 DISPUTES NOT TO AFFECT WORK

In the event of any dispute as to whether or not any portion of the Work is within the scope of the Work to be performed by a Subcontractor, or any dispute as to whether or not the Subcontractor is entitled to a Change Order for any Work requested of it or entitled to payment, the Subcontractor shall continue to proceed diligently with the performance of the Work. Regardless of the size or nature of the dispute, the Subcontractor shall not under any circumstances cease or delay performance of its portion of the Work during the existence of the dispute. The Contractor shall continue to pay the undisputed amounts called for under the Subcontract Agreement during the existence of the dispute. Any party stopping or delaying the progress of the Work because of a dispute shall be responsible in damages to the Owner, the Architect, and the Contractor for any losses suffered as a result of the delay.

5.5.11 APPLICATION FOR PAYMENT

Contractor agrees to advise the Subcontractor if any documentation in connection with the Subcontractor's application for payment has not been accepted or is in any way unsatisfactory.

5.5.12 COMPLIANCE WITH PROCEDURES

Each Subcontractor shall comply with all procedures established by the Contractor for coordination among the Owner, the Owner's consultants, Architect, Construction Manager, Contractor, and the various Subcontractors for coordination of the Work with all local municipal authorities, government agencies, utility companies, and any other agencies with jurisdiction over all or any portion of the Work. The Subcontractor shall cooperate fully with all of the foregoing parties and authorities.

5.5.13 ON-SITE RECORD KEEPING

Subcontractor shall comply with all on-Site record keeping systems established by the Contractor and shall, upon the request of the Contractor, provide the Contractor with such information and reports as the Contractor may deem appropriate. Without limitation of the foregoing, the Subcontractor shall assemble all required permits and certificates so that they are readily accessible at the Site.

5.5.14 NON-EXCLUSIVE OBLIGATIONS

The specific requirements of Article 5 are not intended to exclude the obligation of the Subcontractor to comply with any of the other provisions of the General Conditions and the other Contract Documents which are relevant to the proper performance of its portion of the Work.

ARTICLE 6

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 OWNER'S RIGHTS

The Owner reserves the right to perform work related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the Site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance. Upon the election to perform additional work with its own forces or separate contractors, the Owner shall notify the Contractor through the Construction Manager. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall proceed pursuant to Section 4.5 in the Contract Documents.

6.1.2 DESIGNATION AS CONTRACTOR

As separate contracts will be awarded for different portions of the Project or other construction or operations on the Site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner/Contractor Agreement.

6.1.3 CONTRACTOR DUTIES

The Contractor shall have overall responsibility for coordination and scheduling of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum deemed necessary after

a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors, and the Owner until subsequently revised.

6.1.4 OWNER OBLIGATIONS

Unless otherwise provided in the Contract Documents, when the Owner performs work related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations, and to have the same rights, which apply to the Contractor under the General Conditions, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 DELIVERY AND STORAGE

The Contractor shall afford the Owner and separate contractors reasonable opportunity for delivery and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the separate contractors' construction and operations with theirs as required by the Contract Documents.

6.2.2 NOTICE BY CONTRACTOR

If part of the Contractor's Work depends upon proper execution or results from work by the Owner or separate contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager patent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 COSTS INCURRED

Costs, expenses, and damages caused by delays, improperly timed activities, defective construction, or damages to another's work/Work or property shall be borne by the party responsible. Should any Contractor cause damage to the work/Work or property of a separate contractor on the Project, or cause any delay to any such contractor, the Contractor shall defend, indemnify and hold Owner harmless for such damage or delay under section 3.16. Owner may withhold from progress payments and/or retention the cost of delay or damage to another contractor’s work/Work or damage to another contractor’s property caused by the Contractor.

6.2.4 CORRECTION OF DAMAGE

The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors.

6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Section 3.13, the Owner may clean up and allocate the cost among those responsible as the Owner determines to be just.

ARTICLE 7

CHANGES IN THE WORK

7.1 CHANGES

7.1.1 NO CHANGES WITHOUT AUTHORIZATION

The Owner reserves the right to change the Work by making such alterations, deviations, additions to, or deletions from the plans and specifications, as may be deemed by the Owner to be necessary or advisable for the proper completion or construction of the Work contemplated, and Owner reserves the right to require Contractor to perform such work. No adjustment will be made in the Contract unit price of any Contract item regardless of the quantity ultimately required.

Owner shall compensate Contractor with money or grant extra time for any extra work ordered by the Owner to be performed. Contractor shall follow the provisions of 7.6 and 7.7 when requesting additional money or additional time. Contractor shall expeditiously perform all extra work upon direction, even if no agreement has been reached on extra time or money. For all such changes resulting in a credit to Owner, Contractor shall follow 7.5 and 7.7 in providing the credit to Owner. Contractor shall bring all potential credits to the Owner’s attention.

There shall be no change whatsoever in the drawings, specifications, or in the Work or payments under the Contract Documents without an executed Change Order, Construction Change Directive, or order by the Owner pursuant to Section 7.1.2. Owner shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the same shall have been properly requested under Section 4.5 and authorized by, and the cost thereof approved in writing by, Change Order or Construction Change Directive. No extension of time for performance of the Work shall be allowed hereunder unless request for such extension is properly made under Section 4.5 and such time is thereof approved in writing by Change Order or Construction Change Directive. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications.

7.1.2 ARCHITECT AUTHORITY TO ORDER MINOR CHANGES

The Owner has authority to order minor changes in the Work not involving any adjustment in the Contract Sum, an extension of the Contract Time, or a change which is inconsistent with the intent of the Contract Documents. Such changes shall be effected by written Construction Change Directive and shall be binding on the Owner. The Contractor shall carry out such written orders promptly.

7.2 CHANGE ORDERS ("CO")

A CO is a written instrument signed by the Owner and the Contractor, stamped (or sealed) and signed by the Architect, and approved by the Owner's Governing Board and DSA, stating the agreement upon all of the following:

A. A change in the Work;

B. The amount of the adjustment in the Contract Sum, if any; and

C. The extent of the adjustment in the Contract Time, if any.

Unless expressly stated otherwise in the CO, any CO executed by Owner and Contractor constitutes and includes full and complete money and time (including but not limited to, adjustments to money and time) for all costs and effects caused by any of the changes described within it. Unless expressly stated otherwise in the CO, in consideration for the money received for the changes described in the CO, Contractor waives all Claims for all costs and effects caused by any of the changes, including but not limited to labor, equipment, materials, delay, extra work, overhead (home and field), profit, direct costs, indirect costs, acceleration, disruption, impaired productivity, time extensions, and any the costs and effects on Subcontractors and suppliers of any tier.

7.3 CONSTRUCTION CHANGE DIRECTIVES ("CCD")

7.3.1 DEFINITION

A CCD is a written unilateral order signed by the Owner, and if necessary by the Architect, directing a change in the Work and stating an adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by CCD, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions pursuant to Section 7.1.1.

7.3.2 USE TO DIRECT CHANGE

A CCD shall be used in the absence of agreement on the terms of a CO. If Contractor disagrees with the terms of a CCD, it shall nevertheless perform the work directed by the CCD, but it may

pursue the Notice of Potential Change, COR and Claim procedures of Section 4.5 if Contractor believes it is entitled to changes in the Contract Sum or Contract Time.

7.4 REQUEST FOR INFORMATION ("RFI")

7.4.1 DEFINITION

An RFI is a written request prepared by the Contractor asking the Owner through the Construction Manager to provide additional information necessary to clarify an item which the Contractor feels is not clearly shown or called for in the drawings or specifications, or to address problems which have arisen under field conditions.

7.4.2 SCOPE

The RFI shall reference all the applicable Contract Documents including specification section, detail, page numbers, drawing numbers, and sheet numbers, etc. The Contractor shall make suggestions and/or interpretations of the issue raised by the RFI. An RFI cannot modify the Contract Sum, Contract Time, or the Contract Documents.

7.4.3 RESPONSE TIME

Unless Owner expressly directs otherwise in writing, Contractor shall submit RFIs directly to the Architect, with copies forwarded to the Owner. Contractor shall submit a revised and updated priority schedule with each RFI. The Architect shall endeavor to follow the Contractor's requested order of priorities. The Owner and Contractor agree that an adequate time period for the Architect (or other designated recipient of the RFI) to respond to an RFI is generally fourteen (14) calendar days after the Architect's receipt of an RFI, unless the Owner and Contractor agree otherwise in writing. However, in all cases, the Architect shall take such time, whether more or less than 14 days, as is necessary in the Architect's professional judgment to permit adequate review and evaluation of the RFI. If Contractor informs the Architect that it needs a response to an RFI expedited to avoid delay to the critical path, the Architect shall provide a response as quickly as reasonably possible. The total time required for the Architect to respond is subject to the complexity of the RFI, the number of RFI's submitted concurrently and the reprioritization of pending RFI's submitted by the Contractor, among other things. If Contractor believes that the Architect's response results in a change in the Work that warrants additional money or time, or that Architect's response was unreasonably delayed and caused delay to the Work's critical path, Contractor shall follow the procedures for additional money or time under Section 4.5. No presumption shall arise as to the timeliness of the response if the response is more than fourteen (14) days after the Architect's receipt of the RFI. Contractor shall review the Contract Documents before submitting an RFI to ensure that the information is not already in the Contract Documents. To compensate the Owner for time and costs incurred for each time the information was already in the Contract Documents, Owner may withhold $100 from progress payments or retention in addition to any other remedies which Owner may have the right to pursue.

7.4.4 COSTS INCURRED

The Contractor shall be invoiced by the Owner for any costs incurred for professional services, which shall be withheld from progress payments or retention, if an RFI requests an interpretation or decision of a matter where the information sought is equally available to the party making such request.

7.5 REQUEST FOR PROPOSAL ("RFP")

7.5.1 DEFINITION

An RFP is Owner's written request asking the Contractor to submit to the Owner and through the Construction Manager an estimate of the effect, including credits, of a proposed change on the Contract Sum and the Contract Time.

7.5.2 SCOPE

An RFP shall contain adequate information, including any necessary drawings and specifications, to enable Contractor to provide the cost breakdowns required by section 7.7. The Contractor shall not be entitled to any additional money for preparing a response to an RFP, whether ultimately accepted or not.

7.6 CHANGE ORDER REQUEST ("COR")

7.6.1 DEFINITION

A COR is a written request prepared by the Contractor asking the Owner through the Construction Manager for additional time or money.

7.6.2 CHANGES IN PRICE

A COR shall include breakdowns per section 7.7 to validate any proposed change in Contract Sum.

7.6.3 CHANGES IN TIME

Where a change in Contract Time is requested, a COR shall also include delay analysis to validate any proposed change to the Contract Time, and shall meet all requirements in these General Conditions, including but not limited to Section 8.4. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Work Schedule as defined in section 3.9 and Division 1 of the Specifications.

7.7 PRICE OF CHANGE ORDERS

7.7.1 SCOPE

Any COR shall provide in writing to the Owner, Architect and Construction Manager, the effect of the proposed CO upon the Contract Sum and the actual cost of construction, which shall include a complete itemized cost breakdown of all labor and material showing actual quantities, hours, unit prices, wage rates, required for the change, and the effect upon the Contract Time of such CO.

7.7.2 DETERMINATION OF COST

The amount of the increase or decrease in the Contract Sum resulting from a CO, if any, shall be determined in one or more of the following ways as applicable to a specific situation:

A. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

B. Unit prices stated in the Contractor's original bid, the Contract Documents, or subsequently agreed upon between the Owner and the Contractor;

C. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

D. By cost of material and labor and percentage of overhead and profit. If the value is determined by this method the following requirements shall apply:

1. **Daily Reports by Contractor**.

a) General: At the close of each working day, the Contractor shall submit a daily report to the Inspector of Record and Construction Manager, on forms approved by the Owner, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day, the location of the work, and for other services and expenditures when authorized concerning extra work items. An attempt shall be made to reconcile the report daily, and it shall be signed by the Inspector and the Contractor. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by Subcontractors or others shall be submitted through the Contractor.

b) Labor: Show names of workers, classifications, and hours worked.

c) Materials: Describe and list quantities of materials used.

d) Equipment: Show type of equipment, size, identification number, and hours of operation, including, if applicable, loading and transportation.

e) Other Services and Expenditures: Describe in such detail as the Owner may require.

2. **Basis for Establishing Costs**.

a) Labor will be the actual cost for wages prevailing locally for each craft or type of workers at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. The use of a labor classification, which would increase the extra work cost, will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

b) Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the Site in the quantities involved, plus sales tax, freight, and delivery.

The Owner reserves the right to approve materials and sources of supply or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the Owner.

c) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of $100 or less.

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors at the time the work is performed.

The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Necessary loading and transportation costs for equipment used on the extra work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the Owner than holding it at the work Site, it shall be returned unless the Contractor elects to keep it at the work Site at no expense to the Owner.

All equipment shall be acceptable to the Inspector of Record, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and modifications shall be used to classify equipment,

and equipment shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

d) Other Items. The Owner may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature from those required by the Work, and which are of a type not ordinarily available from the Contractor or any of the Subcontractors. Invoices covering all such items in detail shall be submitted with the Application for Payment.

e) Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the COR. If the Application for Payment is not substantiated by invoices or other documentation, the Owner may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.

f) Overhead, premiums and profit. For overhead, including direct and indirect costs, submit with the COR and include: home office overhead, off-Site supervision, CO preparation/negotiation/research for Owner initiated changes, time delays, project interference and disruption, additional guaranty and warranty durations, on-Site supervision, additional temporary protection, additional temporary utilities, additional material handling costs, and additional safety equipment costs.

7.7.3 FORMAT FOR PROPOSED COST CHANGE

The following format shall be used as applicable by the Owner and the Contractor to communicate proposed additions and deductions to the Contract.

	EXTRA	**CREDIT**
A. Material (attach itemized quantity and unit cost plus sales tax, invoices, receipts, truck tags, etc., for force account work)	_____	_____
B. Labor (attach itemized hours and rates, daily logs, certified payroll, etc.)	_____	_____
C. Equipment (attach any invoices)	_____	_____

D. Subtotal	_____	_____
E. If Subcontractor performed Work, add Subcontractor's overhead and profit to portions performed by Sub-contractor, not to exceed fifteen percent (15%) of item D.	_____	_____
F. Liability and Property Damage Insurance, Worker's Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed twenty-five percent (25%) of Item B.	_____	_____
G. Subtotal	_____	_____
H. General Contractor's Overhead and Profit, not to exceed fifteen percent (15%) of Item G; and for work performed by subcontractors, not to exceed five percent (5%).	_____	_____
I. Subtotal	_____	_____
J. Bond not to exceed one percent (1%) of Item I.	_____	_____
K. TOTAL		

It is expressly understood that the value of such extra work or changes, as determined by any of the aforementioned methods, expressly includes (1) any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the project or resulting from delay to the Work, and (2) any costs of preparing a COR, including but not limited to delay analysis. Any costs or expenses not included are deemed waived.

7.7.4 DISCOUNTS, REBATES, AND REFUNDS

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omissions in the Work as provided herein.

7.7.5 ACCOUNTING RECORDS

With respect to portions of the Work performed by COs and CCDs on a time-and-materials, unit-cost, or similar basis, the Contractor shall keep and maintain cost-accounting records satisfactory to the Owner, which shall be available to the Owner and Construction Manager on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

7.7.6 NOTICE REQUIRED

Contractor shall submit a written Notice of Potential Change for additional money or time pursuant to section 4.5.1.

7.7.7 APPLICABILITY TO SUBCONTRACTORS

Any requirements under this Article 7 shall be equally applicable to COs or CCDs issued to Subcontractors by the Contractor to the same extent required of the Contractor.

7.8 WAIVER OF RIGHT TO CLAIM MONEY OR TIME

Failure to demand money based on costs, or time extensions, as part of a COR constitutes a complete waiver of Contractor’s right to claim the omitted money or time. All money or time for an issue must be included in the COR at the time submitted.

ARTICLE 8

TIME

8.1 DEFINITIONS

8.1.1 CONTRACT TIME

Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Completion of the Work.

8.1.2 NOTICE TO PROCEED

Contractor shall not commence the Work until it receives a Notice to Proceed from Owner. The date of commencement of the Work is the date established in the Notice to Proceed. The date of Commencement shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 DAYS

The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 HOURS OF WORK

8.2.1 SUFFICIENT FORCES

Contractors and Subcontractors shall furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

8.2.2 PERFORMANCE DURING WORKING HOURS

Work shall be performed during regular working hours except that in the event of an emergency or when required to complete the Work in accordance with job progress, work may be performed outside of regular working hours with the advance written consent of the Owner.

8.2.3 LABOR CODE APPLICATION

As provided in Article 3 (commencing at § 1810), Chapter 1, Part 7, Division 2 of the Labor Code, eight (8) hours of labor shall constitute a legal day's work. The time of service of any worker employed at any time by the Contractor or by any Subcontractor on any subcontract under this Contract, upon the work or upon any part of the work contemplated by this Contract, is limited and restricted to eight (8) hours during any one calendar day and forty (40) hours during any one calendar week, except as hereinafter provided. Notwithstanding the provision hereinabove set forth, work performed by employees of Contractors in excess of eight (8) hours per day and forty (40) hours during any one week shall be permitted upon this public work with compensation provided for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1-1/2) times the basic rate of pay.

Contractor or subcontractor shall pay to the Owner a penalty of Twenty-five Dollars ($25.00) for each worker employed in the execution of this Contract by the Contractor, or by any Subcontractor, for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any calendar day and forty (40) hours in any one (1) calendar week, in violation of the provisions of Article 3 (commencing at § 1810), Chapter 1, Part 7, Division 2 of the Labor Code, unless compensation for the workers so employed by Contractor is not less than one and one-half (1-1/2) times the basic rate of pay for all hours worked in excess of eight (8) hours per day.

8.2.4 COSTS FOR AFTER HOURS INSPECTIONS

If the work done after hours is required by the Contract Documents to be done outside the Contractor's or the Inspector of Record's regular working hours, the costs of any inspections, if required to be done outside normal working hours, shall be borne by the Owner.

If the Owner allows the Contractor to do work outside regular working hours for the Contractor's own convenience, the costs of any inspections required outside regular working hours, among other remedies, shall be invoiced to the Contractor by the Owner and withheld from progress payments and/or retention. Contractor shall give Owner through the Construction Manager at least 48 hours notice prior to working outside regular working hours.

If the Contractor elects to perform work outside the Inspector of Record's regular working hours, costs of any inspections required outside regular working hours, among other remedies, may be invoiced to the Contractor by the Owner and withheld from progress payments and/or retention.

8.2.5 TIME FOR COMMENCEMENT BY SUBCONTRACTORS

Unless otherwise provided in the Contract Documents, all Subcontractors shall commence their Work within two (2) consecutive business days after notice to them by the Contractor and shall prosecute their Work in accordance with the progress of the Work.

8.3 PROGRESS AND COMPLETION

8.3.1 TIME OF THE ESSENCE

Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.3.2 NO COMMENCEMENT WITHOUT INSURANCE

The Contractor shall not knowingly, except by agreement or instruction of the Owner, in writing, commence operations on the Site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance.

8.3.3 EXPEDITIOUS COMPLETION

The Contractor shall proceed expeditiously to perform the Work with adequate forces, labor, materials, equipment, services and management, and shall achieve Completion within the Contract Time.

8.4 EXTENSIONS OF TIME - LIQUIDATED DAMAGES

8.4.1 CONDITIONS ALLOWING FOR EXTENSIONS OF TIME TO COMPLETE THE WORK, ONLY (EXCUSABLE DELAY)

If Contractor exercises due diligence, but the critical path schedule of the Work is unavoidably delayed due to acts of God, acts of public enemy, acts of the Government, acts of the Owner or anyone employed by it, acts of another contractor in performance of a contract (other than this Contract) with the Owner, fires, floods, epidemics, quarantine restrictions, labor disputes, unusually severe weather, or delays of subcontractors due to such causes, the Owner shall extend the time to complete the Work if Contractor complies with Section 4.5 and Article 7. Owner shall take into consideration other relevant factors such as concurrent delays. Contractor has the burden of proving that any delay was excusable.

8.4.2 COMPENSABLE DELAY (TIME AND MONEY)

Compensable delays are those excusable delays for which Contractor is also entitled to money. To be compensable, an excusable delay must be one for which the Owner is responsible, where the delay was unreasonable under the circumstances involved, and where the delay was not within the contemplation of the parties; ***however***, Contractor shall not be entitled to monetary compensation when (a) Contractor could have reasonably anticipated the delay and avoided or minimized the cost impacts of it, (b) there was a concurrent delay which does not qualify for monetary compensation under this paragraph, (c) the cause of the delay was reasonably unforeseen by the Owner or the delay was caused by factors beyond the control of the Owner, including but not limited to a delay under Section 2.2.8 above or a delay caused by a utility company's failure to perform despite Owner's reasonable arrangements for such performance; or (d) any other defense available to Owner under law or equity applies. Contractor has the burden of proving that any delay was excusable and compensable, including an analysis that establishes non-concurrency.

8.4.3 NOTICE BY CONTRACTOR REQUIRED; PROCEDURES FOR DEMANDING ADDITIONAL TIME OR MONEY

For notice and other required procedures related to requests by Contractor for additional time or money related to delay, Contractor shall comply with the Contract Documents, including but not limited to Sections 3.18 and 4.5, and Article 7, above.

8.4.4 EARLY COMPLETION

Regardless of the cause therefore, the Contractor may not maintain any Claim or cause of action against the Owner for damages incurred as a result of its failure or inability to complete its Work in a shorter period than established in the Contract Documents, the parties stipulating that the period set forth in the Contract Documents is a reasonable time within which to perform the Work.

8.4.5 LIQUIDATED DAMAGES

Failure to complete the Work within the time and in the manner provided for by the Contract Documents shall subject the Contractor to liquidated damages. For purposes of liquidated damages, the concept of substantial completion shall not constitute completion and is not part of this agreement. The actual occurrence of damages and the actual amount of the damages which the Owner would suffer if the Work were not completed within the specified times set forth are dependent upon many circumstances and conditions which could prevail in various combinations and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which the Owner would suffer in the event of delay include, but are not limited to, loss of the use of the Project, disruption of activities, costs of administration, supervision and the incalculable inconvenience and loss suffered by the public.

Accordingly, the parties agree that the amount set forth in the Agreement shall be presumed to be the amount of damages which the Owner shall directly incur upon failure of the Contractor to complete the Work within the time specified, during or as a result of each calendar day by which completion of the Work or Project is delayed beyond the completion date as adjusted by Change Orders.

If the Contractor fails to complete the Work by the completion date as adjusted by Change Orders, and liquidated damages therefore accrue, the Owner, in addition to all other remedies provided by law, shall have the right to assess liquidated damages at any time, and to withhold liquidated damages (and any interest thereon) at any time from any and all retention or progress payments, which would otherwise be or become due the Contractor. In addition, if it is reasonably apparent to the Owner before the completion date (as adjusted by Change Orders) that the Contractor cannot or will not complete the Work before that completion date, Owner may assess and withhold, from retention or progress payments, the estimated amount of liquidated damages that will accrue in the future. If the retained percentage or withheld progress payments are not sufficient to discharge all liabilities of the Contractor incurred under this Article, the Contractor and its sureties shall continue to remain liable to the Owner until all such liabilities are satisfied in full.

If the Owner accepts any work or makes any payment under this Agreement after a default by reason of delays, the payment or payments shall in no respect constitute a waiver or modification of any Agreement provisions regarding time of completion and liquidated damages.

8.5 GOVERNMENT APPROVALS

Owner shall not be liable for any delays or damages related to the time required to obtain government approvals.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement, later adjusted by Change Orders and Construction Change Directives, and is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 COST BREAKDOWN

9.2.1 REQUIRED INFORMATION

On forms approved by the Owner, the Contractor shall furnish to the Construction Manager the following:

A. Within ten (10) days of the mailing, faxing or delivering of the Notice of Award of the Contract, a detailed breakdown of the Contract Sum (Schedule of Values) for the Work. Each item in the schedule of values shall include its proper share of the overhead and profit.

B. Within ten (10) days of the mailing, faxing or delivering of the Notice of Award of the Contract, a schedule of estimated monthly payment requests (cash flow) due the Contractor showing the values and construction time of the various portions of the Work to be performed by it and by its Subcontractors or material and equipment suppliers containing such supporting evidence as to its correctness as the Owner may require;

C. Five (5) days prior to the submission of a pay request, an itemized breakdown of work done for the purpose of requesting partial payments;

D. Within ten (10) days of the mailing, faxing or delivering of the Notice of Award of the Contract , the name, address, telephone number, fax number, license number, and classification of all of its Subcontractors and of all other parties furnishing labor, material, or equipment for its Contract, along with the amount of each such subcontract or the price of such labor, material, and equipment needed for its entire portion of the Work.

9.2.2 OWNER ACCEPTANCE REQUIRED

The Owner shall review all submissions received pursuant to paragraph 9.2.1 in a timely manner. All submissions must be accepted by the Owner before becoming the basis of any payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 PROCEDURE

On or before the fifth (5th) day of each calendar month during the progress of the portion of the Work for which payment is being requested, the Contractor shall submit to the Construction Manager or as the Owner otherwise directs, an itemized Application for Payment for operations completed in accordance with the Schedule of Values through the end of the previous calendar month. Such application shall be notarized, if required, and supported by the following or such portion thereof as the applicable entity requires:

A. The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;

B. The amount being requested with the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;

C. The balance that will be due to each of such entities after said payment is made;

D. A certification that the Record Drawings and Annotated Specifications are current;

E. The Owner approved additions to and subtractions from the Contract Sum and Time;

F. A summary of the retentions (each Application shall provide for retention, as set out in Article 9.6);

G. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the Owner may require from time to time;

H. The percentage of completion of the Contractor's Work by line item;

I. A statement showing all payments made by the Contractor for labor and materials on account of the Work covered in the preceding Application for Payment. Such applications shall not include requests for payment of amounts the Contractor does not intend to pay to subcontractors or others because of a dispute or other reason; and

J. Contractor’s monthly reports, daily reports, and monthly schedule updates for all months of Work prior to the Application for Payment that Contractor has not previously submitted.

9.3.2 PURCHASE OF MATERIALS AND EQUIPMENT

As the Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from Owner, to assure that there will be no delays, payment by the Owner for stored material shall be made only in unusual circumstances where the Architect specifically recommends, and Owner specifically approves, the payment in writing. If payments are to be made on account of materials and equipment not incorporated in the Work, but delivered and suitably stored at the Site or at some other location agreed upon in writing by the Owner, the payments shall be conditioned upon submission by the Contractor, Subcontractor, or vendor to the Construction Manager of bills of sale and such other documents satisfactory to the Owner to establish the Owner's title to such materials or equipment free of all liens and encumbrances, and otherwise protect the Owner's interest, including, without limitation, provision of applicable insurance and transportation to the Site. All stored items shall be inventoried, specified by identification numbers (if applicable), released to the Owner by sureties of the Contractor and the Subcontractor and, if stored off-Site, stored only in a bonded warehouse.

9.3.3 WARRANTY OF TITLE

The Contractor warrants that title to all work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work. Transfer of title to work does not constitute a waiver by Owner of any defects in the work.

9.4 REVIEW OF PROGRESS PAYMENT

9.4.1 OWNER ACCEPTANCE

The Owner will, within seven (7) days after receipt of the Contractor’s Application for Payment, either accept such payment or notify the Contractor in writing of the Owner’s reasons for withholding acceptance in whole or in part as provided in paragraph 9.5.1.

9.4.2 OWNER’S REVIEW

The review of the Contractor’s Application for Payment by the Owner will be based, at least in part, on the Owner’s observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated. The review is also subject to an evaluation of the Work for conformance with the Contract Documents, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion, and to specific qualifications expressed by the Owner. The Owner may reject the Application for Payment if it is not complete under section 9.3. The issuance of a Certificate for

Payment will constitute a representation that the Contractor is entitled to payment in the amount certified, subject to any specific qualifications Owner expresses in the Certificate for Payment. However, Contractor's entitlement to payment may be affected by subsequent evaluations of the Work for conformance with the Contract Documents, test and inspections and discovery of minor deviations from the Contract Documents correctable prior to completion. The issuance of a Certificate for Payment will not be a waiver by the Owner of any defects in the work covered by the Application for Payment, nor will it be a representation that the Owner has:

A. Made exhaustive or continuous on-Site inspections to check the quality or quantity of the Work;

B. Reviewed construction means, methods, techniques, sequences, or procedures;

C. Reviewed copies of requisitions received from Subcontractors, material and equipment suppliers, and other data requested by the Owner to substantiate the Contractor's right to payment; or

D. Made an examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD PAYMENT

9.5.1 REASONS TO WITHHOLD PAYMENT

The Owner may withhold from a progress payment, in whole or in part, to such extent as may be necessary to protect the Owner due to any of the following:

A. Defective or incomplete Work not remedied;

B. Stop Payment Notices. For any stop payment notice, the Owner shall withhold the amount stated in the stop payment notice, the stop notice claimant's anticipated interest and court costs and an amount to provide for the public entity's reasonable cost of any litigation pursuant to the stop payment notice. For any stop payment notice action the parties resolve before judgment is entered, Owner has the right to permanently withhold for any reasonable cost of litigation for that stop payment notice, even if it exceeds the amount originally withheld by Owner for the estimated reasonable cost of litigation. However, if (1) the Contractor at its sole expense provides a bond or other security satisfactory to the Owner in the amount of at least one hundred twenty-five percent (125%) of the claim, in a form satisfactory to the Owner, which protects the Owner against such claim, and (2) the Owner chooses to accept the bond, then Owner would release the stop payment notice funds withheld to the Contractor, except that Owner may permanently withhold for any reasonable cost of litigation. Any stop payment notice release bond shall be executed by a California admitted, fiscally solvent surety, completely unaffiliated with and separate from the surety on the payment

and performance bonds, that does not have any assets pooled with the payment and performance bond sureties.

C. Liquidated damages against the Contractor, whether already accrued or estimated to accrue in the future;

D. Reasonable doubt that the Work can be completed for the unpaid balance of any Contract Sum or by the completion date;

E. Damage to the property or work of the Owner, another contractor, or subcontractor;

F. Unsatisfactory prosecution of the Work by the Contractor;

G. Failure to store and properly secure materials;

H. Failure of the Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, monthly progress schedules, shop drawings, submittal schedules, schedule of values, product data and samples, proposed product lists, executed change orders, and verified reports;

I. Failure of the Contractor to maintain record drawings;

J. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Application for Payment;

K. Unauthorized deviations from the Contract Documents;

L. Failure of the Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates.

M. Subsequently discovered evidence or observations nullifying the whole or part of a previously issued Certificate for Payment;

N. Failure by Contractor to pay Subcontractors or material suppliers as required by Contract or law, which includes but is not limited to Contractor's failure to pay prevailing wage and any assessment of statutory penalties;

O. Overpayment to Contractor on a previous payment;

P. Credits owed to Owner for reduced scope of work or work that Contractor will not perform;

Q. The estimated cost of performing work pursuant to Section 2.4;

R. Actual damages related to false claims by Contractor;

S. Breach of any provision of the Contract Documents;

T. Owner's potential or actual loss, liability or damages caused by the Contractor; and

U. As permitted by other provisions in the Contract or as otherwise allowed by law, including statutory penalties Owner or other entities assessed against Contractor. (See e.g., Labor Code section 1813 (working hours) or Public Contract Code section 4110 (subcontractor listings and substitutions))

Owner may, but is not required to, provide to Contractor with the progress payment written notice of the items for which Owner is withholding amounts from the payment. To claim wrongful withholding by the Owner, or if Contractor otherwise disputes any amount being withheld, Contractor must submit an inquiry in writing to Owner within thirty (30) days of receipt of the notice, and Owner shall respond within fifteen (15) days of receipt of the inquiry. If any disputed issues remain unresolved after Owner's response, Contractor shall timely submit a Claim pursuant to Section 4.5.

For any withhold amount based on an estimate where the actual amount later becomes known and certain, no later than the final accounting for the Work the Owner will release any amount withheld over that certain and known amount. If the certain and known amount exceeds the amount previously withheld, Owner may withhold additional amounts from Contractor to cover the excess amount. If available funds are not sufficient, Contractor shall pay Owner the difference.

9.5.2 PAYMENT AFTER CURE

When the Contractor removes or cures the grounds for withholding amounts, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

9.5.3 OVERPAYMENT AND/OR FAILURE TO WITHHOLD

Neither Owner's overpayment to Contractor, nor Owner's failure to withhold an amount from payment that Owner had the right to withhold, shall constitute a waiver by Owner of its rights to withhold those amounts from future payments to Contractor or to otherwise pursue recovery of those amounts from Contractor.

9.6 PROGRESS PAYMENTS

9.6.1 PAYMENTS TO CONTRACTOR

Unless otherwise stated in the Contract Documents, within thirty (30) days after receipt of an

undisputed and properly submitted Application for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the undisputed value of the Work performed up to the last day of the previous month, less the aggregate of previous payments; and Owner shall retain the other five percent (5%) of the undisputed value of the Work. The value of the Work completed shall be an estimate only, no inaccuracy or error in said estimate shall operate to release the Contractor, or any bondsman, from damages arising from such Work or from enforcing each and every provision of this Contract, and the Owner shall have the right subsequently to correct any error made in any estimate for payment. Contractor shall base an Application for Payment only on the original Contract Sum plus any fully executed and Board-approved Change Orders. Contractor shall not include Notices of Potential Claims, CORs, Claims or disputed amounts

The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for work performed, so long as any lawful or proper direction given by the Owner concerning the Work, or any portion thereof, remains uncomplied with. Payment shall not be a waiver of any such direction.

9.6.2 **PAYMENTS TO SUBCONTRACTORS**

No later than ten (10) days after receipt of payment from Owner, pursuant to Business and Professions Code section 7108.5, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.6.3 **PERCENTAGE OF COMPLETION OR PAYMENT INFORMATION**

The Owner will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor, and action taken thereon by the Owner, on account of portions of the Work done by such Subcontractor.

9.6.4 **NO OBLIGATION OF OWNER FOR SUBCONTRACTOR PAYMENT**

The Owner shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

9.6.5 **PAYMENT TO SUPPLIERS**

Payment to material or equipment suppliers shall be treated in a manner similar to that provided in paragraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 **PAYMENT NOT CONSTITUTING APPROVAL OR ACCEPTANCE**

An accepted Application for Payment, issuance of a Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Work by the Owner shall not constitute acceptance or

approval of any portion of the Work, especially any work not in accordance with the Contract Documents.

9.6.7 JOINT CHECKS

Owner shall have the right, if necessary for the protection of the Owner, to issue joint checks made payable to the Contractor and Subcontractors and/or material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. However, Owner has no duty to issue joint checks. In no event shall any joint check payment be construed to create any contract between the Owner and a Subcontractor of any tier, any obligation from the Owner to such Subcontractor, or rights in such Subcontractor against the Owner.

9.7 COMPLETION OF THE WORK

9.7.1 CLOSE-OUT PROCEDURES

When the Contractor considers that the Work is complete and submits a written notice to Owner requesting an inspection of the Work, the Owner shall review the Work and prepare and submit to the Contractor a comprehensive list of items to be completed or corrected (the "Punch List"). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct items on the Punch List. Failure to include an item on the Punch List does not alter the responsibility of the Contractor to complete all Work (including the omitted item) in accordance with the Contract Documents, and to complete or correct the work so long as the statute of limitations (or repose) has not run.

When the Contractor believes the Punch List work is complete and in accordance with the Contract Documents, it shall then submit a request for an additional inspection by the Owner to determine completion. Owner shall again inspect the Work and inform the Contractor of any items that are incomplete or incorrect. Contractor shall promptly complete or correct items until no items remain.

After the Work, including all Punch List work, is inspected and informally deemed by the Owner to be complete, the Owner's governing body may formally accept the Work as complete at a meeting of the governing body. Warranties required by the Contract Documents shall commence on the date of Contractor's completion of the Work.

9.7.2 COSTS OF MULTIPLE INSPECTIONS

More than two (2) requests by Contractor to make inspections to confirm completion as required under paragraph 9.7.1 shall be considered an additional service of Owner, and all subsequent costs will be invoiced to Contractor and withheld from remaining payments.

9.8 PARTIAL OCCUPANCY OR USE

The Owner may occupy or use any completed, or partially completed, portion of the Work at any

stage prior to acceptance, or prior to completion if there is no formal acceptance. Occupancy or use of any portion of the Work, or the whole Work, shall not constitute approval or acceptance of it, nor shall such occupancy or use relieve Contractor of any of its obligations under the Contract Documents regarding that portion of, or the whole, Work.

The Owner and the Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents. When the Contractor considers a portion complete, the Contractor may request through the Construction Manager an inspection of that portion and preparation of a Punch List by the Owner for that portion, as set forth for the entire Work under paragraph 9.7.1; however, such inspection and Punch List shall not act as any form of approval or acceptance of that portion of the Work, or of any Work not complying with the requirements of the Contract, and that portion shall be subject to subsequent inspections and Punch Lists.

Immediately prior to such partial occupancy or use, the Owner, the Architect, the Construction Manager and the Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9 FINAL PROGRESS PAYMENT AND RELEASE OF RETENTION

9.9.1 FINAL APPLICATION FOR PROGRESS PAYMENT

When, pursuant to Section 9.7.1, the Owner finds all of the Work is completed in accordance with the Contract Documents, it shall so notify Contractor, who shall then submit to the Owner its final Application for Payment.

Upon receipt and approval of such final Application for Payment, the Owner shall issue a final Certificate of Payment, based on its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Owner in connection with the Work, that such Work has been completed in accordance with the Contract Documents.

9.9.2 PROCEDURES FOR APPLICATION FOR FINAL PROGRESS PAYMENT

The Application for Final Progress Payment pursuant to Section 9.9.1 shall be accompanied by the same details as set forth in paragraph 9.3, and in addition, the following conditions must be fulfilled:

A. The Work shall be complete, and the Contractor shall have made, or caused to have been made, all corrections to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of Owner required under the Contract.

B. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work, and Contractor delivered them to the Owner.

C. The Contractor shall deliver to the Owner (i) reproducible final Record Drawings and Annotated Specifications showing the Contractor's Work "as built," with the Contractor's certification of the accuracy of the Record Drawings and Annotated Specifications, (ii) all warranties and guarantees, (iii) operation and maintenance instructions, manuals and materials for equipment and apparatus, and (iv) all other documents required by the Contract Documents.

D. Contractor shall provide extensive assistance in the utilization of any equipment or system such as initial start-up or testing, adjusting and balancing, preparation of operation and maintenance manuals and training personnel for operation and maintenance.

Acceptance of Final Progress Payment shall constitute a complete waiver of Claims except for those previously identified in writing and identified by that payee as unsettled at the time of Final Progress Payment.

9.9.3 RELEASE OF RETAINAGE

Owner may withhold from release or payment of retainage (or "retention") up to 150% of disputed amounts listed in Section 9.5. If retainage is held in an escrow account pursuant to an escrow agreement under Public Contract Code section 22300 (see Section 9.10) and Owner withholds from release of retainage based on a breach of the Contract, or other default, by Contractor, Owner may withdraw the withheld retainage from the escrow account. Owner shall release the undisputed retainage within sixty (60) days after completion of the Work. For this purpose, "completion" is defined in Public Contract Code section 7107(c). No interest shall be paid on any retainage, or on any amounts withheld, except as provided to the contrary in any Escrow Agreement and General Conditions between the Owner and the Contractor under Public Contract Code section 22300.

9.10 SUBSTITUTION OF SECURITIES

In accordance with section 22300 of the Public Contract Code, the Owner will permit the substitution of securities for any retention monies withheld by the Owner to ensure performance under the Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the Owner, or with a state or federally chartered bank as the escrow agent, who shall then pay such retention monies to the Contractor. Upon completion of the Contract, the securities shall be returned to the Contractor if Owner has no basis to withhold under the Contract Documents.

Securities eligible for investment under this section shall include those listed in Government Code section 16430, bank or savings and loan certificates of deposit, interest-bearing, demand-

deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the Owner.

The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

Any escrow agreement entered by Owner and Contractor pursuant to Public Contract Code section 22300 shall be substantially similar to the form set forth in Public Contract Code section 22300.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 CONTRACTOR RESPONSIBILITY

The Contractor shall have responsibility for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. Contractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention, and who shall have the responsibility and full authority to enforce the program. This person shall attend meetings with the representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs. Contractor will ensure that his employees and Subcontractors cooperate and coordinate safety matters with other contractors to form a joint safety effort.

10.1.2 SUBCONTRACTOR RESPONSIBILITY

Subcontractors have the responsibility for participating in, and enforcing, the safety and loss prevention programs established by the Contractor, which will cover all Work performed by the Contractor and its Subcontractors. Each Subcontractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention, and who shall have the responsibility and full authority to enforce the program. This person shall attend meetings with the representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs.

10.1.3 COOPERATION

All Subcontractors and material or equipment suppliers, shall cooperate fully with Contractor, the Owner, and all insurance carriers and loss prevention engineers.

10.1.4 ACCIDENT REPORTS

Subcontractors shall promptly report in writing to the Contractor all accidents whatsoever arising

out of, or in connection with, the performance of the Work, whether on or off the Site, which caused death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger. Contractor shall thereafter promptly report the facts in writing to the Owner and Construction Manager giving full details of the accident.

10.1.5 FIRST-AID SUPPLIES AT SITE

The Contractor will provide and maintain at the Site first-aid supplies for minor injuries.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 THE CONTRACTOR

The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

A. Employees on the Work and other persons who may be affected thereby;

B. The Work, material, and equipment to be incorporated therein, whether in storage on or off the Site, under the care, custody, or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

C. Other property at the Site or adjacent thereto such as trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

10.2.2 CONTRACTOR NOTICES

The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss.

10.2.3 SAFETY BARRIERS AND SAFEGUARDS

The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent Sites and utilities.

10.2.4 USE OR STORAGE OF HAZARDOUS MATERIAL

When use or storage of explosives, other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. The Contractor shall notify the

Owner and Construction Manager any time that explosives or hazardous materials are expected to be stored on Site. Location of storage shall be coordinated with the Owner and local fire authorities.

10.2.5 FINGERPRINTING

At its own expense, Contractor shall comply with all fingerprinting requirements under law and Contract, including but not limited to the requirements of Education Code section 45125.2 and the Independent Contractor Student Contact Form which is a part of the Contract. Contractor shall hold harmless, defend and indemnify the Owner under section 3.16, for any costs, including attorneys' fees, Owner incurs from Contractor's failure to comply.

10.3 PROTECTION OF WORK AND PROPERTY

10.3.1 PROTECTION OF WORK

The Contractor and Subcontractors shall continuously protect the Work, the Owner's property, and the property of others, from damage, injury, or loss until formal acceptance of the Work or completion of the Work if there is no formal acceptance of the Work. The Contractor and Subcontractors shall make good any such damage, injury, or loss, except such as may be solely due to, or caused by, agents or employees of the Owner.

10.3.2 PROTECTION FOR ELEMENTS

The Contractor will remove all mud, water, or other elements as may be required for the proper protection and prosecution of its Work. The Contractor shall at all times provide heat, coverings, and enclosures necessary to maintain adequate protection against weather so as to preserve the Work, materials, equipment, apparatus, and fixtures free from injury or damage.

10.3.3 SHORING AND STRUCTURAL LOADING

The Contractor shall not impose structural loading upon any part of the Work under construction or upon existing construction on or adjacent to the Site in excess of safe limits, or loading such as to result in damage to the structural, architectural, mechanical, electrical, or other components of the Work. The design of all temporary construction equipment and appliances used in construction of the Work and not a permanent part thereof, including, without limitation, hoisting equipment, cribbing, shoring, and temporary bracing of structural steel, is the sole responsibility of the appropriate Contractor. All such items shall conform to the requirements of governing codes and all laws, ordinances, rules, regulations, and orders of all authorities having jurisdiction. The Contractor shall take special precautions, such as shoring of masonry walls and temporary tie bracing of structural steel work, to prevent possible wind damage during construction of the Work. The installation of such bracing or shoring shall not damage or cause damage to the Work in place or the Work installed by others. Any damage which does occur shall be promptly repaired by the Contractor at no cost to the Owner.

10.3.4 CONFORMANCE WITHIN ESTABLISHED LIMITS

The Contractor and Subcontractors shall confine their construction equipment, the storage of materials, and the operations of workers to the limits indicated by laws, ordinances, permits, and the limits established by the Owner, and shall not unreasonably encumber the premises with construction equipment or materials.

10.3.5 SUBCONTRACTOR ENFORCEMENT OF RULES

Subcontractors shall enforce the Owner's and the Contractor's instructions, laws, and regulations regarding signs, advertisements, fires, smoking, the presence of liquor, and the presence of firearms by any person at the Site.

10.3.6 SITE ACCESS

The Contractor and the Subcontractors shall use only those ingress and egress routes designated by the Owner, observe the boundaries of the Site designated by the Owner, park only in those areas designated by the Owner, which areas may be on or off the Site, and comply with any parking control program established by the Owner such as furnishing license plate information and placing identifying stickers on vehicles.

10.3.7 PROTECTION OF MATERIALS

The Contractor and the Subcontractors shall receive, count, inspect for damage, record, store, and protect construction materials for the Work and Subcontractors shall promptly send to the Contractor evidence of receipt of such materials, indicating thereon any shortage, change, or damage (failure to so note shall constitute acceptance by the Subcontractor of financial responsibility for any shortage).

10.4 EMERGENCIES

10.4.1 EMERGENCY ACTION

In an emergency affecting the safety of persons or property, the Contractor shall take any action necessary, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional money or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Section 4.5 and Article 7.

10.4.2 ACCIDENT REPORTS

The Contractor shall promptly report in writing to the Owner and Construction Manager all accidents arising out of or in connection with the Work, which caused death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to the Owner.

10.5 HAZARDOUS MATERIALS

10.5.1 DISCOVERY OF HAZARDOUS MATERIALS

In the event the Contractor encounters or suspects the presence on the Site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by section 25249.5 of the California Health and Safety Code, which (a) has not been rendered harmless, and (b) the handling or removal of which is not within the scope of the Work, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner, Construction Manager and the Architect in writing, whether or not such material was generated by the Contractor, another contractor or the Owner. The Work in the affected area shall not thereafter be resumed, except by written agreement of the Owner and the Contractor, if in fact the material is asbestos, polychlorinated biphenyl (PCB), or other hazardous material, and has not been rendered harmless. The Work in the affected area shall be resumed only in the absence of asbestos, polychlorinated biphenyl (PCB), or other hazardous material, or when it has been rendered harmless by written agreement of the Owner and the Contractor.

10.5.2 HAZARDOUS MATERIAL WORK LIMITATIONS

In the event that the presence of hazardous materials is suspected or discovered on the Site, the Owner shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Contractor shall not be required pursuant to Article 7 to perform without consent any Work in the affected area of the Site relating to asbestos, polychlorinated biphenyl (PCB), or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by Owner, as certified by an independent testing laboratory and/or approved by the appropriate government agency.

10.5.3 INDEMNIFICATION BY OWNER FOR HAZARDOUS MATERIAL NOT CAUSED BY CONTRACTOR

In the event the presence of hazardous materials on the Site is not caused by the Contractor, Owner shall pay for all costs of testing and remediation, if any, and shall compensate Contractor for any additional costs incurred or Work or Project delay in accordance with the applicable provisions of Article 7 herein. Owner shall defend, indemnify and hold harmless the Contractor and its agents, officers, directors and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with or arising out of, or relating to, the performance of the Work in the area affected by the hazardous material, except to the extent the claims, damages, losses, costs, or expenses were caused by Contractor's active negligence, sole negligence or willful misconduct.. By providing this indemnification, District does not waive any immunities.

10.5.4 INDEMNIFICATION BY CONTRACTOR FOR HAZARDOUS MATERIAL CAUSED BY CONTRACTOR

In the event the presence of hazardous materials on the Site is caused by Contractor,

Subcontractors, materialmen or suppliers, the Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the Owner for any additional costs incurred as a result of the generation of hazardous material on the Project Site. In addition, the Contractor shall defend, indemnify and hold harmless Owner and its agents, officers, and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with, arising out of, or relating to, the presence of hazardous material on the Site, except to the extent the claims, damages, losses, costs, or expenses were caused by Owner's active negligence, sole negligence or willful misconduct..

10.5.5 TERMS OF HAZARDOUS MATERIAL PROVISION

The terms of this Hazardous Material provision shall survive the completion of the Work and/or any termination of this Contract.

10.5.6 ARCHEOLOGICAL MATERIALS

In the event the Contractor encounters or reasonably suspects the presence on the Site of archeological materials, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and the Architect in writing. The Work in the affected area shall not thereafter be resumed, except after Contractor's receipt of written notice form the Owner.

ARTICLE 11

INSURANCE AND BONDS

11.1. CONTRACTOR'S LIABILITY INSURANCE

11.1.1 LIABILITY INSURANCE REQUIREMENTS

11.1.1 By the earlier of the deadline set forth in the Instructions to Bidders or, the commencement of the Work, and within limits acceptable to the Owner, the Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in California as admitted carriers with a financial rating of at least A+, Class XII status as rated in the most recent edition of Best's Insurance Reports such commercial general liability insurance per occurrence for bodily injury, personal injury and property damage as set forth in the Agreement and automobile liability insurance per accident for bodily injury and property damage combined single limit as set forth in the Agreement as will protect the Contractor from claims set forth below, which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations are by the Contractor, by a Subcontractor, by Sub-subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

11.1.1.1 claims for damages because of bodily injury (including emotional distress), sickness, disease, or death of any person other than the Contractor's employees. This coverage shall be provided in a form at least as broad as Insurance Services Office (ISO) Form CG 0001 11188;

11.1.1.2 claims for damages arising from personal or advertising injury in a form at least as broad as ISO Form CG 0001 11188;

11.1.1.3 claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents; and

11.1.1.4 claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work; and

11.1.1.5 claims involving blanket contractual liability applicable to the Contractor's obligations under the Contract Documents, including liability assumed by and the indemnity and defense obligations of the Contractor and the Subcontractors; and

11.1.1.6 claims involving Completed Operations, Independent Contractors' coverage, and Broad Form property damage, without any exclusions for collapse, explosion, demolition, underground coverage, and excavating. (XCU)

If commercial general liability insurance or another insurance form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the project location (with the ISO CG 2501 or insurer's equivalent endorsement provided to the Owner) or the general aggregate limit shall be twice the required occurrence limit.

Any deductible or self-insured retention must be declared to and approved by the Owner. At the option of the Owner, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the Owner, its Board of Trustees, members of its Board of Trustees, officers, employees, agents and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

11.1.2 **SUBCONTRACTOR INSURANCE REQUIREMENTS**

The Contractor shall require its Subcontractors and any Sub-subcontractors to take out and maintain similar public liability insurance and property damage insurance, in a company or companies lawfully authorized to do business in California as admitted carriers with a financial rating of at least A+, Class XII status as rated in the most recent edition of Best's Insurance Reports, in like amounts and scope of coverage.

11.1.3 **OWNER'S INSURANCE**

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability

insurance. Optionally, the Owner may purchase and maintain other insurance for self protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

11.1.4 ADDITIONAL INSURED ENDORSEMENT REQUIREMENTS

The Contractor shall name, on any policy of insurance, the Owner, the Construction Manager and the Architect as additional insureds. Subcontractors shall name the Contractor, the Owner, the Construction Manager and the Architect as additional insureds. The Additional Insured Endorsement included on all such insurance policies shall state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the additional insureds have other insurance which is applicable to the loss, such other insurance shall be excess to any policy of insurance required herein. The amount of the insurer's liability shall not be reduced by the existence of such other insurance.

11.1.5 WORKERS' COMPENSATION INSURANCE

During the term of this Contract, the Contractor shall provide workers' compensation insurance for all of the Contractor's employees engaged in Work under this Contract on or at the Site of the Project and, in case any of the Contractor's work is sublet, the Contractor shall require the Subcontractor to provide workers' compensation insurance for all the Subcontractor's employees engaged in Work under the subcontract. Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in Work under this Contract on or at the Site of the Project is not protected under the Workers' Compensation laws, the Contractor shall provide or cause a Subcontractor to provide adequate insurance coverage for the protection of those employees not otherwise protected. The Contractor shall file with the Owner certificates of insurance as required under this Article and in compliance with Labor Code section 3700.

If the contractor fails to maintain such insurance, the Owner may take out compensation insurance which the Owner might be liable to pay under the provisions of the Act by reason of an employee of the Contractor being injured or killed, and withhold from progress payments and/or retention the amount of the premium for such insurance.

11.1.6 BUILDER'S RISK/"ALL RISK" INSURANCE

11.1.6.1 COURSE-OF-CONSTRUCTION INSURANCE REQUIREMENTS

Unless provided by Owner at Owner's sole discretion, Contractor, during the progress of the Work and until final acceptance of the Work by Owner upon completion of the entire Contract, shall maintain Builder's Risk/Course-of-Construction insurance satisfactory to the Owner, issued on a completed value basis on all insurable Work included under the Contract Documents. This insurance shall insure against all risks, including but not limited to the following perils: vandalism, theft, malicious mischief, fire, sprinkler leakage, civil authority, sonic boom, explosion, collapse, flood, earthquake (for projects not solely funded through revenue bonds,

limited to earthquakes equivalent to or under 3.5 on the Richter Scale in magnitude), wind, hail, lightning, smoke, riot or civil commotion, debris removal (including demolition) and reasonable compensation for the Architect's services and expenses required as a result of such insured loss. This insurance shall provide coverage in an amount not less than the full cost to repair, replace or reconstruct the Work. Such insurance shall include the Owner, the Architect, and any other person or entity with an insurable interest in the Work as an additional named insured.

The Contractor shall submit to the Owner for its approval all items deemed to be uninsurable under the Builder's Risk/Course-of Construction insurance. The risk of the damage to the Work due to the perils covered by the Builder's Risk/Course-of-Construction insurance, as well as any other hazard which might result in damage to the Work, is that of the Contractor and the surety, and no claims for such loss or damage shall be recognized by the Owner, nor will such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.

11.1.7 CONSENT OF INSURER FOR PARTIAL OCCUPANCY OR USE

Partial occupancy or use in accordance with the Contract Documents shall not commence until the insurance company providing property insurance has consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company and shall, without mutual consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of the insurance.

11.1.8 FIRE INSURANCE

Before the commencement of the Work, the Contractor shall procure, maintain, and cause to be maintained at the Contractor's expense, fire insurance on all Work included under the Contract Documents, insuring the full replacement value of such Work as well as the cost of any removal and demolition necessary to replace or repair all Work damaged by fire. The amount of fire insurance shall be subject to approval by the Owner and shall be sufficient to protect the Project against loss or damage in full until the Work is accepted by the Owner. Should the Work being constructed be damaged by fire or other causes during construction, it shall be replaced in accordance with the requirements of the drawings and specifications without additional expense to the Owner.

11.1.9 OTHER INSURANCE

The Contractor shall provide all other insurance required to be maintained under applicable laws, ordinances, rules, and regulations.

11.1.10 PROOF OF CARRIAGE OF INSURANCE

The Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract until all required insurance, certificates, and an Additional Insured Endorsement and Declarations Page have been obtained and delivered in duplicate to the Owner for approval subject to the following requirements:

(a) Certificates and insurance policies shall include the following clause:

> This policy shall not be non-renewed, canceled, or reduced in required limits of liability or amounts of insurance until notice has been mailed to the Owner. Date of cancellation or reduction may not be less than thirty (30) days after the date of mailing notice.

(b) Certificates of insurance shall state in particular those insured, the extent of insurance, location and operation to which the insurance applies, the expiration date, and cancellation and reduction notices.

(c) Certificates of insurance shall clearly state that the Owner and the Architect are named as additional insureds under the policy described and that such insurance policy shall be primary to any insurance or self-insurance maintained by Owner and any other insurance carried by the Owner with respect to the matters covered by such policy shall be excess and non-contributing.

(d) The Contractor and its Subcontractors shall produce a certified copy of any insurance policy required under this Section upon written request of the Owner.

11.1.11 COMPLIANCE

In the event of the failure of any contractor to furnish and maintain any insurance required by this Article, the Contractor shall be in default under the Contract. Compliance by Contractor with the requirement to carry insurance and furnish certificates, policies, Additional Insured Endorsement and Declarations Page evidencing the same shall not relieve the Contractor from liability assumed under any provision of the Contract Documents, including, without limitation, the obligation to defend and indemnify the Owner and the Architect.

11.2 PERFORMANCE AND PAYMENT BONDS

11.2.1 BOND REQUIREMENTS

Unless otherwise specified in the Contract Documents, prior to commencing any portion of the Work, the Contractor shall apply for and furnish Owner separate payment and performance bonds for its portion of the Work which shall cover 100% faithful performance of and payment of all obligations arising under the Contract Documents and/or guaranteeing the payment in full of all claims for labor performed and materials supplied for the Work. All bonds shall be provided by a corporate surety authorized and admitted to transact business in California. All bonds shall be submitted on the Owner's approved form.

To the extent, if any, that the Contract Sum is increased in accordance with the Contract Documents, the Contractor shall cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the Owner. To the extent available, the bonds shall further provide that no change or alteration of the Contract Documents (including, without limitation, an increase in the Contract Sum, as referred to above), extensions of time, or modifications of the time, terms, or conditions of payment to the Contractor will release the surety. If the Contractor fails to furnish the required bond, the Owner may terminate the Contract for cause.

11.2.2 SURETY QUALIFICATION

Only bonds executed by admitted Surety insurers as defined in Code of Civil Procedure section 995.120 shall be accepted. The surety insurers must, unless otherwise agreed to by Owner in writing, at the time of issuance of the bonds, have a rating not lower than "A-" as rated by A.M. Best Company, Inc. or other independent rating companies. Owner reserves the right to approve or reject the surety insurers selected by Contractor and to require Contractor to obtain bonds from surety insurers satisfactory to the Owner.

ARTICLE 12

UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 UNCOVERING WORK FOR REQUIRED INSPECTIONS

If a portion of the Work is covered contrary to the Owner's request or to requirements specifically expressed in the Contract Documents, Contractor must, if required in writing by the Owner, uncover it for the Owner's observation and replace the removed work at the Contractor's expense without change in the Contract Sum or Time.

12.1.2 COSTS FOR INSPECTIONS NOT REQUIRED

If a portion of the Work has been covered which the Owner has not specifically requested to observe prior to its being covered, the Owner may request to see such work, and it shall be uncovered by the Contractor. If such work is in accordance with the Contract Documents, costs of uncover and replacement shall, by appropriate Change Order, be paid by the Owner. If such work is not in accordance with Contract Documents, the Contractor shall pay such costs, unless the condition was caused by the Owner or a separate contractor, in which event the Owner shall be responsible for payment of such costs to the Contractor.

12.2 CORRECTION OF WORK; WARRANTY

12.2.1 CORRECTION OF REJECTED WORK

The Contractor shall promptly correct the work rejected by the Owner for failing to conform to

the requirements of the Contract Documents, until the statutes of limitation (or repose) and all warranties have run, as applicable, and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting the rejected work, including additional testing, inspections, and compensation for the Owner's expenses and costs incurred.

12.2.2 REMOVAL OF NONCONFORMING WORK

The Contractor shall remove from the Site portions of the Work which are not in accordance with the requirements of the Contract Documents and are not corrected by the Contractor or accepted or approved by the Owner.

12.2.3 OWNER'S RIGHTS IF CONTRACTOR FAILS TO CORRECT

If the Contractor fails to correct nonconforming work within a reasonable time, the Owner may correct it in accordance with Section 2.4. As part of Owner's correction of the work, the Owner may remove any portion of the nonconforming Work and store any salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten (10) days after written notice, the Owner may upon ten (10) additional days written notice sell such material or equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's and other professionals and representatives' services and expenses, made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contractor shall be invoiced for the deficiency or Owner may withhold such costs from payment pursuant to Section 9.5. If progress payments or retention then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.4 COST OF CORRECTING THE WORK

The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or separate contractors, whether completed or partially completed, caused by the Contractor's correction or removal of the nonconforming work.

12.2.5 WARRANTY CORRECTIONS (INCLUDES REPLACEMENT)

Pursuant to the warranty in Section 3.5, if within one (1) year after the completion of the Work or within a longer time period for an applicable special warranty or guarantee required by the Contract Documents, any of the Work does not comply with the Contract Documents, the Contractor shall correct it after receipt of Owner's written notice to do so, unless the Owner has previously waived in writing such right to demand correction. Contractor shall correct the work promptly, and passage of the applicable warranty period shall not release Contractor from its obligation to correct the work if Owner provided the written notice within the applicable warranty period. Contractor's obligation to correct the warranty item continues until the correction is made. After the correction is made to Owner's satisfaction, a new warranty period of the same length as the original warranty period shall run on the corrected work. The

obligations under this paragraph 12.2.5 shall survive acceptance of the Work under the Contract and termination of the Contract.

12.2.6 NO TIME LIMITATION

Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one (1) year as described in Section 12.2.5 relates only to the specific warranty obligation of the Contractor to correct the Work after the date of commencement of warranties under Sections 3.5 and 9.7.1, and has, for example, no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, or to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 NONCONFORMING WORK AND WITHHOLDING THE VALUE OF IT

If it is found at any time before completion of the Work that the Contractor has varied from the Contract Documents in materials, quality, form, finish, or in the amount or value of the materials or labor used, the Owner may, in addition to other remedies in the Contract Documents or under law and as allowed by law, accept the improper work. The Owner may withhold from any amount due or to become due Contractor that sum of money equivalent to the difference in value between the work performed and that called for by the Drawings and Specifications. The Owner shall determine such difference in value. No structural related work shall be accepted that is not in conformance with the Contract Documents.

ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

The Owner and the Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole or in part without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

In the absence of specific notice requirements in the Contract Documents, written notice shall be deemed to have been duly served if delivered in person to the individual, member of the firm or entity, or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified or overnight mail to the last business address known to the party giving notice. Owner shall, at Contractor's cost, timely notify Contractor of Owner's receipt of any third party claims relating to the Contract pursuant to Public Contract Code section 9201.

13.4 RIGHTS AND REMEDIES

13.4.1 DUTIES AND OBLIGATIONS CUMULATIVE

Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

13.4.2 NO WAIVER

No action or failure to act by the Inspector of Record, Owner, Construction Manager or Architect shall constitute a waiver of a right or duty afforded them under the Contract Documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in a written amendment to the Contract.

13.5 TESTS AND INSPECTIONS

13.5.1 COMPLIANCE

Tests, inspections, and approvals of portions of the Work required by the Contract Documents will comply with Title 24, and with all other laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction.

13.5.2 INDEPENDENT TESTING LABORATORY

The Owner will select and pay an independent testing laboratory to conduct all tests and inspections, including shipping or transportation costs or expenses (mileage and hours). Selection of the materials required to be tested shall be made by the laboratory or the Owner's representative and not by the Contractor. However, if Contractor requests that the Owner use a different testing laboratory and Owner chooses to approve such request, Contractor shall pay any additional shipping or transportation costs or expenses (mileage and hours). If Owner pays such additional costs or expenses instead of Contractor, then Owner may invoice such costs or expenses to the Contractor or withhold such costs or expenses from progress payments and/or retention.

13.5.3 ADVANCE NOTICE TO INSPECTOR OF RECORD

The Contractor shall notify the Inspector of Record and Construction Manager a sufficient time in advance of its readiness for required observation or inspection so that the Inspector of Record and Construction Manager may arrange for same. The Contractor shall notify the Inspector of Record and Construction Manager a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents which must, by terms of the Contract Documents, be tested in order that the Inspector may arrange for the testing of the material at the source of supply.

13.5.4 TESTING OFF-SITE

Any material shipped by the Contractor from the source of supply, prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Work.

13.5.5 ADDITIONAL TESTING OR INSPECTION

If the Inspector of Record, the Architect, the Owner, or public authority having jurisdiction determines that portions of the Work require additional testing, inspection, or approval not included under section 13.5.1, the Inspector of Record will, upon written authorization from the Owner, make arrangements for such additional testing, inspection, or approval. The Owner shall bear such costs except as provided in section 13.5.6.

13.5.6 COSTS FOR RETESTING

If such procedures for testing, inspection, or approval under sections 13.5.1, 13.5.2 and 13.5.5 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs arising from such failure, including those of re-testing, re-inspection, or re-approval, including, but not limited to, compensation for the Architect's services and expenses. Any such costs shall be paid by the Owner, invoiced to the Contractor, and, among other remedies, can be withheld from progress payments and/or retention.

13.5.7 COSTS FOR PREMATURE TEST

In the event the Contractor requests any test or inspection and is not completely ready for the inspection, the Contractor shall be invoiced by the Owner for all costs and expenses resulting from that testing or inspection, including, but not limited to, the Architect's fees and expenses, and the amount of the invoice can among other remedies, be withheld from progress payments and/or retention.

13.5.8 TESTS OR INSPECTIONS NOT TO DELAY WORK

Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 [INTENTIONALLY LEFT BLANK]

13.7 TRENCH EXCAVATION

13.7.1 TRENCHES GREATER THAN FIVE FEET

Pursuant to Labor Code section 6705, if the Contract Sum exceeds $25,000 and involves the excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall, in advance of excavation, submit to the Owner or a registered civil or structural engineer employed by the Owner through the Construction Manager a detailed plan showing the design of shoring for protection from the hazard of caving ground during the excavation of such trench or trenches.

13.7.2 EXCAVATION SAFETY

If such plan varies from the Shoring System Standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by the Owner or by the person to whom authority to accept has been delegated by the Owner.

13.7.3 NO TORT LIABILITY OF OWNER

Pursuant to Labor Code section 6705, nothing in this Article shall impose tort liability upon the Owner or any of its employees.

13.7.4 NO EXCAVATION WITHOUT PERMITS

The Contractor shall not commence any excavation work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.

13.8 WAGE RATES

13.8.1 WAGE RATES

Pursuant to the provisions of Article 2 (commencing at § 1770), Chapter 1, Part 7, Division 2, of the Labor Code, the governing board of the Owner has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public work is to be performed for each craft, classification, or type of worker needed for this Project from the Director of Industrial Relations ("Director"). These rates are on file with the Clerk of the Owner's Governing Board, and copies will be made available to any interested party on request. The Contractor shall post a copy of such wage rates at the Site.

13.8.2 HOLIDAY AND OVERTIME PAY

Holiday and overtime work, when permitted by law, shall be paid for at a rate of at least one and one-half (1½) times the above specified rate of per diem wages, unless otherwise specified. Holidays shall be defined in the Collective Bargaining Agreement applicable to each particular craft, classification, or type of worker employed.

13.8.3 WAGE RATES NOT AFFECTED BY SUBCONTRACTS

The Contractor shall pay and shall cause to be paid each worker engaged in work on the Work not less than the general prevailing rate of per diem wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor and such workers.

13.8.4 CHANGE IN PREVAILING WAGE DURING BID OR CONSTRUCTION

If during the period this bid is required to remain open, the Director of Industrial Relations determines that there has been a change in any prevailing rate of per diem wages in the locality in which this public work is to be performed, such change shall not alter the wage rates discussed in the Notice to Bidders or the Contract subsequently awarded.

13.8.5 FORFEITURE AND PAYMENTS

Pursuant to Labor Code section 1775, the Contractor and any subcontractor under the Contractor shall as a penalty to the Owner, forfeit not more than Two Hundred Dollars ($200.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing rate of per diem wages, determined by the Director, for such craft or classification in which such worker is employed for any public work done under the Agreement by the Contractor or by any Subcontractor under it. Minimum penalties shall apply, as also provided in Civil Code section 1775. The amount of the penalty shall be determined by the Labor Commissioner and shall be based on both of the following: (1) whether the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected upon being brought to the attention of the contractor or subcontractor; and (2) whether the contractor or subcontractor has a prior record of failing to meet its prevailing wage obligations. The difference between such prevailing rate of per diem wage and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing rate of per diem wage shall be paid to each work by the Contractor or subcontractor.

13.8.6 MINIMUM WAGE RATES

Any worker employed to perform work on the Project, which work is not covered by any craft or classification listed in the general prevailing rate of per diem wages determined by the Director, shall be paid not less than the minimum rate of wages specified therein for the craft or classification which most nearly corresponds to the Work to be performed by them, and such

minimum wage rate shall be retroactive to time of initial employment of such person in such craft or classification.

13.8.7 PER DIEM WAGES

Pursuant to Labor Code section 1773.1, per diem wages includes employer payments for health and welfare, pension, and vacation pay.

13.8.8 POSTING OF WAGE RATES AND OTHER REQUIRED JOB SITE NOTICES

The Contractor shall post at appropriate conspicuous points on the Site, a schedule showing all determined minimum wage rates and all authorized deductions, if any, from unpaid wages actually earned and all other required job site notices as prescribed by regulation.

13.9 RECORD OF WAGES PAID: INSPECTION

13.9.1 APPLICATION OF LABOR CODE

Pursuant to section 1776 of the Labor Code:

> (a) Each Contractor and subcontractor shall keep accurate payroll records, showing the name, address, social security number, work classification, and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that is made under penalty of perjury, stating both of the following:
>
> (1) The information contained in the payroll record is true and correct.
>
> (2) The employer has complied with the requirements of sections 1771, 1811 and 1815 for any work performed by his or her employees on the public works project.
>
> (b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:
>
> (1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.
>
> (2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract and as may be required by the Labor Commissioner under Labor Code section 1771.4. The Contractor and each subcontractor shall furnish a certified copy of all payroll records directly to

the Labor Commissioner monthly or more frequently, if so specified in the Agreement and in a format the Labor Commissioner prescribes.

(3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract or the Division of Labor Standards Enforcement of the Department of Industrial Relations ("DIR"). If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of the preparation by the contractor, subcontractors, and the entity through which the request was made. The public may not be given access to such records at the principal office of the Contractor.

(c) Unless required as of January 1, 2015, to be furnished directly to the Labor Commissioner under Labor Code section 1771.4(a)(3), the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement of the DIR or shall contain the same information as the forms provided by the division. The payroll records may consist of printouts of payroll data that are maintained as computer records, if the printouts contain the same information as the forms provided by the division and the printouts are verified in the manner specified in (a) above.

(d) A Contractor or subcontractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested such records within 10 days after receipt of a written request.

(e) Except as provided in subdivision (f), any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body or the Division of Labor Standards Enforcement of the DIR shall be marked or obliterated to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or the subcontractor performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a multiemployer Taft-Hartley trust fund (29 U.S.C. Sec. 186(c)(5) that requests the records for the purposes of allocating contributions to participants shall be marked or obliterated only to prevent disclosure of an individual's full social security number, but shall provide the last four digits of the social security number. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (29 U.S.C. Sec. 175a) shall be marked or obliterated only to prevent disclosure of an individual's social security number.

(f) Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided nonredacted copies of

certified payroll records. Any copies of records or certified payroll made available for inspection and furnished upon request to the public by an agency included in the Joint Enforcement Strike Force on the Underground Economy or to a law enforcement agency investigating a violation of law shall be marked or redacted to prevent disclosure of an individual's name, address, and social security number. An employer shall not be liable for damages in a civil action for any reasonable act or omission taken in good faith in compliance with this subsection.

(g) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.

(h) The contractor or subcontractor has 10 days in which to comply subsequent to receipt of written notice requesting the records enumerated in subdivision (a). In the event that the Contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit one hundred dollars ($100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement of the DIR, these penalties shall be withheld from progress payments then due. A contractor is not subject to a penalty assessment pursuant to this section due to the failure of the subcontractor to comply with this section.

13.10 APPRENTICES

13.10.1 APPRENTICE WAGES AND DEFINITIONS

All apprentices employed by the Contractor to perform services under the Contract shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he or she is employed, and shall be employed only at the work of the craft or trade to which he or she is registered. Only apprentices, as defined in section 3077 of the Labor Code, who are in training under apprenticeship standards and written apprenticeship agreements under Chapter 4 (commencing with § 3070) of Division 3, are eligible to be employed under this Contract. The employment and training of each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training.

13.10.2 APPRENTICE LABOR POOL

When the Contractor to whom the Contract is awarded by the Owner, or any Subcontractor under him or her, in performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Contractor and Subcontractor shall apply to the joint apprenticeship committee administering the apprenticeship standards of the craft or trade in the area of the Site of the Project, for a certificate approving the Contractor or Subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, approval as established by the joint apprenticeship committee or

committees shall be subject to the approval of the Administrator of Apprenticeship. The joint apprenticeship committee or committees, subsequent to approving the subject Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or Subcontractor in order to comply with this section. Every Contractor and Subcontractor shall submit the contract award information to the applicable joint apprenticeship committee which shall include an estimate of journeyman hours to be performed under the Contract, the number of apprentices to be employed, and the approximate dates the apprentices will be employed. There shall be an affirmative duty upon the joint apprenticeship committee or committees administering the apprenticeship standards of the crafts or trade in the area of the Site of the public work, to ensure equal employment and affirmative action and apprenticeship for women and minorities. Contractors or Subcontractors shall not be required to submit individual applications for approval to local joint apprenticeship committees provided they are already covered by the local apprenticeship standards. The ratio of work performed by apprentices to journeymen, who shall be employed in the craft or trade on the Project, may be the ratio stipulated in the apprenticeship standards under which the joint apprenticeship committee operates, but, except as otherwise provided in this section, in no case shall the ratio be less than one (1) hour of apprentice work for every five (5) hours of labor performed by a journeyman. However, the minimum ratio for the land surveyor classification shall not be less than one (1) apprentice for each five (5) journeymen.

13.10.3 JOURNEYMAN/APPRENTICE RATIO; COMPUTATION OF HOURS

Any ratio shall apply during any day or portion of a day when any journeyman, or the higher standard stipulated by the joint apprenticeship committee, is employed at the job Site and shall be computed on the basis of the hours worked during the day by journeymen so employed, except for the land surveyor classification. The Contractor shall employ apprentices for the number of hours computed as above before the end of the Contract. However, the Contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the job Site. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Division of Apprenticeship Standards, upon application of a joint apprenticeship committee, may order a minimum ratio of not less than one (1) apprentice for each five (5) journeymen in a craft or trade classification.

13.10.4 JOURNEYMAN/APPRENTICE RATIO

The Contractor or Subcontractor, if he or she is covered by this section upon the issuance of the approval certificate, or if he or she has been previously approved in the craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the apprenticeship standards. Upon proper showing by the Contractor that he or she employs apprentices in the craft or trade in the state on all of his or her contracts on an annual average of not less than one (1) hour of apprentice work for every five (5) hours of labor performed by a journeyman, or in the land surveyor classification, one (1) apprentice for each five (5) journeymen, the Division of Apprenticeship Standards may grant a certificate exempting the Contractor from the 1-to-5 hourly ratio as set forth in this section. This section shall not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor, when the contracts of general contractors or those

specialty contractors involve less than Thirty Thousand Dollars ($30,000) or twenty (20) working days. Any work performed by a journeyman in excess of eight (8) hours per day or forty (40) hours per week, shall not be used to calculate the hourly ratio required by this section.

13.10.4.1 ***Apprenticeable Craft or Trade.***

"Apprenticeable craft or trade" as used in this Article means a craft or trade determined as an apprenticeable occupation in accordance with the rules and regulations prescribed by the California Apprenticeship Council. The joint apprenticeship committee shall have the discretion to grant a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting a Contractor from the 1-to-5 ratio set forth in this Article when it finds that any one of the following conditions is met:

A. Unemployment for the previous three-month period in the area exceeds an average of fifteen percent (15%).

B. The number of apprentices in training in such area exceeds a ratio of 1-to-5.

C. There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth (1/30) of its journeymen annually through the apprenticeship training, either on a statewide basis or on a local basis.

D. Assignment of an apprentice to any work performed under this contract would create a condition which would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman.

13.10.5 **RATIO EXEMPTION**

When exemptions are granted to an organization which represents Contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis, the member Contractors will not be required to submit individual applications for approval to local joint apprenticeship committees, if they are already covered by the local apprenticeship standards.

13.10.6 **APPRENTICE FUND**

A Contractor to whom the Contract is awarded or any Subcontractor under him or her, who, in performing any of the work under the Contract, employs journeymen or apprentices in any apprenticeable craft or trade and who is not contributing to a fund or funds to administer and conduct the apprenticeship program in any such craft or trade in the area of the site of the Project, to which fund or funds other contractors in the area of the site of the Project are contributing, shall contribute to the fund or funds in each craft or trade in which he or she employs journeymen or apprentices on the Project in the same amount or upon the same basis and in the same manner as the other contractors do, but where the trust fund administrators are unable to accept the funds, contractors not signatory to the trust agreement shall pay a like

amount to the California Apprenticeship Council. The Contractor or Subcontractor may add the amount of the contributions in computing his or her bid for the contract. The Division of Labor Standards Enforcement is authorized to enforce the payment of the contributions to the fund or funds as set forth in the Labor Code section 227.

13.10.7 PRIME CONTRACTOR COMPLIANCE

The responsibility of compliance with section 13.10 and section 1777.5 of the Labor Code for all apprenticeable occupations is with the Prime Contractor.

13.10.8 DECISIONS OF JOINT APPRENTICESHIP COMMITTEE

All decisions of the joint apprenticeship committee under this section 13.10 and Labor Code section 1777.5 are subject to Labor Code section 3081.

13.10.9 NO BIAS

It shall be unlawful for an employer or a labor union to refuse to accept otherwise qualified employees as registered apprentices on any public works on the grounds of race, religious creed, color, national origin, ancestry, sex, or age, except as provided in the Labor Code section 3077.

13.10.10 VIOLATION OF LABOR CODE

Pursuant to Labor Code section 1777.1, in the event a Contractor or Subcontractor willfully fails to comply with the provisions of this section 13.10 and Labor Code section 1777.5, among other things:

(a) The Labor Commissioner may deny to the contractor or subcontractor, and to its responsible officers, the right to bid on, or be awarded or perform work as a subcontractor on, any public works project for a period of up to one year for the first violation and for a period of up to three years for the second and subsequent violation. Each period of debarment shall run from the date the determination of noncompliance by the Labor Commissioner becomes a final order.

(b) A contractor or subcontractor who violates section 1777.5 shall forfeit as a civil penalty an amount not exceeding the sum of one hundred dollars ($100) for each full calendar day of noncompliance. Upon receipt of a determination that a civil penalty has been imposed, the awarding body shall enforce the penalty, which includes withholding the amount of the civil penalty from the contract progress payments or retention then due or to become due.

(c) In lieu of the penalty provided, the Labor Commissioner may for a first time violation and with the concurrence of an applicable apprenticeship program, order the contractor or subcontractor to provide apprentice employment equivalent to the work hours that would have been provided for apprentices during the period of noncompliance.

(d) Any funds withheld by the awarding body pursuant to this section shall be deposited in the General Fund.

(e) The interpretation and enforcement of section 1777.5 and this section shall be in accordance with the regulations of the California Apprenticeship Council.

Pursuant to Public Contract Code section 6109, no contractor or subcontractor may bid on, be awarded, or perform work as a subcontractor on a public works project if ineligible to bid or work on, or be awarded, a public works project pursuant to section 1777.1 of the Labor Code.

13.11 ASSIGNMENT OF ANTITRUST CLAIMS

13.11.1 APPLICATION

Pursuant to Public Contract Code section 7103.5 and Government Code section 4552, in entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or Subcontractor offers and agrees to assign to the Owner all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 [commencing with § 16700] of Part 2 of Division 7 of the Bus. & Prof. Code), arising from the purchase of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders Final Progress Payment to the Contractor, without further acknowledgment by the parties. If the Owner receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Chapter 11 (commencing with § 4550) of Division 5 of Title 1 of the Government Code, the assignor may, upon demand, recover from the Owner any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the Owner as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

13.11.2 ASSIGNMENT OF CLAIM

Upon demand in writing by the assignor, the Owner shall, within one (1) year from such demand, reassign the cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose and the Owner has not been injured thereby or the Owner declines to file a court action for the cause of action.

13.12 AUDIT

Pursuant to and in accordance with the provisions of Government Code section 8546.7, or any amendments thereto, all books, records, and files of the Owner, the Contractor, or any Subcontractor connected with the performance of this Contract involving the expenditure of state funds in excess of Ten Thousand Dollars ($10,000.00), including, but not limited to, the administration thereof, shall be subject to the examination and audit of the Office of the Auditor General of the State of California for a period of three (3) years after release of all retention

under this Contract. Contractor shall preserve and cause to be preserved such books, records, and files for the audit period. During the progress of the Work and for three (3) years after release of all retention under the Contract, Owner shall also have the right to such an audit, and Contractor must cooperate by producing all information requested within seven (7) days.

13.13 STORM WATER DISCHARGE PERMIT

If applicable, the Contractor shall file a Notice of Intent to comply with the terms of the general permit to discharge storm water associated with construction activity (WQ Order No. 920-08-DWQ). The Notice of Intent must be sent to the following address along with the appropriate payment (warrant to be furnished by the Owner upon request by the Contractor, allow warrant processing time.): California State Water Resources Control Board, Division of Water Quality, Storm Water Permit Unit, P.O. Box 1977, Sacramento, CA 95812-1977. The Contractor may also call the State Water Board's Construction Activity Storm Water Hotline at (916) 657-1146. The Notice of Intent shall be filed prior to the start of any construction activity.

ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR FOR CAUSE

Contractor may not terminate for convenience. Contractor may only terminate for cause if the Work is stopped by others for a period of one hundred eighty (180) consecutive days through no act or fault of the Contractor, a Subcontractor of any tier, their agents or employees, or any other persons performing portions of the Work for whom the Contractor is contractually responsible, **and** the Work was stopped by others for one of the following reasons: (A) Issuance of an order of a court or other public authority having jurisdiction which requires Owner to stop all Work; or (B) an act of government, such as a declaration of national emergency, making material unavailable which requires Owner to stop all Work. If such grounds exist, the Contractor may serve written notice of such grounds on Owner and demand a meet-and-confer conference to negotiate a resolution in good faith within twenty (20) days of Owner's receipt of such notice. If such conference does not lead to resolution and the grounds for termination still exist, Contractor may terminate the Contract and recover from the Owner payment for Work executed and for reasonable verified costs with respect to materials, equipment, tools, construction equipment, and machinery, including reasonable overhead, profit, and damages for the Work executed, but excluding overhead (field and home office) and profit for (i) Work not performed and (ii) the period of time that the Work was stopped.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 GROUNDS FOR TERMINATION

The Owner may terminate the Contract if the Contractor:

A. Refuses or fails to supply enough properly skilled workers or proper materials, or refuses or fails to take steps to adequately prosecute the work toward completion within the Contract Time;

B. Fails to make payment to Subcontractors for materials or labor in accordance with Public Contract Code section 10262 or Business and Professions Code section 7108.5, as applicable;

C. Disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction;

D. Violates Labor Code section1771.1(a), subject to the provisions of Labor Code section 1771.1(f); or

E. Otherwise is in breach of the Contract Documents.

14.2.2 **NOTIFICATION OF TERMINATION**

When any of the above reasons exist, the Owner may, without prejudice to any other rights or remedies of the Owner, give notice to Contractor of the grounds for termination and demand cure of the grounds within seven (7) days (a "Notice of Intent to Terminate"). If Contractor fails to **either** (a) completely cure the grounds for termination within seven (7) days **or** (b) reasonably commence cure of the grounds for termination within seven (7) days and reasonably continue to cure the grounds for termination until such cure is complete, then Owner may terminate the Contract effective immediately upon service of written Notice of Termination and may, subject to any prior rights of Contractor's surety on the performance bond ("Surety"):

A. Take possession of the Site and of all material, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

B. Accept assignment of subcontracts pursuant to section 5.4; and

C. Complete the Work by whatever reasonable method the Owner may deem expedient.

14.2.3 **PAYMENTS WITHHELD**

If the Owner terminates the Contract for one of the reasons stated in section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is complete.

14.2.4 **PAYMENTS UPON COMPLETION**

If the unpaid balance of the Contract Sum exceeds costs of completing the Work, including compensation for professional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This payment obligation shall survive completion of the Contract.

14.2.5 **INCLUSION OF TERMINATION FOR CONVENIENCE**

Any purported termination by Owner for cause under this section 14.2, which is revoked or determined to not have been for cause, shall be deemed to have been a termination for convenience effective as of the same date as the purported termination for cause.

14.3 SUSPENSION OR TERMINATION BY THE OWNER FOR CONVENIENCE

14.3.1 **SUSPENSION BY OWNER**

The Owner may, without cause, order the Contractor in writing to suspend, delay, or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.1.1 ***Adjustments.*** An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance caused by suspension, delay, or interruption. No adjustment shall be made to the extent:

A. That performance is, was or would have been so suspended, delayed, or interrupted by another cause for which the Contractor is responsible; or

B. That an equitable adjustment is made or denied under another provision of this Contract.

14.3.1.2 ***Adjustments for Fixed Cost.*** Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

14.3.2 **TERMINATION BY THE OWNER FOR CONVENIENCE**

14.3.2.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.3.2.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

1. Cease operations as directed by the Owner in the notice;

2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

14.3.2.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination.

14.4 NOT A WAIVER

Any suspension or termination by Owner for convenience or cause under this Article 14 shall not act as a waiver of any claims by Owner against Contractor or others for damages based on breach of contract, negligence or other grounds.

14.5 MUTUAL TERMINATION FOR CONVENIENCE

The Contractor and the Owner may mutually agree in writing to terminate this Contract for convenience. The Contractor shall receive payment for all Work performed to the date of termination in accordance with the provisions of Article 9.

14.6 EARLY TERMINATION

Notwithstanding any provision herein to the contrary, if for any fiscal year of this Contract the governing body of the Owner fails to appropriate or allocate funds for future periodic payments under the Contract after exercising reasonable efforts to do so, the Owner may upon thirty (30) days' notice, order work on the Project to cease. The Owner will remain obligated to pay for the work already performed but shall not be obligated to pay the balance remaining unpaid beyond the fiscal period for which funds have been appropriated or allocated and for which the work has not been done.

SECTION 00 7320 - SUPPLEMENTARY CONDITIONS

MODIFICATION OF GENERAL CONDITIONS: The following provisions modify, delete or supplement the General Conditions. All paragraph numbers refer to the General Conditions for Construction. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

3.8.2.2 **Delete** in its entirety and substitute the following:

Unless otherwise provided in the Contract Documents, allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes less applicable trade discounts, Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts. Whenever costs are more than or less than allowances, the Total Sublease Amount shall be adjusted accordingly by Change Order. The Change Order shall reflect the difference between the actual costs and the allowances. Unused portion or total of allowance(s) shall be credited back to the Owner free of Contractor's overhead and profit mark-up.

3.8.2.3 **Delete** in its entirety without replacement.

3.8.2.4 **Delete** in its entirety without replacement.

7.7.2 **Delete** paragraph 7.7.2 in its entirety and substitute the following:

7.7.2 DETERMINATION OF COST

The amount of the increase or decrease in the Contract Sum resulting from a change order, if any, shall be determined in one or more of the following ways as applicable to a specific situation:

7.7.2.1 Lump Sum: Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

7.7.2.2 Unit Price: Unit prices stated in the Contractor's original bid, the Contract Documents, or subsequently agreed upon between the Owner and the Contractor;

7.7.2.3 Mutually Agreed Price: Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

7.7.2.4 Time and Material (T&M): By cost of material, equipment, labor and a fee for overhead and profit. If the value is determined by this method, then the following requirements shall apply:

.1 Daily Reports by Contractor:

.1 At the close of each working day, the Contractor shall submit a daily report to the Inspector, on forms approved by the Owner, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day, the location of the Work, and for other services and expenditures when authorized concerning extra work items, including any schedule delay days required. An attempt shall be made to reconcile the report daily, and it shall be signed by the Inspector and the Contractor. In the event of disagreement, pertinent notes shall be entered by each party to explain points that cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by subcontractors or others shall be submitted through the Contractor. The Contractor shall organize and forward copies of the Contractor's and Inspector's reports to the Architect upon the completion of each T&M activity.

.2 Any reports not submitted in a timely manner and not signed by the Inspector shall not be considered as a part of the costs considered for the change order. The Contractor shall notify the Inspector prior to starting the work each day.

.3 **Labor:** Show names of workers, classifications, hours worked, and hourly rate. Project Superintendent expenses are not allowed.

.4 **Materials:** Describe and list quantities of materials used.

.5 **Equipment:** Show type of equipment, size, identification number, and hours of operation, including, and hours of operation, including loading and transportation, if applicable, and hourly/daily cost.

.6 **Other Services and Expenditures:** Describe in such detail as the Owner may require.

7.7.2.5 Basis for Establishing Costs: The cost of the Work related to any change order means the sum of all costs necessarily incurred and paid by the Contractor in the proper performance of the extra work required or permitted under a change order. Except as otherwise may be agreed to in writing by the Owner, such costs shall include **ONLY** the following items:

.1 **Cost of Labor:** Payroll cost of employees in direct performance of the work including:

- **.1** Payroll wages comparable to but no higher than prevailing wage rates for the specific job classification. Prevailing wage is inclusive of the basic hourly rate, health and welfare, pension, vacation/holiday pay only when applicable, training and "other payments" all as defined by the Director of Industrial Relations.
- **.2** Fringe benefit mark-up is only allowed on the basic hourly rate, not the entire billable / prevailing wage. Cost of fringe benefits are limited to Social Security contributions, Medicare, Federal and State Unemployment tax, State Disability tax and workers compensation but in no case shall they exceed 25% total.
  - **.1** Provide full breakdown of labor rate with fringe benefits and insurance upon request.
  - **.2** Additionally, provide insurance certificates and internal accounting documentation to support cost of insurance if requested.
- **.3** Travel and subsistence as required by the Labor Code or Master Labor Agreements and only when the new work exceeds the original Contract Time.

.2 **Cost of the Material:** Cost of all material and equipment furnished and incorporated into the work including:

- **.1** Direct cost of material or equipment.
- **.2** Incidental or accessory material consumed during the installation.
- **.3** Taxes.
- **.4** Cost of delivery or transportation of the material or equipment.
- **.5** All rebates, refunds and credits for returns or surplus material shall accrue to the Owner.
- **.6** Material invoices shall be submitted with each change order request.
- **.7** Only materials used in the performance of the work will be paid. All excess and surplus materials shall be returned for credit to the Owner.
- **.8** No markup shall be applied to material provided by the Owner.

.3 **Cost of Rental Equipment:** The cost of all rental equipment necessary for the installation of the work, including:

- **.1** Use of tools which have a replacement value of more than $250.00.
- **.2** The actual rental cost paid to the Rental Agency.
- **.3** Cost of fuel to operate the equipment during the execution of the work only.
- **.4** Cost of transportation set up and take down of rental equipment only if the rental equipment requires specialized handling or set up, or is delivered by the rental company.
- **.5** Only equipment in good working condition and suitable for the intended purpose shall be used. Rental time will not be allowed for down time due to breakdown or non-use.
- **.6** Rental invoices shall be submitted for each item.
- **.7** Heavy equipment owned by the Contractor which would normally be rented, may be charged to the Owner at comparable rental rates substantiated by an actual rental agency cost bid and shall comply with all the requirements of this paragraph 7.7.2.5.3.
- **.8** The cost of the operator of the rental equipment shall be included in the cost of the labor and the employee shall be paid the prevailing per diem wage per hour for labor performed on the site.
- **.9** If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the Owner than holding it at the work site, it shall be returned unless the Contractor elects to keep it at the site at no expense to the Owner.

.4 Supplemental Expenses:
- **.1** Any taxes not specifically identified above that is directly attributable to the cost of the work.
- **.2** Additional permit fees, inspection costs or additional governmental agency charges.

7.7.2.6 Costs Included in Overhead and Profit: The following costs are overhead costs and are included in the Contractor's overhead and profit and are not considered to be a cost of the Work:

.1 Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, superintendents, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditor, timekeepers, clerks, and other personnel employed by the Contractor whether at the site or in Contractor's principal or a branch office for general administration of the work.

.2 Expenses of Contractor's principal and branch offices other than Contractor's office at the site.

.3 Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the work and charges against Contractor for delinquent payments.

.4 Cost of premiums for all bonds and for all insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same. Cost shall not exceed 2% of the total cost of the work.

.5 Cost due to the negligence of Contractor, any subcontractor, or anyone directly or indirectly employed by any of them for whose acts any of them may be liable, including but not limited to the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

.6 Office supplies and equipment consumed in the field office or home office.

.7 Cost of utility usage, including telephone and fax service, consumed during the installation of the work.

.8 The use, depreciation, maintenance, rental and replacement of all hand tools (less than $250.00 capital cost per item).

.9 Contractor owned vehicles, fuel, insurance, and maintenance.

.10 Cost of change order preparation and negotiation, estimating, scheduling, supervision, drafting, and clerical or secretarial services.

.11 Cost of time and material documentation procedures.

.12 Other overhead and general expense costs of any kind and the costs of any item not specifically and expressly included herein.

7.7.2.7 Contractor's Fee:

1. Self-Performed Work: The Contractor's fee allowed to Contractor for overhead and profit on self-performed work shall be determined by the following percentages of the various portions for the cost of the work:
- **.1** Labor 15%
- **.2** Materials 15%
- **.3** Equipment Rental.....15%
- **.4** Other items and expenditures 15%
- **.5** Contractor's fee shall only be allowed on the net increase in the Contract Sum.

.2 Subcontracted Work: For all allowable expenses defined as cost of the work incurred by subcontractors, the Contractor fee shall be 5% and no more than 2% for all bonds, insurance, builders risk, etc. on the net increase of the subcontracted portion of the cost of the work.
- **.1** In no case shall total combined mark-up on subcontracted and sub-subcontracted work exceed 27%.

7.7.2.8 Subcontractor Cost of the Work:

.1 All work performed by the subcontractor in the performance of the additional work shall be subject to all requirements stated above and imposed on the General Contractor and shall comply with all the same recording and documentation requirements.

.2 The subcontractor's fee allowed to subcontractor for overhead and profit shall be determined by the following percentages of the various portions for the cost of the work:
- **.1** Labor 15%
- **.2** Materials 15%
- **.3** Equipment Rental.....15%

.4 Other items and expenditures 15%

.5 Subcontractor's fee shall only be allowed on the net increase in the cost of the work.

.3 For all allowable expenses defined as cost of the work incurred by sub-subcontractors, the subcontractor fee shall be 5% on the net increase of the subcontracted portion of the cost of the work.

.1 In no case shall combined mark-up on subcontracted and sub-subcontracted work exceed 20%.

7.7.2.9 Changes Resulting in a Reduction of the Contract Sum: If the net value of a change results in a reduction of the Contract Sum from the Contractor or subcontractor, the credit given shall be the net cost of the work without overhead or profit.

7.7.2.10 Extended Overhead: The following items are "Extended Overhead" and may be considered as costs when Contract Time is extended due to additional work or due to a **Class 1** cause defined in 8.3.1, and solely to the extent directly attributable to extension of time. **In all other instances, the following items shall be considered included in overhead:**

.1 Field offices, sheds, phones, sanitary facilities, utilities, drinking fountains, cleaning, safety programs, and other construction facilities and temporary controls not specifically required for additional work;

.2 Additional costs of field supervision.

7.7.2.11 Itemized Cost Breakdown: Whenever the Contractor requests an adjustment to the Contract Sum, Contractor shall submit an itemized cost breakdown in a form acceptable to the Owner, together with supporting data, for all work performed by the Contractor and each subcontractor and sub-subcontractor. The itemized breakdown shall include copies of the original subcontractor invoices or cost statements, certified payroll, invoices for material, invoices for equipment rental, and other data required to substantiate costs claimed.

7.7.3 **Delete** paragraph 7.7.3 in its entirety and substitute the following:

7.7.3 The following format shall be used by the Owner and the Contractor to communicate proposed additions and deductions to the Contract.

CHANGE ORDER REQUEST			
	DESCRIPTION	**ADDED COST**	**DEDUCTIVE COST**
1	Subcontractor Labor Total *1*	$ _____	$ _____
2	Subcontractor Material Total *1,2*	$ _____	$ _____
3	Subcontractor Equipment Total *1,2*	$ _____	$ _____
4	**SUBTOTAL #1** (Sum lines 1, 2, and 3) ➔	$ _____	$ _____
5	Subcontractor Overhead and Profit for Subtotal #1 *3,5*	$ _____	$ _____
6	**SUBTOTAL #2** (Sum lines 4 and 5) ➔	$ _____	$ _____
7	Contractor Overhead and Profit for Subtotal #2 *3,5*	$ _____	$ _____
8	**SUBTOTAL #3** (Sum lines 6 and 7) ➔	$ _____	$ _____
9	Contractor Labor Total *1*	$ _____	$ _____
10	Contractor Material Total *1,2*	$ _____	$ _____
11	Contractor Equipment Total *1,2*	$ _____	$ _____
12	**SUBTOTAL #4** (Sum lines 9, 10, and 11) ➔	$ _____	$ _____
13	Contractor Overhead and Profit for Subtotal #4 *3,5*	$ _____	$ _____
14	**SUBTOTAL #5** (Sum lines 12 and 13) ➔	$ _____	$ _____
15	Contractor Bonds and Insurance *4*	$ _____	$ _____
16	**TOTAL** (Sum lines 8, 14, and 15) ➔	$ _____	$ _____
17	Other costs *6*	$ _____	$ _____
18	**GRAND TOTAL** (Sum lines 16 and 17) ➔	$ _____	$ _____

FOOT NOTES:

1: Attach itemized list(s) indicating hours, rates, material quantity, material costs, and unit costs. Payroll taxes, fringe benefits, insurance and travel shall be included in Additive Costs and shall be credited in Deductive Costs.

2: State and City sales taxes shall be included in Additive Costs and shall be credited in Deductive Costs.

3: Refer to the Overhead and Profit Schedule below.

4: Contractor's bonds and insurance premium. Total cost shall not exceed 2% of the Grand Total (Line 16).

5: Overhead and profit shall only be allowed on the net increase.

6: Includes all direct and indirect costs, including but not limited to extended overhead where permitted, acceleration, cumulative effect of the change, expediting the Work, scheduling, etc.

8.4.1 **Delete** in its entirety and **substitute** the following:

8.4.1 The basis for an extension of time exists if the Contractor is delayed in performing the Work, but solely to the extent that delays are unforeseeable, unavoidable, and beyond the control and without fault or negligence, in whole or in part, of the Contractor, subcontractors, sub-subcontractors, and suppliers at every tier, and said delays directly impact the Contractor's ability to achieve Completion in accordance with the Contract Time requirements, and said delays cannot be made up by reasonable efforts otherwise, and said delays stem from the following causes:

.1 **Class 1 Cause:** An act or failure to act on the part of the Owner or Architect or an employee of either, or of a separate contractor employed by the Owner, or concealed or unknown conditions.

.2 **Class 2 Cause:** Fires, floods, acts of God, riots, civil commotion, acts of War, unavoidable casualties, epidemics, quarantine restrictions, labor disputes, unusually severe weather, unusual delay in deliveries, freight embargoes, governmental action in connection with the Project including required deferred approval submittal reviews by the Division of the State Architect, interference in the Project by neighbors, discovery or occurrence of any environmental matter or hazardous material, or the discovery of archaeological artifacts at the site, or delays of subcontractors due to such causes.

.3 If the basis exists for an extension of time, the Owner may either:

- **.1** In the case of a **Class 1** cause:
  - **.1** Include any Extended Overhead in the Change Order extending the Contract Time; or
  - **.2** Assign any Extended Overhead (defined in 7.7.2.10) to an allowance pending a final determination of actual impact at the conclusion of the Work, whichever occurs sooner;
- **.2** Accept the reasonable and appropriate time extension as determined by the Architect to cover such delays, and in the case of a **Class 2** cause, there will be no corresponding adjustment in Contract Sum, and the sole recourse of the Contractor will be entitlement to time extension as provided by the Architect regardless of actual sources or cause of delay;
- **.3** Order the Contractor to accelerate construction activity by working overtime and by adding extra forces in order to overcome such delays, and adjusting the Contract Sum in accordance with Article 7 to compensate the Contractor for such directed acceleration; however, direct costs used in determining such compensation shall be limited to properly substantiated and documented premium or overtime costs; or
- **.4** Employ a combination of the above remedies.

.4 Neither the Owner nor the Architect will be obligated or liable to the Contractor for, and the Contractor hereby expressly waives claims against the Owner and Architect on account of damages, costs, expenses, or related impacts which the Contractor, subcontractors, sub-subcontractors, suppliers, or other persons may incur as a result of a **Class 2** cause; the Contractor's sole remedy and full compensation in such event shall be extension of Contract Time in accordance with provisions of the Contract Documents. The Contractor likewise waives claims of damages, costs, or expenses due to a delay resulting from a **Class 1** cause except and solely to the extent of costs allowed under 7.7.2.5, 7.7.2.6, 7.7.2.7, 7.7.2.8, and 7.7.2.9.

.5 The Contractor shall reasonably anticipate that normal weather conditions will be encountered. No extension of time will be granted for normal weather conditions. Normal weather conditions shall be defined as the average days per month in which 0.10" or more of precipitation occurs, based upon the weather data from the Western Regional Climate Center, National Weather Service, for Visalia, Porterville, Hanford, Fresno, Madera, California. Average precipitation days per month are as follows:

Month	**Coalinga**	**Delano**	**McFarland**	**Hanford**	**Lemoore**	**Visalia**	**Los Banos**	**Fresno**	**Madera**	**Porterville**	**Lemon Cove**	**Lindsay**	**Merced**	**Three Rivers**	**Springville**
January	4	4	4	4	4	5	5	5	5	5	5	5	6	5	6
February	4	4	4	4	4	5	5	5	5	5	5	5	5	6	6
March	3	3	3	4	4	4	4	5	4	5	5	5	5	6	6
April	2	2	2	2	2	2	2	2	3	3	3	3	3	4	5
May	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
June	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
July	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
October	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2
November	2	2	2	2	2	2	3	3	3	2	3	3	3	3	5
December	3	3	3	3	3	4	4	4	4	4	4	4	5	5	6
Total:	**20**	**20**	**20**	**21**	**21**	**24**	**25**	**26**	**26**	**26**	**27**	**27**	**30**	**35**	**40**

Final determination of the final impact of adverse weather may be deferred to the conclusion of the Work. Extensions of time may be requested for any month of construction for days lost, which affect the critical path of construction, due to adverse weather in excess of the normal weather conditions, as defined above. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating days claimed and the impact on the critical path of construction.

END OF SECTION 00 7320

SECTION 00 9140 - ADDENDA

1. In accordance with Section 4-338(a) of the California Administrative Code, 2016 Edition, changes or alterations of the approved plans and specifications prior to the letting of a construction contract for the Work shall be made by means of addenda, which shall be submitted to and approved by Division of the State Architect (DSA) prior to distribution to contractors.

2. Addenda shall be stamped and signed by the Architect or Engineer in general responsible charge of preparation of the plans and specifications, and by the Architect or Engineer delegated responsibility for the portion affected by the addenda.

3. Addenda issued during bidding, if any, will be inserted following this page in the Contract Documents sets issued for construction.

4. The provisions of all Addenda shall become part of the Contract Documents and Contractor shall be obligated to construct the Project in accordance with the Contract Documents as modified or supplemented by the addenda provisions.

END OF SECTION 00 9140

SECTION 01 1100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY:

A. Related Sections: Close coordination between this Section, the General and Supplementary Conditions, and Divisions 1 through 16 is required.

B. Project Location: 900 Pioneer Avenue, Porterville, CA 93257

C. Project: The Project consists of the total construction of which the Work performed under the Contract Documents is a part and which may include construction by the Owner or by separate contractors, for:

ALTERNATIVE EDUCATION COMPLEX

D. Work: The Work of the Project consists of all labor, material, equipment, and services to perform all selective demolition and construction required by the Contract Documents, including but not limited to the relocation of (13) relocatable 24'x40' classroom buildings and (1) relocatable 36'x40' Admin. Building. The Contractor will move (5) of the relocatable classrooms from Monache High School, (8) relocatable classrooms from Porterville High School, and (1) Admin relocatable from Prospect Ed. Center to the new site, with related on-site improvements.

E. Applicable Codes: All work shall be performed in accordance with the plans, specifications and the following regulations:
1. 2016 Building Standards Administrative Code, Part 1, Title 24 CCR.
2. 2016 California Building Code (CBC), Part 2, Title 24 CCR.
3. 2016 California Electrical Code (CEC), Part 3, Title 24 CCR.
4. 2016 California Mechanical Code (CMC) Part 4, Title 24 CCR.
5. 2016 California Plumbing Code (CPC), Part 5, Title 24 CCR.
6. 2016 California Energy Code (CEC), Part 6, Title 24 CCR.
7. 2016 California Fire Code, Part 9, Title 24 CCR.
8. 2016 California Green Building Standards Code (CALGreen), Part 11, Title 24 CCR.
9. 2016 California Referenced Standards, Part 12, Title 24 CCR.
10. Title 19 CCR, Public Safety, State Fire Marshal Regulations.
11. 2016 NFPA 72 National Fire Alarm Code, as amended.
12. 2016 NFPA 13 Automatic Sprinkler Systems, as amended.
13. 2016 NFPA 24 Private Fire Mains and Their Appurtenances, as amended.

F. Conflicts in the Drawings and Specifications:
1. When conflicts are noticed prior to bidding, the bidder shall notify the architect immediately in order that an addendum can be issued to all bidders prior to bidding. When the discrepancy is noticed after the bid, the architect shall be notified and will review the discrepancy and interpret the intent. For the purpose of bidding and interpreting, **the most restrictive and potentially most expensive condition may prevail.**
2. In the case of ambiguity, conflict, or lack of information, the Architect shall respond with reasonable promptness and provide additional instructions, by means of drawings and/or written instructions, as may be otherwise necessary for proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof, and reasonably inferable therefrom.

1.2 DIVISION OF THE STATE ARCHITECT REQUIREMENTS

A. Addenda: Changes or alterations of approved plans or specifications that affect structural, fire/life safety, or

accessibility portions of the Project prior to letting a construction contract shall be made by means of addenda submitted to and approved by DSA in accordance with Section 4-338, California Administrative Code, Title 24, Part 1, California Code of Regulations.

B. Changes: Changes or alterations of approved plans or specifications that affect structural, fire/life safety, or accessibility portions of the Project after a contract for the work has been let shall be made by means of Construction Change Documents submitted to and approved by DSA in accordance with Section 4-338, California Administrative Code, Title 24, Part 1, California Code of Regulations.
   1. Refer to Section 01 2600 for modification procedures.

C. Intent of the Contract Documents:
   1. The intent of the Drawings and Specifications is that the Work of alteration, rehabilitation, or reconstruction shall be in accordance with Title 24, California Code of Regulations.
   2. Should any existing conditions such as deterioration or non-complying conditions be discovered which is not covered by the Contract Documents, wherein the finished work will not comply with Title 24, California Code of Regulations, a Construction Change Document or separate set of Drawings and Specifications, detailing and specifying the work shall be submitted to and approved by DSA prior to proceeding with the Work.
      a. Refer to Section 01 2600 for modification procedures.

1.3 CONTRACTS

A. All work of this project will be let as a single lump sum General Contract.

1.4 FEES AND PERMITS

A. The Owner will be responsible to obtain and pay for the following:

   1. DSA approval and field inspection fee.
   2. Storm Water Prevention Pollution Plan filing fee.
   3. Dust Control Plan filing fee.
   4. Indirect Source Review filing fee.
   5. Service connection fees to gas, permanent telephone, and permanent power utilities.
   6. City/County engineering review and inspection fee for work performed in the public right-of-way.
   7. Transportation mitigation, water system, wastewater system, storm water system, fire protection, and police protection impact fees.

B. The Contractor shall be responsible to obtain and pay for the following:
   1. Permits and licenses required for work performed in the public right-of-way.
   2. Permits, licenses, and inspection fees required for execution and completion of the Work which are not the responsibility of the Owner.

C. The Contractor shall be responsible for requesting all inspections required by the governing jurisdictions.

1.5 FUTURE WORK

A. Route all underground utilities a minimum of 10'-0" away from all building footprints identified as future construction.

B. Construct building pads for future buildings as indicated, grading top of pad to provide for drainage.

1.6 WORK SEQUENCE

A. Refer to Section 00 3100 for preliminary schedule requirements.
B. Construct the Work within the following constraints:

1. Fire Department Requirements: Maintain access to existing hydrants and maintain existing fire lanes free of obstruction.

1.7 CONTRACTOR'S USE OF PREMISES

A. Limit use of the site to construction activities in the areas indicated.

B. Confine operations to areas within the Contract Limits indicated. Portions of the site beyond areas in which construction operations are indicated shall not be disturbed.

C. Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.

D. Keep driveways and entrances serving the premises clear and available at to the Owner, the Owner's employees, and the public at all times.

E. Keep bus lanes and drop-off zones clear and available to the Owner at all times.

F. Use of existing toilets within the existing buildings, by the Contractor, shall not be permitted.

G. Store and stockpile materials on the property, excluding public rights-of-way.

1.8 OWNER OCCUPANCY

A. Owner intends to occupy the Project by the date stated in the Agreement as the Contract Completion Date.

B. Owner intends to continue to occupy adjacent portions of the existing site and/or buildings during the entire construction period. Do not interfere with the Owner's and public's use of the site and existing buildings outside of the Contract Limits indicated. Schedule the Work to accommodate Owner occupancy during construction. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

1.9 WORK BY OWNER

A. Items noted as NIC (Not In Contract) will be furnished and installed by the Owner.

B. The Owner will furnish and install the following work:
1. New Restrooms in relocatables, framing, finishes, doors and frames by Owner. Plumbing, Mechanical & Electrical work by contractor as part of the Work.
2. Grading and re-seeding of existing lawn areas damaged by construction operations.
3. Repair and reconfiguration of existing landscape irrigation systems made necessary by the Work.
4. Relocatable buildings provided by the Owner under separate contract, Contractor to relocate from existing sites, secured to concrete slabs provided as part of the Work.

END OF SECTION 01 1110

SECTION 01 1110 - BID PACKAGES

PART 1 - GENERAL

1.1 SUMMARY:

A. The Project will be bid as multiple prime contracts according to the Bid Packages list below:

Bid Package #1 Site Preparation: Bid Package specific specification sections:
01 7120 Field Engineering
02 4210 Selective Demolition
31 1000 Site Clearing
31 2000 Earthwork
31 3115 Termite Control

Bid Package #2 Site Development: Bid Package specific specification sections:
03 1510 Post-Installed Anchors
05 5000 Metal Fabrications
09 9100 Painting
10 1400 Signage
10 1410 Plaques
10 7500 Flagpoles
11 6820 Exterior Court Athletic Equipment
32 1720 Pavement Markings
32 1725 Tactile Warning Surfaces
32 3115 Chain Link Fences and Gates
Site signage indicated on the Drawings shall be included in this Bid Package.

Bid Package #3 Concrete: Bid Package specific specification sections:
03 3000 Concrete

Bid Package #4 Site & Building Plumbing: Bid Package specific specification sections:
21 0000 Fire Sprinkler System
22 0000 Plumbing
33 4000 Storm Drainage Utilities
Domestic water, fire water, and sewer

Bid Package #5 Electrical: Bid Package specific specification sections:
26 6000 General Conditions for Electrical Work
26 7000 Basic Electrical Materials and Methods
27 0200 General Requirements
27 0400 Execution
27 0500 Common Work Results for Communications
27 1000 Structured Cabling System
28 3100 Fire Alarm System

1.2 WORK BY OWNER

A. The Owner will furnish and install the following work:
1. New Restrooms in relocatables, framing, finishes, doors and frames by Owner. Plumbing, Mechanical & Electrical work by contractor as part of the Work.
2. Grading and re-seeding of existing lawn areas damaged by construction operations.

3. Repair and reconfiguration of existing landscape irrigation systems made necessary by the Work.
4. Relocatable buildings provided by the Owner under separate contract, Contractor to relocate from existing sites, secured to concrete slabs provided as part of the Work.

1.3 SPECIFIC CONDITIONS FOR ALL BID PACKAGES

A. The work to be performed by the Contractor shall conform to the requirements of all of Division 0 and Division 1 of the Specifications. Work to be performed by the Contractor is covered by all sheets in the Drawings, Specifications and other related documents. The work shall include all labor, materials, tools, equipment, transportation, plan and services necessary therefore and incidental there to provide complete systems and to complete the project. As it may apply to each Bid Package, the work shall consist of, but not be limited to, the following :

1. Perform all cutting and patching scope of work related to your Bid Package Scope of Work.
2. Excavation, Grading, and Backfill of all trenches and pits including any required shoring required as pertains to your Bid Package.
3. Provide utility location and all necessary temporary utilities prior to commencing any excavation that pertains to your Bid Package's scope of work.
4. Provide backfill of all excavations that pertain to your Bid Package to original sub grade as first provided.
5. Haul off Spoils and excess materials as pertains to your Bid Package.
6. Comply with requirements of the SWPPP plan. All trades are responsible to clean off tires of their trucks and equipment before leaving Site.
7. All trades must use the washout area for concrete deliveries provided by the SWPPP program.
8. Provide dust control/wind erosion control as pertains to your Bid Package as required by the specifications and at the direction of the Owner.
9. All work shall comply with San Joaquin Valley Air Pollution Control District standards.
10. Provide grade checking for your scope of work.
11. All Offsite work shall comply with the State of California Department of Transportation (Caltrans) standard plans and specifications, latest edition or City Standards as applicable.
12. Provide all necessary traffic control required for your Bid Package's scope of work.
13. Maintain all site drainage daily for this Bid Package's scope of work to prevent any standing water.
14. All costs for repairs due to your Bid Package's negligence shall be borne by your Bid Package.
15. The contract, as required may require multiple move ins.
16. Coordinate with other Bid Packages. All potential space conflicts are to be identified in the shop drawing phase. Field space conflicts encountered shall be reworked or rerouted at no additional cost to the owner. If a space conflict is identified in the shop drawing phase, only a scope change by the Architect will be considered for Contract price adjustment.
17. Any damage to the other work inflicted in the process of installation or necessary to correct rejected work shall be borne by your Bid Package and shall be repaired without delay to the project.
18. Provide Sealants at joints of similar materials as pertains to your scope of work.
19. Provide sealants at adjacent dissimilar materials as pertains to your scope of work.
20. Any penetrations made by your Bid Package through Fire rated walls or assemblies will be repaired by your Bid Package per plans and/or specs at no additional cost to Owner.
21. Provide protection of all installations as pertains to your Bid Package.
22. Continuous housekeeping and daily clean up is required. Contractor shall put debris in own debris boxes and/or remove debris from site at Contractor's expense prior to the end of the work day or as direted by the Owner. If contractor fails to perform daily clean up, the Owner shall order the clean up done at the contractors expense.
23. The Owner shall direct the timing of cleaning. While on-site each trade Package Bidder shall include in their bid (1) one hour of labor to clean up site, one hour of labor for every day trade contractor is on site dedicated to clean the site.
24. All storage containers and debris boxes are to be kept free of graffiti at all times.
25. Contractor must provide punch list repairs and/or corrections and closeout for your Bid Package per the construction schedule. Parties agree that delays to punch list and closeout would constitute a delay in the

project completion and, therefore, entitle the Owner to withhold and retain potential liquidated damages per the Contract Documents from Contractor's progress payments.

26. Timely requests for clarifications and other information to allow reasonable response time and avoid delay to the construction schedule as noted in the General Conditions.
27. Schedule shall be in accordance with Owner's approved construction schedule and all subsequent revisions.
28. One set of grade stakes will be provided at Owner's expense for your Bid Package. Any restaking will be the responsibility of the requesting party.
29. Provide all necessary barricades, caution tape, and trench plates for open excavations made by your Bid Package to maintain safety requirements.
30. Provide all shoring of open trenches made by your Bid Package necessary to meet safety codes.
31. Provide and keep up to date "As Built" record set of drawings.
    a. As Built drawings are to be maintained by Contractor but kept on site with the Owner.
32. Provide all dewatering for Underground Plumbing as it pertains to your Bid Package.
33. Dispose (to offsite) off debris and excess spoils as pertains to your Bid Package.

B. Existing Site Conditions: The Contractor shall make a thorough examination of the site to determine all existing conditions affecting the work.

1.4 CONTRACT METHOD:

A. Construct the work under single Lump Sum Contract.

1.5 CONTRACTOR USE OF PREMISES:

A. Contractor shall have use of premises for execution of work.

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

C. Assume full responsibility for the protection and safekeeping of products under this Contract that are stored on the site.

D. Move any stored products under Contractor's control that interferes with the operation of the Owner or a separate Contractor.

E. Obtain and pay for the use of additional storage or work areas needed for operations.

F. Contractor shall assume all responsibility for parking his own and his subcontractor's vehicles at the direction of the Owner. Contractor shall direct all materials deliveries to the construction gate.

G. The property is tobacco free, drug free, alcohol free, weapons free and graffiti free. Contractor shall enforce these rules to his crew, subcontractors and suppliers.

END OF SECTION 01 1110

SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes procedures for securing approval of proposed substitutions.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Make submittals in accordance with pertinent provisions of Section 01 3300.

1.2 SUBSTITUTIONS

A. Substitutions: Contractors, subcontractors and/or material suppliers shall comply with the requirements set forth in this Section. All requests for material substitutions shall be submitted with all required substantiating data, comparisons to the material specified, including samples and colors as needed to determine their acceptance. Failure to provide the required documentation is justification for rejection.
1. Prior to Bid: Substitution Requests shall be submitted a minimum of 10 days prior to the bid (if material is to be included on the final addendum). Substitutions may be submitted by general contractor or subcontractor bidders directly to the Architect.
2. After Award of Contract. Substitution Requests may be submitted not more than 35 days after the award of the contract. Substitution requests shall only be submitted by the General Contractor.
3. Substitution Requests received greater than 35 days after the award shall be rejected.

B. Required Substitution Submittal Requirements:
1. Submit required substitution information with a completed “Substitution Request Form” found at the end of this Section.
2. Manufacturer's descriptive literature and product specifications for each product, with the proposed products clearly identified.
3. Comparative specification data between the specified item and the proposed substitution, showing compliance with the specified requirements.
4. Test reports indicating compliance with ASTM standards and ICC ES approvals where compliance with such standards is required by the Contract Documents or where compliance is claimed by the Contractor requesting substitution.
5. Samples of actual material and color, where applicable.
6. **Submittal without this information will automatically be rejected.**

C. Approval of Substitutions:
1. Where the phrase "or equal," or "or equal as approved by the Architect," occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for this Work by the Architect.
2. The burden of proof as to the equivalency of any material, process, or product shall rest with the Contractor. Any or all of the following will be used by the Architect to determine if a proposed substitution is equivalent to the specified products or materials:
a. Code and legislative compliance.
b. Functional performance and characteristics.
c. Industry standard compliance.
d. Composition of materials.
e. Cost.
f. Aesthetic characteristics.

g. Environmental characteristics.
h. Manufacturer characteristics.
i. Installation characteristics.
j. Maintenance requirements.
k. Warranty characteristics.

3. **Approvals shall be at the sole discretion of the Architect and the decision of the Architect shall be final and binding.**
4. The provisions allowing submission of substitutions shall not in any way authorize an extension of time for performance of the Work.

D. Substitution of any material, system, or product that would normally be reviewed by DSA (Structural Safety, Fire/Life Safety, Access Compliance, or Energy) shall be submitted to and approved by DSA prior to fabrication or use. Such substitutions shall be considered Construction Change Document in accordance with Section 01 2600.

1.3 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of the agreed Time of Completion, or reason for change.

B. All additional time required by the Architect or his consultants in dealing with such delay will be charged to the Contractor at the rates listed above.

C. Equal or better material replacements caused by delay in approvals and/or ordering may cost more than the original material specified. Increased costs shall be absorbed by the Contractor and not the Owner.

END OF SECTION 01 2500

SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES AND FORMS (DSA)

PART 1 - GENERAL

1.1 SUMMARY:

A. This section includes procedural requirements for consideration and execution of modifications to and interpretations of the Contract Documents. This section is intended to supplement requirements set forth in the Agreement and the General and Supplementary Conditions.

B. Section includes:
1. Documentation of changes in Contract Sum and Contract Time.
2. Interpretation and clarification procedures.
3. Change procedures.
4. Correlation of Contractor submittals based on changes.

C. Related Sections:
1. Close coordination between this Section, the General and Supplementary Conditions, and Divisions 1 through 16 is required.
2. Section 00 5210: Agreement, Contract Sum, retainage, payment period, values of unit prices.
3. Section 00 7210: Requirements for progress payments, final payment, changes in the Work.
4. Section 00 7310: Percentage allowances for Contractor's overhead and profit.
5. Section 01 2100: Payment procedures relating to allowances.

1.2 DIVISION OF THE STATE ARCHITECT REQUIREMENTS

A. In addition to the modification requirements of this section, the Agreement, and the General and Supplementary Conditions, the Division of the State Architect (DSA) requires that all changes to the approved construction documents that affect structural, accessibility, or fire/life safety portions of the Project be submitted to and approved by DSA in accordance with the procedure set forth in the current edition of DSA Interpretive Regulation IR A-6.

B. Definitions:
1. **Approved Construction Documents:** The approved construction documents are the drawings, specifications, addenda, deferred approvals, changes and bulletins approved by the governing code jurisdiction.
2. **Change:** A change is a revision, modification, deletion, addition, or substitution to the approved Construction Documents.
3. **Change Order:** A document defining and memorializing construction changes that result in changes to the Construction Contract, usually changing Contract Sum or Contract Time.
4. **Clarification:** A clarification is a statement that clarifies (but does not change) the requirements of the approved Construction Documents.
5. **Contract:** A written agreement for construction, alteration, reconstruction, repair, or other construction activities.
6. **Construction Change Documents (CCD):** The documentation of construction changes for DSA purposes, using DSA Form-140, prepared and submitted by the Architect.
7. **DSA:** The Division of the State Architect (DSA) is the Authority Having Jurisdiction over Project for code compliance.
8. **Interpretation:** An interpretation is a statement that interprets (but does not change) the requirements of the approved Construction Documents.

C. **DSA Changes:** In accordance with the current edition of DSA Interpretation of Regulation IR A-6, changes to the approved construction documents that affect structural, accessibility, or fire/life safety portions of the Project made after a contract for the Work has been let shall be made by means of a Construction Change Document submitted and approved by DSA prior to commencement of the Work shown thereon.

D. **Non-DSA Changes:** In accordance with the current edition of DSA Interpretation of Regulation IR A-6, changes to the approved construction documents that do not affect structural, accessibility, or fire/life safety portions of the Project are not required to be submitted to or approved by DSA.

E. **Change Orders:** DSA does not review change orders.

1.3 MODIFICATION PROCEDURES

A. Definitions:
1. **Bulletin:** A bulletin is a document produced by the Architect to memorialize all changes, clarifications and interpretations to the approved Construction Documents. A bulletin may or may not change the Contract Sum or the Contract Time.
a. For the purpose of changes requiring DSA approval, the Architect's Bulletin number will be the same as the DSA CCD number.
2. **Bulletin Log:** The Bulletin Log is an organized method of numbering, logging, cost accounting, and tracking the status of each bulletin issued.

B. For minor changes not involving an adjustment to the Contract Sum or Contract, the Architect will issue a Bulletin which provides supplementary instructions and information, including a detailed description of the change with supplementary or revised drawings and specifications.
1. Proceeding with the changes described in the Bulletin indicates the Contractor's acknowledgment that there will be no change in Contract Sum or Contract Time.
2. In the event the Contractor believes that such Bulletin constitutes a change to the adjustment to the Contract Sum or Contract Time, the Contractor shall immediately give written notice to the Architect within 10 calendar days of receipt of the Bulletin stating that the Contractor considers the Bulletin to be a Change Order. Failure to give such written notice shall waive the Contractor’s right to seek additional time or cost.

C. For changes involving adjustment to the Contract Sum or Contract Time, Architect will issue a Bulletin which provides a detailed description of the proposed change with supplementary or revised drawings and specifications.
1. Contractor shall prepare and submit a fixed price quotation in the form of a Change Order Request (COR) within 14 calendar days.
2. The Owner shall provide written acceptance of the Contractor's COR prior to the Contractor commencing work described in the COR.

D. The Contractor may propose a change by submitting a Change Order Request (COR) to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6200.

E. Execution of Change Orders: Architect will issue Change Orders on the form attached at the end of this Section for signatures of parties as provided in the Conditions of the Contract.

F. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

G. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

H. Promptly enter changes in Project Record Documents.

1.4 CONTRACT INTERPRETATION AND CLARIFICATION PROCEDURES

A. **Request for Information (RFI):** A written request from the Contractor to the Architect, seeking an interpretation or a clarification of some requirement of the Contract Documents. The Contractor shall clearly and concisely set forth the issue for which it seeks clarification or interpretation and why a response is needed from the Architect. The Contractor shall, in the written request, set forth its interpretation or understanding of the contract's requirements along with reasons why it has reached such an understanding.

1. The Architect will review all RFI to determine whether they are RFI within the meaning of this term. Project communications; substitution submittals; product data, shop drawings, or samples submittals, or construction schedule submittals shall not transmitted by RFI. Project communications shall not be considered RFI.
2. Responses to RFI shall be issued within 10 calendar days of receipt of the request from the Contractor unless the Architect determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Architect, the Architect will, within 10 calendar days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a Request for Information on an activity with 10 calendar days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request provided that the Architect responds within the 10 calendar days set forth above.
3. In the event the Contractor believes that a response to a Request for Information will cause a change to the requirements of the Contract Documents, the Contractor shall immediately give written notice to the Architect within 10 calendar days of receipt of the request the Architect stating that the Contractor considers the response to be a Change Order. Failure to give such written notice shall waive the Contractor's right to seek additional time or cost under the Changes article of the General Conditions.
4. Failure on the part of the Contractor to provide timely Requests for Information does not constitute a crisis solution from the Architect.
5. Requests for Information that affect structural, accessibility, or fire/life safety portions of the Project made after a contract for the Work has been let shall be submitted to and approved by DSA as a Construction Change Document prior to commencement of the Work shown thereon.

END OF SECTION 01 2600

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

REQUEST FOR INFORMATION RFI NO.

TO: **Mangini Associates Inc.** **DATE:**
Attn: **ARCHITECT'S RFI NO.:**
PROJECT NO.:
PROJECT: **DSA APPL. NO.:**

Subject:
Plan/Spec. Ref:
Question:

Suggestion:

Attachments:

Contractor's Contract Status:

- ☐ No change in contract time of sum required
- ☐ Change in contract time may be required
- ☐ Change in contract sum may be required

The undersigned certifies that the Contractor has thoroughly reviewed all Contract Documents and determines that the information requested is not contained in the Contract Documents.

By: **Company:** **Title:**
Phone: **Fax:** **Email:**

Response:

By: **Date:**
MANGINI ASSOCIATES INC.

CC:

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

BULLETIN NO. 01

TO:	Contractor Name Contractor Address Contractor Address	**DATE:**	January 25, 2017
		BULLETIN NO.:	One
		PROJECT NO.:	XXXX
		DSA FILE NO.:	02-123456
PROJECT:	Project Name Owner Name	**DSA APPL. NO.:**	54-12

☐ **Supplemental Instructions:** The Work shall be carried out in accordance with the following supplementary instructions, clarifications, or interpretations issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgment that there will be no change in Contract Sum or Contract Time.

☐ **Proposal Request:** Submit an itemized proposal for changes in Contract Sum and/or Time for to the proposed modifications to the Contract Documents described herein. **This is not a Change Order, a Construction Change Directive, or a direction to proceed with the changes to the Work described herein.**

BULLETIN DESCRTIPTION:

Item BX.01: Description

Item BX.02: Description

ATTACHMENTS:

Drawing B1.1 dated November 29, 2017

END BULLETIN NO. XX

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

CHANGE ORDER NO. 01

TO: Contractor Name
Contractor Address
Contractor Address

DATE: February 8, 2017
CO NO.: One
PROJECT NO.: XXXX

PROJECT: Project Name
Owner Name

THE CONTRACT IS CHANGED AS FOLLOWS:

See attached Exhibit "A" for Description of Work

TOTAL THIS CHANGE ORDER: **DEDUCT** **$0.00**

Attachments: None

The Contractor agrees that this resolution constitutes a final accord and satisfaction of the Contractor's rights with respect to this change order.

The original Contract Sum was	$	-
Net change by previous Change Orders	$	-
The Contract Sum prior to this Change Order was	$	-
The Contract Sum will be changed by this Change Order	$	-
The new Contract Sum including this Change Order will be	$	-

The Contract Time will be **unchanged** **ZERO** (0) days.
The Date of Completion as of the date of this Change Order therefore is **Month, Day, Year**

Contractor: _____ Date: _____
Name, President
Company

Architect: _____ Date: _____
Architect
Mangini Associates Inc.

Owner: _____ Date: _____
Name, Superintendent
Owner Name

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

CHANGE ORDER NO. 1
PROJECT NAME

EXHIBIT "A"

Description of Work

Item No. 1:	**BL #0:** Description of Work **Reason:**	ADD	$0.00
Item No. 2:	**BL #0:** Description of Work **Reason:**	DEDUCT	$0.00

TOTAL THIS CHANGE ORDER **$0.00**

SECTION 01 2910 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide a detailed breakdown of the agreed Contract Sum showing values allocated to each of the various parts of the Work, as specified herein and in other provisions of the Contract Documents.

B. Related Sections:
1. Section 00 7210: General Conditions related to payment procedures.
2. Section 01 3210: Construction schedules and schedule updates.

1.2 SCHEDULE OF VALUES

A. One week prior to first application for payment, submit proposed Schedule of Values to Architect.
1. Meet with the Architect and determine additional data, if any, required to be submitted.
2. Secure Architect's approval of Schedule of Values prior to submitting first application for payment.
3. Without documentation, the Architect will value the work and spread the costs throughout the project.

B. Construction Schedule Correlation: Schedule of Values line items shall be identical to construction schedule activity items.

C. Activity Dollar Value: Assign a dollar value to each activity which includes overhead and profit.

D. Construction Activity Breakdown:
1. Limit activities to a single floor level.
2. Separate vertical activities from horizontal activities.
3. Separate site work into quadrants.
4. Separate on-site work from off-site work.
5. For plumbing, mechanical, and electrical work, separate activities into underground, rough-in, and finish activities.
6. Separate costs (cabling, devices, installation, programming, testing) for each of the following systems from the other power and lighting electrical costs:
a. Fire alarm.
b. Data
c. Telephone.
d. Intercom / clock.
e. Intrusion alarm.
7. For concrete work, separate activities into footings, exterior walks, interior slabs, curbs/mowstrips.

E. Stored Materials: When the Contractor desires to request payment for stored materials (on-site or off-site), such materials shall be identified in the schedule as a material line item. Materials not identified as material line item will not be considered for payment as stored materials and will only be considered for payment when incorporated into the Work.

F. Division 1 Activities: At a minimum, break down Division 1 costs into the following categories:
1. Mobilization.
2. Surveying.
3. Supervision/administration.
4. Bonds and insurance.
5. Temporary facilities and controls.

6. Demobilization.

G. Cost Correlation: Progress in terms of Contractor's applications for payment shall be measured as a percentage and shall be based on an estimate of actual dollar value of work completed and materials stored, versus total dollar value for each activity included in Schedule of Values, less applicable retainage.

1.3 QUALITY ASSURANCE

A. Assure arithmetical accuracy of the sums described.

B. When so requested by the Architect, provide copies of the subcontracts or other data acceptable to the Architect, substantiating the sums described.

1.4 PAYMENT FOR STORED MATERIALS

A. The Contractor is encouraged to order materials early in order to prevent delays. **Delays arising from non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of time or reason for change. Refer to Section 01 6200.**

B. The Architect and Owner will consider payment for materials stored properly in accordance with the General Conditions. Payment for materials stored off-site will require, at a minimum:
1. Storage at a bonded or insured yard or warehouse with the stored materials properly tagged and identifiable for the project;
2. Insurance certificate acceptable to the Owner naming the Owner as additional insured, with the stored items specifically described on the certificate;
3. Verification by the Inspector of Record;
4. Manufacturer's invoices for materials and freight.

1.5 APPLICATIONS FOR PAYMENT

A. **General:** Use AIA Document G702, "Application for Payment" as summary and certification page.

B . **Initial Application for Payment:** Submittal of the following items is a condition precedent to certification and payment of the first application for payment. The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed or submitted any or all of the following:
1. Listing of subcontractors and principal suppliers and fabricators.
2. Schedule of Values approved by the Architect.
3. Construction Schedule reviewed by the Architect.
4. Listing of Contractor's staff assignments and principal consultants.
5. Inspector of Record signature on the AIA G702 document.

C. **Progress Payments:** Submittal of the following items is a condition precedent to certification and payment of each progress application for payment. The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed and submitted any or all of the following:
1. Updated construction schedule as specified in Section 01 3210.
2. Recovery schedule specified in Section 01 3210 when required.
3. Inspector of Record signature on the AIA G702 document.

D. **Final Application for Payment:** Submittal of the following items is a condition precedent to certification and payment of the final application for payment. The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed and submitted

any or all of the following:

1. Administrative actions and submittals specified in Section 01 7700 as preliminary procedures for Final Acceptance.
2. Inspector of Record signature on the AIA G702 document.

END OF SECTION 01 2910

SECTION 01 3110 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Architect will conduct project meetings throughout the construction period. The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

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

1.2 SUBMITTALS

A. Agenda Items: To the maximum extent practicable, advise the Architect at least 48 hours in advance of project meetings regarding items to be added to the agenda.

B. Minutes: The Architect will compile minutes of each project meeting, and will furnish one copy to the Contractor and to the Owner. Recipients of copies may make and distribute such other copies as they wish.

1.3 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.4 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held weekly.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

1.5 MEETING LOCATION

A. The Architect will establish meeting location. To the maximum extent practicable, meetings will be held at the job site.

1.6 PRECONSTRUCTION MEETING

A. Preconstruction Meeting will be scheduled to be held within 15 working days after the Owner has issued the Notice to Proceed.

1. Mandatory attendance by authorized representatives of the Contractor and major subcontractors, including but not limited to:
    a. Earthwork.
    b. Concrete.
    c. Plumbing/mechanical.
    d. Electrical.
    e. Data
2. The Architect will advise other interested parties, including the Owner, and request their attendance.

B. Minimum Agenda: Data will be distributed and discussed on at least the following items:
   1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and Architect.
   2. Channels and procedures for communications.
   3. Construction schedule, including sequence of critical work.
   4. Contract Documents, including distribution of required copies of original Documents and revisions.
   5. Processing of Shop Drawings and other data submitted to the Architect for review.
   6. Processing of Requests for Information, Proposal Requests, Change Orders and Payment Requests.
   7. Rules and regulations governing performance of the Work; and
   8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

1.7 PROJECT MEETINGS

A. Attendance:
   1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
   2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum Agenda:
   1. Review, revise as necessary, and approve minutes of previous meetings.
   2. Review progress of the Work since last meeting, including status of submittals for approval.
   3. Identify problems which impede planned progress.
   4. Develop corrective measures and procedures to regain planned schedule.
   5. Complete other current business.
   6. Verify that Record Drawings are current and accurate.

C. Revisions to Minutes:
   1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
   2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
   3. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.

END OF SECTION 01 3110

SECTION 01 3210 - CONSTRUCTION PROGRESS SCHEDULES (Bar Chart)

PART 1 - GENERAL

1.1 SUMMARY

A. Prepare and maintain construction schedules as specified in this Section.

B. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
1. Section 00 3110: Preliminary Schedules.
2. Section 01 1110: Work sequences and constraints, Owner occupancy, and Owner furnished items.
3. Section 01 2910: Schedule of values and payments.
4. Section 01 3300: Requirements for shop drawings, product data, and samples.
5. Section 01 7700: Project completion and closeout requirements.

1.2 SUBMITTALS

A. Schedule Development Submittals: Submit 3 color copies of schedule diagram with each submittal.

B. Schedule Updates: Submit 3 color copies of schedule diagram with each with each application for payment.

1.3 SCHEDULE DEVELOPMENT AND UPDATES:

A. Schedule: Submit schedule within 30 calendar days after date of Owner's Notice of Award and prior to first application for payment. Architect may refuse to certify application for payment if a construction schedule has not been submitted.

B. Schedule Updates:
1. Update schedule monthly as part of the application for payment specified in Section 01 2910.
a. Record actual start and finish dates.
b. Graphically indicate progress of each active activity and remaining duration.
2. In addition to updates required for applications for payment, provide a complete schedule submittal whenever the Contractor's planned sequence of construction is changed, when approved change orders impact critical path activities, or when time extension is approved by change order.

1.4 RESPONSIBILITY FOR THE SCHEDULE

A. Responsibility for construction planning and the effective and efficient implementation of such to meet the Contract Completion Date and any required milestones are the sole responsibility of the Contractor.

B. Review of the schedule and subsequent revisions by the Owner or the Architect shall be limited to review for compliance with the requirements of the Contract Documents; review shall not imply agreement of the Owner or Architect to the Contractor's planned procedures, coordination, scheduling, etc., as being appropriate or reasonable. Comments offered by the Owner or Architect relating to schedule logic or sequence which are the Contractor's responsibility are offered as a courtesy and are not conditions of acceptance.

C. Non-Waiver:
1. If the accepted schedule and subsequent revisions do not include contractually required constraints, review and/or acceptance of the schedule and subsequent revisions by the Owner or the Architect shall not waive such requirements.

2. Review of the schedule and subsequent revisions by the Owner or the Architect shall not constitute a waiver of any contract requirement.
3. Contract requirements shall take precedence in the event of conflicts between the accepted schedule and contract requirements.

1.5 CONTRACT MODIFICATIONS

A. When a contract modification is required, submit proposed schedule revisions reflecting the proposed change impact.

B. Time Impact Analysis: Time impact analysis shall be provided as support of a time extension request, claim or request for equitable adjustment by the Contractor.
1. Submit a time impact analysis illustrating the influence of each change or delay on the Contract Completion Date or milestones. The current monthly updated schedule accepted by the Architect shall be used to display the impacts of the change. No other non-approved modifications shall be incorporated into the schedule being used to justify the change impact.
2. Each time impact analysis shall include a fragmentary network demonstrating how the Contractor proposes to incorporate the impact into the schedule. The fragmentary network shall identify the predecessors to the new activities and demonstrate the impact to successor activities.
3. Include a narrative report describing the effects of new activities and relationships to interim and Contract Completion Dates.
4. Include written certification signed by the major subcontractors that they have reviewed and accepted proposed schedule revisions.

C. Determination of contract time extension shall be based on the schedule updates in effect for the time period in question, and other factual information. Actual delays found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be cause for time extension to the Contract Completion Date.

1.6 TIME EXTENSIONS

A. Extension of time for performance will be granted only to the extent that a delay occurs which impacts activities currently on the critical path, consumes all available float, and extends completion of the Work beyond the current Contract Completion Date.

B. The Contractor acknowledges and agrees that delays in activities which, according to the schedule, does not in fact actually affect any milestone completion or the Contract Completion Date shown on the schedule at the time of delay, will not be a basis for a time extension.

1.7 SCHEDULE RECOVERY

A. The Contractor shall take action to put the Project back on schedule, at no additional cost to the Owner, when it becomes apparent from the current schedule that, through no fault of the Owner:
1. The critical path becomes more than 5% behind the time remaining for completion of the Work.
2. Any milestone required by the Contract Documents may not be met.
3. Any schedule update reveals that the Work will complete later than the Contract Completion Date.

B. Action by the Contractor to put the Work back on schedule may include any or all of the following:
1. Increase construction manpower;
2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of construction equipment, or any combination of the foregoing;
3. Reschedule activities to achieve maximum practical concurrency of activities;
4. Expedite delivery of materials.

C. Notify the Architect of the specific measures taken or planned to increase the rate of progress together with an estimate of when scheduled progress will be regained and submit planned revisions to construction schedule prior to implementation of such measures and schedule revisions.

1.8 VOLUNTARY ACCELERATION

A. Early completion or voluntary acceleration of the schedule by the Contractor is acceptable provided that:
   1. The Owner is agreeable to such acceleration and so notifies the Contractor in writing;
   2. At the time of submission of the Preliminary Construction Schedule, such acceleration is clearly indicated and the Owner is notified of actions on the Owner's part necessary to accommodate the change or acceleration;
   3. The Owner is compensated for any inconvenience or expense associated with such acceleration;
   4. The time between early completion date and the Contract Completion date is identified as a schedule activity as “Project Float Time.” Such “Project Float Time” within the construction schedule is not for the exclusive use or benefit of either the Owner or the Contractor but is a jointly owned, expiring project resource available to both parties as needed to meet contract milestones and the Contract Completion Date.

B. The Owner may require various changes in the Work. Pursuant to the voluntary acceleration and float sharing provisions of this Section, no time extensions will be granted nor delay damages paid until a delay occurs that impacts activities currently on the critical path, consumes all available float, and extends completion of the Work beyond the current Contract Completion Date.

1.9 PROJECT SCHEDULE

A. Contract Time: As established by the Agreement Between the Owner and Contractor and amended by change order.

B. Progress of the Work:
   1. Time is of the essence in the performance of this Contract.
   2. Schedule the Work in such a manner as to provide for timely completion.
   3. Begin schedule with the Notice to Proceed and conclude with the late-finish date of the critical path on the Contract Completion Date which shall be the date of Notice of Completion.

C. Plan of the Work: The schedule shall reflect Contractor’s actual plan for prosecution of the Work.

D. DSA Oversight Process: In connection with the DSA Construction Oversight Process, which includes the use of inspection cards and review of changes to the DSA-approved construction documents, the Contractor must (a) include specific tasks in its baseline schedule to take into account these procedures since they are critical path issues; and (b) include a reasonable amount of float in the baseline schedule to accommodate the additional time required by these DSA procedures.

E. Detail: Time scale network diagram in calendar days and prepare at level of detail and logic which will schedule as separate activities all salient features of the Work. At a minimum, include:
   1. Project mobilization.
   2. Schedule preparation and updates.
   3. Submittal and shop drawing preparation.
   4. Review and DSA approval of deferred approvals.
   5. Review of submittals and shop drawings for critical materials and equipment.
   6. Procurement, fabrication, delivery, and installation of major equipment and critical materials.
   7. Testing and inspection.

8. Significant activities of the work of each trade.
    a. Separate plumbing, mechanical, and electrical into underground, rough-in, and finish activities.
    b. Separate concrete work activities into footings, exterior walks, interior slabs, curbs/mowstrips.
9. Separate the following systems from other power and lighting electrical activities:
    a. Fire alarm system.
    b. Data, telephone, intercom / clock, intrusion alarm, audio visual systems.
10 Power shut-downs.
11. All milestone dates.
12. Testing of concrete floor slabs for moisture and pH.
13. Remediation of concrete floor slabs due to unsatisfactory moisture or pH conditions.
14. Final clean-up.
15. Start-up and testing.
16. Commissioning.
17. Correction list work.
18. Building flush out (100% outside air for 14 days).
19. Demobilization.
20. Closeout documentation.

F. Provide for schedule, logic, and operating constraints of the Work as specified in Section 01 1100.

1.10 BAR CHART SCHEDULE

A. Prepare a bar chart graphically showing the order of all activities necessary to complete the Work, and the sequence in which each activity is to be accomplished, as planned by the Contractor. Indicate a separate time bar for each activity.

B. Format:
1. Sequence of Listings: The Table of Contents of this Project Manual.
2. Coordination of Listings: Correspond each schedule activity to a line item listed in the Schedule of Values. Refer to Section 01 2910.
3. Time Scale: Provide a continuous line to identify the first working day of each week.

C. Identify work of each separate stage and other logically grouped activities. In the case of multiple buildings on 1 site, separate the significant elements of the work of each trade for each building as a sub-schedule. Graphically group activities of separate stages and buildings, **do not use a random (or scattered) format.**

1.11 SCHEDULE ACTIVITIES

A. **Schedule Activities:**
1. 30 day maximum duration.
2. Limit activities to a single floor level.
3. Separate vertical activities from horizontal activities.
4. Separate site work into quadrants.
5. Separate on-site work from off-site work.

B. **Activity Information:** Indicate the following information for each activity on network diagram:
1. Activity description.
2. Activity number corresponding to the CSI section numbers listed in the Table of Contents.
3. Duration.
4. Start and completion dates.
5. Status indicator (started or complete).

C. Milestone Activities: Indicate date on the diagram for each of the following milestone activities:
   1. Start project: Start schedule no earlier than the contract award date and the project duration shall start on the Notice to Proceed date.
   2. Early completion: If the Contractor's schedule shows completion of the project prior to the Contract Completion Date, the Contractor shall include an activity named "contractor early completion".
   3. End project: Include as the last activity an activity named "end project" finish date equal to the Contract Completion Date.

END SECTION 01 3210

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements, all as described in this Section.
   1. The section includes requirements for building systems described as Deferred Approval Items on the drawings or in the specifications.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Other requirements for submittals may be described in pertinent Sections of these Specifications.
   3. Section 01 3560: High Performance Criteria Summary.

C. Work not Included:
   1. Submittals not required by the Contract Documents will not be reviewed by the Architect.
   2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the Work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Architect unless specifically called for within the Contract Documents.

1.2 SUBMITTALS

A. Make submittals of Shop Drawings, Samples, substitution requests, and other items in accordance with the provisions of this Section.

B. Substitutions shall comply with the procedures for substitutions specified in Section 01 2500.

C. High Performance Criteria: Submit in accordance with Section 01 3560 - High Performance Criteria Summary under Submittals.

1.3 QUALITY ASSURANCE

A. Coordination of Submittals:
   1. Prior to each submittal to the Architect, the **General Contractor shall** carefully review and coordinate all aspects of each item being submitted.
   2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
   3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

B. Accuracy of Submittals:
   1. By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria relate thereto, or will so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

   2. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract

Documents by the Architect's review or approval of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal requesting a substitution and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the Architect's review thereof.

1.4 USE OF ARCHITECT'S CAD DRAWINGS

A. General:
1. Electronic CAD files of the Contract Drawings may be provided for Contractor's convenience and use in preparing submittals, subject to the requirements of this Section.
2. All requests by subcontractors for CAD drawings shall be transmitted through the Contractor and CAD files released by the Architect shall only be released to the Contractor.

B. Requirements for Release of Architect's Electronic CAD Files:
1. Release of CAD files is subject to Contractor's acceptance of Architect's "Waiver of Liability for Electronic CAD Files", a copy of which is attached at the end of this section.
2. Receipt of executed liability waiver agreement is a condition precedent to releasing architectural CAD files.

C. Requirements for Release of Civil Engineer's Electronic CAD Files:
1. Cost of Civil Engineer's preparation of civil CAD files shall be borne by the Contractor and is in addition to the Contract Sum.
2. Release of civil CAD files is subject to Contractor's acceptance of Civil Engineer's "Waiver of Liability for Electronic CAD Files". Contact the Civil Engineer to obtain the waiver form.
3. Receipt of executed liability waiver agreement is a condition precedent to releasing civil CAD files.

D. The Contractor assumes all liability and risk for use of electronic CAD files. Architectural / engineering drawings are essentially diagrammatic in terms of graphics and are not intended to provide scalable dimensional accuracy. Electronic CAD files are an incomplete representation of the Contract Documents which may not include addendum information or hand drawn additions or modifications. In the event of a conflict between the signed and approved Construction Documents and the electronic CAD files, the signed and approved Construction Documents shall govern.

E. The transfer of CAD files to the Contractor is for the Contractor's convenience only, and does not in any way release the Contractor from the requirement to produce its own shop drawings by the normal method of preparing plans and details by drafting. Delays in the release of CAD files shall not relieve the Contractor of preparing submittals in a timely fashion and such delays shall not provide a basis for claims of delay and damages.

PART 2 - PRODUCTS

2.1 TYPES OF SUBMITTALS

A. Shop Drawings:
1. Scale and Measurements: Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.
2. Types of Prints Required: Submit Shop Drawings in the form of blackline prints of each sheet.
3. Review comments of the Architect will be shown on the sepia transparency when it is returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes.

B. Manufacturer's Literature:
1. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal,

clearly show and highlight the portion of the contents being submitted for review.
2. Submit seven copies of each item.

C. Samples:
1. Provide Sample or Samples identical to the precise article proposed to be provided. Identify as described under "Identification of Submittals" below.
2. Provide three samples; one to be retained by the Architect, one to be returned to the Contractor, and one to be retained by the Inspector of Record.

D. Colors and Patterns: Unless the precise color and pattern is specifically called out in the Contract Documents, and whenever a choice of color or pattern is available in the specified products, submit accurate color and pattern charts to the Architect for selection.

2.2 ELECTRONIC SUBMITTALS

A. Electronic submittal are acceptable in lieu of hard copies providing the following requirements are met:
1. Submittal shall be in PDF format, with book marks for table of contents and each tab, and sub-bookmarks for each item.
2. All text shall be searchable, except text that is part of a graphic.
3. Submittal shall include all items required by the Contract Documents, except a binder is not required.
4. Electronic submittals shall be processed through normal channels. Do not submit directly to the Architect's consultants.
5. Contractor shall provide Owner and Inspector with hard copies of the final Submittal. Coordinate exact number required with the Architect.
6. One hard copy of any submittal may be required upon the Architect’s request for use during review.

B. Electronic submittals which do not comply with the above requirements will be rejected.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals.
1. When material is submitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
2. On resubmittals, cite the original submittal number for reference.

B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.

C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.

3.2 GROUPING OF SUBMITTALS

A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
1. Partial submittals may be rejected as not complying with the provisions of the Contract.
2. The Contractor may be held liable for delays so occasioned.

3.3 TIMING AND REVIEW OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.

B. In scheduling, allow at least 30 calendar days for review by the Architect following the Architect's receipt of the submittal, unless mutually agreed otherwise in writing by the Architect and the Contractor.

C. Resubmittal Costs: The Architect and the Architect's consultants will review the original submittal only as part of their services to the Owner. If the time expended in resubmittal reviews exceeds normal resubmittal review time, the costs of resubmittal reviews by the Architect or the Architect's consultants will be paid to the Architect by the Owner as additional services on an hourly basis.
   1. The Architect will bill the Owner for the additional services required by the Architect and/or the Architect's consultants for such resubmittal reviews, time expended, and reimbursable expenses incurred, and the Owner shall be reimbursed by deducting the same amount from the Contractor's subsequent Application for Payment.

3.4 REQUIRED SUBMITTALS

A. Provide Submittals as required by each Specification Section.

END OF SECTION 01 3300

SECTION 01 3565 - CALGREEN MANDATORY MEASURES SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section summarizes compliance with the mandatory measures of the 2016 California Green Building Standards Code (CalGreen).

CALGREEN COMPLIANCE SUMMARY		
DIVISION 5.1 - PLANNING AND DESIGN		
SITE DEVELOPMENT		
5.106.8 Light Pollution Reduction: 1. The minimum requirements in the California Energy Code for Lighting Zones 1-4 as defined in Chapter 10 of the California Administrative Code; and 2. Backlight, Uplight and Glare (BUG) ratings as defined in IESNA TM-15-11; and 3. Allowable BUG ratings not exceeding those shown in Table 5.106.8, or 4. Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.	☐ ☐ ☐ ☐	
5.106.10 Grading and Paving: Indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings.	☐	
DIVISION 5.2 - ENERGY EFFICIENCY		
GENERAL		
5.201.1 California Energy Code: For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.	☐	
DIVISION 5.3 - WATER EFFICIENCY AND CONSERVATION		
INDOOR WATER USE		
5.303.2 Twenty Percent (20%) Savings: 1. Prescriptive Method: Each plumbing fixture and fitting shall not exceed the maximum flow rate at ≥ 20 percent reduction as specified in Table 5.303.2.3, or 2. Performance Method: A calculation demonstrating a 20% reduction in the building "water use baseline" as established in Table 5.303.2.2 shall be provided.	☐ ☐	
5.303.4 Wastewater Reduction: Reduce wastewater by 20 percent by one of the following methods: 1. The installation of water-conserving fixtures (water closets, urinals) meeting the criteria established in Section 5.303.2. 2. Utilization of non-potable water systems [captured rainwater, gray water, and municipally treated waste water (recycled water) meeting California Plumbing Code or methods described in Section A5.304].	☐ ☐	

CALGREEN COMPLIANCE SUMMARY		
5.303.6 Plumbing Fixtures and Fittings: Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall meet the standards referenced in Table 5.503.6.	☐	
DIVISION 5.4 - MATERIAL CONSERVATION AND RESOURCE EFFICIENCY		
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING		
5.407.1 Weather Protection: Provide weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2 and California Energy Code Section 150, manufacturer's installation instructions, or local ordinance, whichever is more stringent.	☐	
5.407.2 Moisture Control: Employ moisture control measures by the following methods. **5.407.2.1 Sprinklers:** Design and maintain landscape irrigation systems to prevent spray on structures. **5.407.2.2 Entries and Openings:** Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings.	☐ ☐	
5.408.1 Construction Waste Management: Recycle and/or salvage for reuse a minimum of 50 percent of the nonhazardous construction waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.	☐	
5.408.1.1 Construction Waste Management Plan: Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plant that 1. Identifies the construction waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale. 2. Determines if construction waste materials will be sorted on-site (source-separated) or bulk mixed (single stream). 3. Identifies diversion facilities where construction waste material collected will be taken. 4. Specifies that the amount of construction waste materials diverted shall be calculated by weight or volume, but not by both.	☐	
5.408.1.2 Waste Management Company: Utilize a waste management company that can provide verifiable documentation that the percentage of construction waste material diverted from the landfill complies with this section.	☐	
5.408.1.3 Waste Stream Reduction Alternative: The combined weight of new construction disposal that does not exceed 2 lbs./sq.ft. of building area may be deemed to meet the 50 percent minimum requirement as approved by the enforcing agency.	☐	
5.408.2. Isolated Job sites: The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.	☐	
BUILDING MAINTENANCE AND OPERATION		

CALGREEN COMPLIANCE SUMMARY		
5.410.1 Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.	☐	
DIVISION 5.5 ENVIRONMENTAL QUALITY		
POLLUTANT CONTROL		
5.504.3 Covering of Duct Openings and Protection of Mechanical Equipment During Construction: At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.	☐	
5.504.4 Finish Material Pollutant Control: **5.504.4.1 Adhesives, Sealants, and Caulks:** Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards: 1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene, and trichloroethylene), except for aerosol products as specified in Subsection 2, below. 2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.	☐	
5.504.4.3 Paints and Coatings: Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3, shall be determined by classifying the coating as a Flat, Nonflat, or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat, or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.	☐	
5.504.4.3.1 Aerosol Paints and Coatings: Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.	☐	

CALGREEN COMPLIANCE SUMMARY

5.504.4.4 Carpet Systems: All carpet installed in the building interior shall meet the testing and product requirements of one of the following: 1. Carpet and Rug Institute's Green Label Plus Program. 2. California Department of Public Health Standard Method for the Testing and Evaluation Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version1.1, February 2010 (also known as Specification 01350) 3. NSF/ANSI 140 at the Gold level or higher. 4. Scientific Certifications Systems Sustainable Choice.	☐ ☐ ☐ ☐	
5.504.4.4.1 Carpet Cushion: All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.	☐	
5.504.4.4.2 Carpet Adhesive: All carpet adhesive shall meet the requirements of Table 5.504.4.1.	☐	
5.504.4.5 Composite Wood Products: Hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 5.504.4.5	☐	
5.504.4.6 Resilient Flooring Systems (50%): For 50% of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its High Performance Products Database; products complaint with CHPS criteria certified under the Greenguard Children & Schools program; certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Department of Public Health 2010 Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as Specification 01350.)	☐	
5.504.5.3.1 Filters: In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value (MERV) of 8.	☐	
INDOOR MOISTURE CONTROL		
5.505.1 Indoor Moisture Control: Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24,Part 2, Sections 1203 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures not applicable to low-rise residential occupancies, see Section 5.407.2 of this code.	☐	
INDOOR AIR QUALITY		
5.506.1 Outside Air Delivery: For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 121 (Requirements For Ventilation) of the 2010 California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.	☐	
OUTDOOR AIR QUALITY		

CALGREEN COMPLIANCE SUMMARY		
5.508.1 Ozone Depletion and Greenhouse Gas Reductions: Install HVAC and refrigeration and fire suppression equipment shall comply with 5.508.1.1 and 5.508.1.2.	☐	
5.508.1.1 Chlorofluorocarbons (CFCs): Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.	☐	
5.508.1.2 Halons: Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.	☐	

END OF SECTION 01 3565

SECTION 01 4320 - DSA CONSTRUCTION OVERSIGHT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes the oversight provided by the Division of the State Owner (DSA) for projects under its jurisdiction.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
1. Section 01 2600: Contract modification procedures and forms.
2. Section 01 4520: Testing and inspection services.

1.2 DEFINITIONS

A. The following definitions apply to terms used in this Section:
1. DSA Approved Construction Documents: Portions of plans, specifications, addenda, deferred submittals, revisions, and construction change documents (CCDs) duly approved by DSA that contain information related to, and affecting Structural Safety, Fire/Life Safety, and Accessibility. While all portions of the construction documents may contain a DSA identification stamp, this stamp is not the approval. The DSA approval is indicated by a letter to the District. This letter clarifies that the approval is limited to Structural Safety, Fire/Life Safety and Accessibility.

1.3 DSA PROCEDURES, INTERPRETATION OF REGULATIONS, AND FORMS

A. The requirements of the following DSA procedural documents shall apply to this Section:
1. DSA Procedure PR 13-01: Construction Oversight Process.

B. The requirements of the following DSA Interpretation of Regulations documents shall apply to this Section:
1. DSA IR A-8: Project Inspector and Assistant Inspector Duties and Performance.
2. DSA IR A-13: Stop Work and Order to Comply.

C. The Project Inspector, assistant inspectors, Laboratory of Record, Architect, other design professionals, and the Owner shall communicate project information and make certain reports pertaining to the status of construction compliance using the following DSA forms:
1. DSA 1 Application for Approval of Plans and Specifications
2. DSA 5 Project/Special Inspector Qualification Record
3. DSA 6-AE Architect/Engineer Verified Report
4. DSA 6-C Contractor Verified Report
5. DSA 6-PI Project Inspector Verified Report
6. DSA 102-IC Construction Start Notice/Inspection Card Request
7. DSA 103 Statement of Structural Tests and Special Inspections
8. DSA 130 Certificate of Compliance - Approved Bleacher/Grandstand Fabricator
9. DSA 140 Application for Approval of Construction Change Document.
10. DSA 151 Project Inspector Notifications
11. DSA 152 Project Inspection Card
12. DSA 154 Notice of Deviations/Resolution of Deviations
13. DSA 155 Project Inspector Semi-Monthly Report
14. DSA 156 Commencement/Completion of Work Notification
15. DSA 291 Laboratory of Record Verified Report

16. DSA 292 Special Inspection Verified Report
17. DSA 293 Geotechnical Verified Report

1.4 QUALITY ASSURANCE

A. Project Inspector: The Owner shall employ a DSA approved Project Inspector in accordance with the requirements of the California Code of Regulations, Title 24. The Inspector's duties are specifically defined in Title 24, Part 1, Section 4-342.
   1. The work of construction in all stages of progress shall be subject to the personal continuous inspection of the Inspector.
   2. The Inspector shall have free access to any or all parts of the work at any time.
   3. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep the Inspector fully informed respecting the progress and manner of the work and character of the materials.
   4. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

B. DSA Construction Oversight: California Code of Regulations (CCR), Title 24, Part 1, Chapter 4, Article 1 (Sections 4-201 through 4-222) and Group 1, Articles 5 and 6 (Sections 4-331 through 4-344) provide regulations governing the construction process for projects under the jurisdiction of DSA.
   1. Observation of Construction by DSA: The DSA District Engineer conducts occasional site walks to make observations as necessary to ascertain that inspections have been completed diligently. During the site visit, the DSA District Engineer may provide guidance to the Project Inspector, as needed, to ensure enforcement of construction documents.
   2. DSA Field Trip Notes: At the conclusion of the site visit, the DSA Field Engineer issues a Field Trip Note (form DSA 135 or comparable) to the Project Inspector, who shall distribute the field trip note to the school Owner and the responsible design professional.
      a. The field trip note indicates any findings by the Field Engineer that require action by the Project Inspector and/or the Architect and other responsible design professionals to ensure project compliance with Field Act requirements.
      b. The field trip note may include informational comments, including construction status and guidance given to the Project Inspector.
      c. The field trip note becomes a part of the DSA project records.

C. Testing and Special Inspection: Testing required for the project is specified in Section 01 4520 - Testing and Special Inspection Services.
   1. Form DSA-103 is attached to Section 01 4520.
   2. Testing may be required by other Sections that is not specifically noted on Form DSA -103.

1.5 PROJECT INSPECTOR

A. General: The Project Inspector shall perform specific duties in accordance with Title 24, Part 1 (Sections 4-333 and 4-342).
   1. The Project Inspector acts under the direction of the Architect and is subject to supervision by DSA.
   2. The Project Inspector does not have the authority, under Title 24, to direct the Contractor in the execution of the work, nor to stop the work of construction.

B. Code Prescribed Duties:
   1. Maintain Job File: The Inspector shall maintain Project records.
   2. Comprehend of the Construction Documents: The Project Inspector shall study and fully comprehend the requirements of the construction documents in order to provide competent inspection of the work. The Inspector shall:
      a. Consult Architect and other responsible design professionals to resolve uncertainties in the Inspector's comprehension of the plans and specifications prior to construction of that portion of

the work.
   b. Review requirements for each phase of the construction with the Contractor prior to commencing that phase of the work.
   c. Readily identify non-compliant work as the construction progresses to facilitate prompt corrective action.
   d. Verify code-compliant implementation of the materials testing and special inspection program.
   e. Be involved in the Contractor's interpretation of the construction documents in accordance with Title 24, Part 1, Section 4-343.
3. Continuous Inspection of the Work:
   a. Provide complete and timely inspection of every part of the work.
   b. Provide prompt verbal notification to the Contractor of any deviation so that the deviation can be immediately corrected.
   c. The Project Inspector shall have personal knowledge of the construction, obtained through the Project Inspector's own physical inspection of the work in all stages of its progress.
4. Maintain Records of Inspections: The Inspector shall maintain detailed records of all inspections.
5. Communications Required of the Inspector: The Inspector shall during the course of construction, provide specific code-prescribed notices and reports to the Architect, other responsible design professionals, DSA, the Owner, and the Contractor.
6. Inspector's Monitoring of the Materials Testing and Special Inspection Program: The Inspector is responsible, under the direction of the Architect, for monitoring the work of the laboratory of record (LOR) any Special Inspectors hired directly by the Owner to ensure that all materials testing and special inspections required for the project are satisfactorily completed in accordance with the DSA approved documents. The Project Inspector shall monitor the following aspects of the structural testing and special inspection program:
   a. When DSA approval for special inspectors is required for Owner-employed special inspectors, the Project Inspector shall identify and report any special inspectors on the job site that are not DSA approved.
   b. The Project Inspector shall verify that the Laboratory of Record (LOR) is included on the List of DSA Accepted Testing Laboratories on the DSA website.
   c. The Project Inspector shall verify that the LOR and special inspectors have received sufficient advance notification to perform the required material sampling or special inspection.
   d. The Project Inspector is responsible for verifying that all required material sampling and special inspections have been performed. The Project Inspector is also responsible to observe any special Inspector's on-site presence, performance of duties, the special inspector's documentation of complying and non-complying work, and issuance of deviation notices.
   e. The Project Inspector shall report on DSA 155 the status and resolution of deviations reported by any LOR or special inspector.
7. Monitoring of Assistant Inspectors: The Project Inspector shall provide technical guidance to assistant Inspectors and shall verify the assistant inspectors' comprehension of the construction documents.
   a. The Project Inspector shall also monitor the assistant Inspectors' performance, verifying that the assistant inspectors are properly checking the construction, recording inspections, and performing other assigned duties.
   b. The Project Inspector shall ensure that any assistant inspector is performing the duties indicated on the assistant Inspector's approved form DSA 5-AI.
   c. The Project Inspector shall provide continuous on-site supervision of all assistant Inspectors.

C. Prohibited Duties: The Project Inspector is prohibited from performing functions associated with actual construction work such as:
1. Performing construction work.
2. Ordering or purchasing materials.
3. Directing the work of the Contractor, Sub-Contractors, volunteer labor, or any entity performing construction work.
4. Coordinating or scheduling the construction work.

5. Performing "quality control" of construction.
    a. Quality control is the responsibility of the Contractor.
    b. Quality assurance is the responsibility of the Project Inspector.

D. Ancillary Duties: The Project Inspector may perform duties for the Owner that are not code-prescribed as long as such duties do not interfere with inspection duties.
1. It is the Inspector's responsibility to report all ancillary duties to DSA, the Architect, and the structural engineer.
2. The Inspector shall also report unforeseen time demands that are impacting, or will impact, his or her ability to perform code-prescribed duties.
3. DSA may approve a Project Inspector when (in the opinion of DSA) these ancillary duties would not create a conflict of interest. DSA may withhold approval of a Project Inspector or withdraw approval at any time if the appearance of a conflict of interest arises.

1.6 DSA CONSTRUCTION OVERSIGHT PROCESS

A. Project Inspection Card (Form DSA 152): DSA will issue Project Inspection Cards for each project.
1. The number of inspection cards issued varies by project types. In general, one inspection card is required for each separate building and one for the site work, which includes non-building site structures.
2. The project inspection cards are issued electronically by upload to DSA Box.

B. Use of Project Inspection Card:
1. The Project Inspection Card is considered to be an interim verified report by the project inspector.
2. The Project Inspector signs off the applicable blocks and sections on the form as the work progresses. When signing off the blocks and sections of the form, the Project Inspector is verifying that:
    a. Identified areas are determined to be in compliance with the DSA approved construction documents,
    b. Required testing and inspections are complete, and
    c. Required documentation has been received by the Project Inspector.

C. Project Posting of Forms DSA 152: The Project Inspector shall post the forms in his Job File and shall electronically upload the forms to DSA Box.
1. The information in the forms shall always be current. Each time the form is updated, a new electronic posting is required such that the electronically posted form is always kept current.
2. The Project Inspector shall:
    a. Immediately, upon request, make the form available for review by any parties involved in the construction.
    b. Include a current copy of the forms any time a Verified Report (form DSA 6-PI) is submitted.
    c. Upon request, provide a current copy of the forms to DSA, the Owner, or the Architect.

D. Duties of the Inspector of Record: The Inspector shall provide notifications to DSA, Inspector's Semi-monthly Reports, deviation notices, record of communications to the Architect and other responsible design professionals, report the following communications during the course of a construction project which include:
    a. Notifications to DSA: Start of work, minimum 48 hours prior to completion of foundation trenches, minimum 48 hours prior to first concrete placement, and when work is suspended for more than one month.
    b. Semi-monthly Reports: Make semi-monthly reports (on the 1st and 16th of every month) on the progress of construction, on the form DSA 155 and submitted to the Architect and structural engineer, with a copy sent to DSA and the Owner.
    c. Deviation Notices: When the Inspector identifies deviations from the DSA approved plans and specifications, the Inspector shall verbally notify the Contractor. If the deviation is not immediately corrected, the Inspector shall promptly issue a written notice of deviation on form DSA 154 to the Contractor, with a copy sent to the Architect and DSA. The status and resolution of all deviations shall be

documented on semi-monthly reports.

d. Record of Communications to the Architect and other Responsible Design Professionals: All uncertainties in the Inspector's or Contractor's comprehension of the documents shall be reported in writing to the Architect and other responsible design professionals.
e. Reporting for Projects with Work Stoppage: This may be required in cases where DSA issues a Stop Work Order, Order to Comply or a request for Owner to stop work.
f. Verified Reports: Submit verified reports on form DSA 6-PI directly to DSA, with copies to the Architect, other responsible design professionals, and the Owner upon any of the following:
    1) Work on the project is suspended for a period of more than one-month.
    2) The services of the Inspector are terminated for any reason prior to completion of the project and such termination is not a result of work stoppage.
    3) DSA requests a verified report.
    4) At the time of occupancy of any building involved in a project prior to completion of the entire DSA approved scope of work.
    5) The entire project is substantially complete. DSA considers the project to be complete when the construction is sufficiently complete in accordance with the DSA approved construction documents so that the Owner can occupy or utilize the project for its intended use, as determined by the Owner and the Architect.

D. Duties of the Laboratory of Record:
1. Meet with the project inspector, design professionals, and the Contractor as needed to mutually communicate and understand the testing and inspection program, and the methods of communication appropriate for the project.
2. Obtain a copy of the DSA approved construction documents from the Architect prior to the commencement of construction.
3. Obtain a copy of the DSA approved Statement of Structural Tests and Special Inspections (form DSA 103) from the Architect prior to the commencement of construction.
4. Report all project related activities to the project inspector. The Project Inspector is responsible for monitoring the work of the Laboratory of Record and Special Inspectors to ensure the testing and special inspection program is satisfactorily completed.
5. Provide material testing as identified in the DSA approved construction documents.
6. Submit test reports to the project inspector on the day the tests were performed for any tests performed on-site.
7. Submit material test reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the material tests were performed to DSA, the Architect, structural engineer, project inspector and the Owner.
8. Immediately submit reports of material tests not conforming to the requirements of the DSA approved construction documents to DSA, the Architect, structural engineer, project inspector and the Owner.
9. The Engineering Manager shall submit an interim Laboratory of Record Verified Report (form DSA 291) and the Geotechnical Engineer shall submit an interim Geotechnical Verified Report (form DSA 293) to DSA, the project inspector, Owner and the Architect upon any of the following events occurring:
    a. Within 14 days of the completion of the material testing/special inspection program.
    b. Work on the project is suspended for a period of more than one month.
    c. The services of the Laboratory of Record are terminated for any reason prior to completion of the project.
    d. DSA requests a verified report.
    e. The Engineering Manager shall submit an interim verified report (form DSA 291) and the Geotechnical Engineer shall submit form DSA 293 to DSA and a copy to the Project Inspector for each of the applicable sections of the form DSA 152, prior to the Project Inspector signing off that section of the project inspection card, if that section required material testing.

E. Duties of Special Inspectors Employed by the Laboratory of Record:
   1. Meet with the Project Inspector, Architect, and the Contractor as needed to mutually communicate and understand the testing and inspection program, and the methods of communication appropriate for the project.
   2. Report all project related activities to the Project Inspector. The Project Inspector is responsible for monitoring the work of the Laboratory of Record and special inspectors to ensure the testing and special inspection program is satisfactorily completed.
   3. Perform work under the supervision of the Engineering Manager for the Laboratory of Record.
   4. Perform inspections in conformance with the DSA approved construction documents, applicable codes and code reference standards.
   5. Prepare detailed daily inspection reports outlining the work inspected and provide the Project Inspector a copy of the reports on the same day the inspections were performed.
   6. Immediately submit reports of materials or work not conforming to the requirements of the DSA approved construction documents to DSA, the Architect, structural engineer, Project Inspector and the Owner.

   7. Submit daily special inspection reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the special inspections were performed to DSA, the Architect, structural engineer, Project Inspector and the Owner.
   8. The Engineering Manager for the Laboratory of Record shall submit verified report form DSA 291 to DSA, the Project Inspector, the Owner and the Architect.
   9. The reports are required to be submitted upon any of the following events occurring:
      a. Within 14 days of the completion of the special inspection work.
      b. Work on the project is suspended for a period of more than one month.
      c. The services of the special inspector are terminated for any reason prior to completion of the project.
      d. DSA requests a verified report.
      e. The Engineering Manager for the Laboratory of Record shall submit an interim verified report to DSA and a copy to the Project Inspector for each of the applicable sections of the form DSA 152, prior to the signing off that section of the project inspection card, if that section required special inspections.

F. Duties of Special Inspectors Not Employed by the Laboratory of Record:
   1. Meet with the Project Inspector, Laboratory of Record, the design professionals, and the Contractors as needed to mutually communicate and understand the testing and inspection program, and the methods of communication appropriate for the project.
   2. Report all project related activities to the Project Inspector. The Project Inspector is responsible for monitoring the work of the Laboratory of Record and special inspectors to ensure the testing and special inspection program is satisfactorily completed.
   3. Perform work under the direction of the Architect, as defined in Section 4-335(f)1B of the 2016 California Administrative Code (Title 24, Part 1).
   4. Perform inspections in conformance with the DSA approved construction documents, applicable codes and code reference standards.
   5. Prepare detailed daily inspection reports outlining the work inspected and provide the Project Inspector a copy of the reports on the same day the inspections were performed.
   6. Immediately submit reports of materials or work not conforming to the requirements of the DSA approved construction documents to DSA, the Architect, structural engineer, Project Inspector and the Owner.
   7. Submit daily special inspection reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the special inspections were performed to submitted to DSA, the Architect, structural engineer, Project Inspector and the Owner.

8. Submit Special Inspection Verified Report forms DSA 292 to DSA, the project inspector, the Owner and the Architect upon any of the following events occurring:
    a. Within 14 days of the completion of the special inspection work.
    b. Work on the project is suspended for a period of more than one month.
    c. The services of the special inspector are terminated for any reason prior to completion of the project.
    d. DSA requests a verified report.
    e. Submit an interim Special Inspection Verified Report (form DSA 292) to DSA and a copy to the Project Inspector for each of the applicable sections of the form DSA 152, prior to the Project Inspector signing off that section of the project inspection card, if that section required special inspections.

G. Duties of the Architect:
1. Responsible to the Owner and to DSA to see that the completed work conforms in every material respect to the DSA approved construction documents.
2. Ensure the Project Inspector is approved by DSA for the project by submitting form DSA 5 PI to and obtaining approval from DSA prior to the start of construction, and prior to requesting issuance of form DSA 152.
3. Provide a copy of the DSA approved construction documents to the project inspector and Laboratory of Record prior to the commencement of construction.
4. Provide a copy of the DSA approved Statement of Structural Tests and Special Inspections (form DSA 103) to the Project Inspector and Laboratory of Record prior to the commencement of construction.
5. Provide general direction of the work of the Project Inspector.
6. Issue specific instructions to the testing facility and the special inspectors prior to start of construction.
7. Direct and monitor the work of special inspectors who are not provided by the Laboratory of Record, as defined in Section 4-335(f)1B of the 2016 California Administrative Code (Title 24, Part 1).
8. Notify DSA as to the disposition of materials noted on laboratory testing, and/or special inspection reports as not conforming to the DSA approved construction documents.
9. Respond to DSA Field Trip Notes (form DSA 135 or comparable) as necessary.
10. Provide observation of the construction and maintain such personal contact with the project as is necessary to assure themselves of compliance, in every material respect, with the DSA approved construction documents.
11. Submit Architect Verified Reports (form DSA 6-AE) to DSA and to the Project Inspector upon any of the following events occurring:
    a. The project is substantially complete. DSA considers the project to be complete when the construction is sufficiently complete in accordance with the DSA approved construction documents so that the Owner can occupy or utilize the project.
    b. Work on the project is suspended for a period of more than one month.
    c. The services of the Architect or engineer are terminated for any reason prior to completion of the project.
    d. DSA requests a verified report.
    e. The Architect or engineer shall submit an interim Architect Verified Report (form DSA 6-AE) to DSA and a copy to the Project Inspector for each of the applicable sections of the form DSA 152 prior to the Project Inspector signing off that section of the project inspection card.

H. Duties of the Other Responsible Design Professionals:
1. Responsible to the school board and to DSA to see that the completed work for which they are delegated responsibility conforms in every material respect to the DSA approved construction documents.
2. Provide observation of the construction and maintain such personal contact with the project as is necessary to assure themselves of compliance, in every material respect, with the DSA approved construction documents.
3. Submit an Architect/Engineer Verified Report (form DSA 6-AE) to the Architect, who in turn will submit to DSA and the project inspector, upon any of the following events occurring:

a. The project is substantially complete. DSA considers the project to be complete when the construction is sufficiently complete in accordance with the DSA approved construction documents so that the Owner can occupy or utilize the project.
b. Work on the project is suspended for a period of more than one month.
c. The services of the Architect or engineer are terminated for any reason prior to completion of the project.
d. DSA requests a verified report.
e. The Architect shall submit to DSA and the Project Inspector an Interim Architect/Engineer Verified Report (form DSA 6-AE), signed by all Architects and engineers having delegated responsibility for each of the sections of the form DSA 152 applicable to the areas of delegated responsibility, prior to the Project Inspector signing that section off on the project inspection card.

I. Duties of Contractor:
1. The Contractor shall carefully study the DSA approved documents and shall plan a schedule of operations well ahead of time.
2. If at any time it is discovered that work is being done which is not in accordance with the DSA approved construction documents, the Contractor shall correct the work immediately.
3. Verify that DSA 152 forms were issued for the project prior to the commencement of construction.
4. Meet with the Architect, the Laboratory of Record and the Project Inspector to mutually communicate and understand the testing and inspection program, and the methods of communication appropriate for the project.
5. Notify the Project Inspector, in writing, of the commencement of construction of each and every aspect of the work at least 48 hours in advance by submitting form DSA 156, or other agreed upon written documents, to the Project Inspector.

6. Notify the Project Inspector of the completion of construction of each and every aspect of the work by submitting form DSA 156 (or other agreed upon written documents) to the Project Inspector.
7. Consider the relationship of the signed off blocks and sections of the form DSA 152 and the commencement of subsequent work.
   a. Until the Project Inspector has signed off applicable blocks and sections of the form DSA 152, the Contractor may be prohibited from proceeding with subsequent construction activities that cover up the unapproved work.
   b. Any subsequent construction activities, that cover up the unapproved work, will be subject to a "Stop Work Order" from DSA or the Owner, and are subject to removal and remediation if found to be in non-compliance with the DSA approved construction documents.
8. Submit the final Contractor Verified Reports (form DSA 6-C) to DSA and the Project Inspector upon any of the following events occurring:
   a. The project is substantially complete. DSA considers the project to be complete when the construction is sufficiently complete in accordance with the DSA approved construction documents so that the Owner can occupy or utilize the project.
   b. Work on the project is suspended for a period of more than one month.
   c. The services of the Contractor are terminated for any reason prior to the completion of the project.
   d. DSA requests a verified report.

J. Duties of the Owner:
1. Provide for competent, adequate and continuous construction inspections and material testing for the project by employing an appropriate DSA certified approved Project Inspector and Laboratory of Record.
2. Contractually provide for and ensure that the design team is fulfilling their code required duty to observe the construction by making periodic visits of reasonable frequency.

3. Ensure that the Project Inspector is approved by DSA for the project by submitting form DSA 5 to and obtaining approval from DSA prior to the start of construction and prior to requesting issuance of project

inspection cards (DSA 152 forms).

4. Ensure the Laboratory of Record is LEA approved and employed prior to the start of construction and prior to requesting issuance of project inspection cards (DSA 152 forms).
5. Ensure that the project inspection cards (DSA 152 forms) are issued prior to commencement of construction.
6. Submit Statement of Final Actual Project Cost (form DSA 168) to DSA when the project is substantially complete.

1.7 CONTRACTOR COOPERATION WITH PROJECT INSPECTOR AND DSA

A. The Inspector and DSA shall have access to the Work at all times and at all locations where the Work or parts of the Work is in progress. The Contractor shall provide facilities for such access to enable the Inspector and DSA to perform their functions properly and safely.

END OF SECTION 01 4320

SECTION 01 4520 - TESTING AND SPECIAL INSPECTION SERVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes testing and inspection to be provided by the Owner and cooperation required from the Contractor with the Owner's selected testing agency and others responsible for testing and inspecting the Work. For detailed testing requirements, refer to the quality control requirements of the following sections:

1. Section 01 4320: DSA Construction Oversight.
2. Section 03 1510: Concrete expansion anchor testing.
3. Section 03 3000: Concrete testing and inspection.
4. Section 05 5000: Metal fabrications testing and inspection.
5. Section 31 2000: Soils inspection and testing, import soil toxic testing.

B. Testing may be required per the Specification Sections noted above that is not specifically noted on Form DSA-103, Statement of Structural Tests and Special Inspections.

C. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
1. Section 01 4320: DSA construction oversight.

D. Work Not Included:
1. Selection of testing laboratory: The Owner will select a prequalified independent testing laboratory.
2. Payment for initial testing: The Owner will pay all services of the DSA approved testing laboratory as further described in Part 2 of this Section.

1.2 SUBMITTALS

A. Test Reports:
1. The testing laboratory will provide test and inspection reports for all testing and inspection required by this Section and the Division of the State Architect in accordance with DSA Procedure 13-1.
2. One copy of all test and inspection reports shall be forwarded by the testing laboratory to DSA, the Owner, the Architect, the Engineer, the Inspector, and the Contractor.
3. Reports shall include all tests made regardless of whether such tests indicate that the material is satisfactory or unsatisfactory.
4. Samples taken but not tested shall also be reported.
5. Reports shall indicate that the material or materials were sampled and tested in accordance with the requirements of Title 24, California Code of Regulations, and the Contract Documents.
6. Reports shall indicate the specified design strength and state definitely whether or not the material or materials tested comply with the requirements.

B. Contractor's Statement of Responsibility: In accordance with CBC Section 1704A.4, Contractor shall submit a statement of responsibility to the Architect, the Owner, and DSA prior to the commencement of work of the main wind or seismic force resisting systems or component. Statement of responsibility shall contain acknowledgment of awareness of the special inspection requirements contained in the statement of special inspections.

C. Verified Reports: The testing laboratory will provide interim and final verified reports in accordance with Section 01 4320 and DSA Procedure PR 13-1.

1.3 QUALITY ASSURANCE

A. The Owner will select an independent testing laboratory to conduct tests. Testing laboratory shall be approved by the Architect, Structural Engineer, and the Division of the State Architect.

B. Selection of material required for testing shall be by the laboratory or the Owner's representative and not by the Contractor.

C. Testing, when required, will be in accordance with all pertinent codes and regulations, and with selected standards of the American Society for Testing and Materials.

D. Division of the State Architect Testing & Inspection: At a minimum, the testing required for the project is indicated in the Form DSA-103, Statement of Structural Tests and Special Inspections attached at the end of this Section.
   1. Where no testing requirements are described, but the Owner or DSA decides that testing is required, the Owner or DSA may require such testing to be performed under current pertinent standards for testing. Payment for such testing will be made as described in this Section.
   2. Testing may be required by other Specification Sections that is not specifically noted on Form DSA-103, Statement of Structural Tests and Special Inspections.

1.4 MATERIALS, TESTING, AND INSPECTION STANDARDS

A. Comply with the California Building Code, 2016 Edition.

B. Concrete - Section 03 3000:
   1. Material Standards:
      a. Portland cement: CBC Section 1903A.1, ACI 318, Table 26.4.1.1.1(a).
      b. Fly ash: ACI 318, Table 26.4.1.1.1(a).
      c. Concrete aggregates: CBC Section 1903A.5; ACI 318, Section 26.4.1.2.1(a)(1).
   2. Material Tests:
      a. Reinforcing bar test: CBC Section 1910A.2.
      b. Waiver of reinforcing bar testing: CBC Section 1910A.2.
      c. Concrete strength: ACI 318, Section 26.12.
      d. Drilled expansion / epoxy bolt: CBC Section 1910A.5.
      e. Composite construction cores: CBC Section 1910A.4.
   3. Special Inspections:
      a. Job site inspection: CBC Section 1704A.3, Table 1705A.3.
      b. Batch plant inspection: CBC Section 1705A.3.3.
      c. Waiver of batch plant inspection: CBC Section 1705A.3.3.1.
      d. Post-installed anchors: CBC Table 1705A.3, Type 4, Section 1910A.5.

C. Earth Fill, Foundations, and Excavations - Section 31 2000:
   1. Special Inspection:
      a. Fill and Compaction: CBC Section 1705A.6 and Table 1705A.6.
      b. Pier Foundations: CBC Section 1704A.8.

D. Toxic Testing of Import Fill Material - Section 31 2000:
   1. Testing and Inspection: Refer to Section 32 2000.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Promptly process and distribute required copies of test reports and related instructions to assure necessary re-testing and replacement of materials with the least possible delay in progress of the Work.

PART 2 - PRODUCTS

2.1 PAYMENT FOR TESTING

A. Initial Testing: The Owner will pay for services requested by the Owner.

B. Retesting: When initial tests indicate non-compliance with the Contract Documents, subsequent retesting occasioned by the non-compliance shall be performed by the same testing agency and the costs thereof will be paid by the Contractor.

2.2 CONTRACTOR'S CONVENIENCE TESTING

A. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

2.3 OWNER’S INSPECTOR

A. The Owner shall employ a DSA approved Inspector in accordance with the requirements of the California Code of Regulations, Title 24. The Inspector’s duties are specifically defined in Title 24, Part 1, Section 4-342.
1. Refer to Section 01 4320 - DSA Construction Oversight.

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

PART 3 - EXECUTION

3.1 COOPERATION WITH TESTING LABORATORY

A. Representatives of the Owner and the testing laboratory shall have access to the Work at all times and at all locations where the Work or parts of the Work is in progress. The Contractor shall facilities for such access to enable the laboratory to perform its functions properly and safely.

3.2 TAKING SPECIMENS

A. Test specimens and prisms required for concrete, grout and mortar shall be taken by the testing laboratory and delivered directly to the testing laboratory as required by the California Building Code, 2016 Edition.

B. The testing laboratory shall be responsible for testing the samples.

C. Miscellaneous materials to be tested shall be tagged by the Project Inspector and delivered to the testing laboratory for testing. The testing laboratory shall provide specimen containers for the Project Inspector for

the required tests.

3.3 SCHEDULES FOR TESTING

A. Establishing Schedule:
   1. The Contractor shall notify the Project Inspector a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents, which must by terms of the Contract be tested, in order that the Inspector may arrange for testing of the material at the source of supply.
   2. The Contractor shall provide time within the construction schedule required for the laboratory to perform its tests and to issue each of its findings.
   3. Contractor shall coordinate times for testing of materials and/or installations with the testing laboratory not less than 48 hours prior to the need for testing.

B. Revising Schedule: When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.

C. Adherence to Schedule: When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back charged to the Contractor and shall not be borne by the Owner.

D. Tests and Inspections Required:
   1. Refer to attached Form DSA 103.
   2. Testing may be required by other Specification Sections that is not specifically noted on Form DSA-103, Statement of Structural Tests and Special Inspections.

3.4 UNTESTED MATERIALS

A. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed any required testing and inspection, or prior to receipt of notice from the Architect that testing and inspection will not be required, shall not be incorporated into the Work.

B. If such non-inspected and non-tested material is incorporated into the project, it shall be removed at the Contractor’s expense and no consideration will be given for delays or additional cost caused by this action.

END OF SECTION 01 4520

DSA DIVISION OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES

DSA-103 Revised 5/8/2019

List of Required Structural Tests & Special Inspections - 2016 CBC

INCREMENT #:

DSA File No.: 54-H9

Application No.: 02-117736

Date Submitted: 7.10.19

Revised:

Revised:

School Name	Alternative Education Complex	District	Porterville Unified School District

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A.
NOTE: This form is also available for projects submitted for review under the 2007, 2010, and 2013 CBC.

INSTRUCTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests and special inspections. A shaded box indicates a test or special inspection that may be required, depending on the scope of the construction and other issues. A shaded box can be clicked indicating your selection of that test. **Note:** A minus (-) on a category or subcategory heading indicates that it can be collapsed. However, any selections you may have made will be cleared. Click on the "COMPILE" button to show only the tests and inspections finally selected.
For more information on use of this form, see DSA-103.INSTR.

Note: References are to the 2016 edition of the California Building Code (CBC) unless otherwise noted.

REQUIRED	TEST OR SPECIAL INSPECTION	TYPE [1]	PERFORMED BY [2]	CODE REFERENCE AND NOTES
-	**SOILS (Indicate if project has geotechnical report):**			(●) Project has a geotechnical report, or CDs indicate soils special inspection is required by GE. ( ) Project does NOT have and does NOT require a geotechnical report.
-	**1. GENERAL:**	**Table 1705A.6**		
X	**a.** Verify that: • site has been prepared properly prior to placement of controlled fill and/or excavations for foundations, • foundation excavations are extended to proper depth and have reached proper material, and • materials below footings are adequate to achieve the design bearing capacity.	**Periodic**	**GE***	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
-	**2. SOIL COMPACTION AND FILL:**	**Table 1705A.6**		
X	a. Perform classification and testing of fill materials.	**Test**	**LOR***	* Under the supervision of the geotechnical engineer.
X	b. Verify use of proper materials, densities and inspect lift thicknesses, placement, and compaction during placement of fill.	**Continuous**	**GE***	* By geotechnical engineer or his or her qualified representative. (Refer to specific items identified in the Appendix for exemptions where soils SI and testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil SI and test reporting requirements for the exempt items.)
X	c. Compaction testing.	**Test**	**LOR***	* Under the supervision of the geotechnical engineer. (Refer to specific items identified in the Appendix for exemptions where soils testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil test reporting requirements for the exempt items.)
+	**3. DRIVEN DEEP FOUNDATIONS (PILES):**	**Table 1705A.7**		
+	**4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):**	**Table 1705A.8**		
+	**5. RETAINING WALLS:**			
+	**6. OTHER SOILS:**			

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 2016 CBC Sec. 1.9.2.2.

DSA-103 Revised 5/8/2019

List of Required Structural Tests & Special Inspections - 2016 CBC

INCREMENT #

DSA File No.: 54-H9

Application No.: 02-117736

Date Submitted: 7.10.19

Revised:

Revised:

-	**CONCRETE**			**Table 1705A.3, ACI 318-14 Sections 26.12 & 26.13**
-	**7. CAST-IN-PLACE CONCRETE**			
	Material Verification and Testing:			
X	**a.** Verify use of required design mix.	**Periodic**	**SI**	**Table 1705A.3 Item 5, 1910A.1** (1909.2.3+)
X	**b.** Identifiy, sample, and test reinforcing steel.	**Test**	**LOR**	**1910A.2** (1909.2.4+); ACI 318-14 Section 26.6.1.2. DSA IR 17-10.16 (See Appendix for exemptions.)
X	**c.** During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	**Test**	**LOR**	**Table 1705A.3 item 6**; ACI 318-14 Sections 26.5 & 26.12
X	**d.** Test concrete (f'_c).	**Test**	**LOR**	**1905A.1.16** (1909.3.7+); ACI 318-14 Section 26.12.
	Inspection:			
X	**e.** Batch plant inspection ○ Continuous ◉ Periodic	**See Notes**	**SI**	Default of **'Continuous'** per **1705A.3.3**; If approved by DSA, batch plant inspection may be reduced to **'Periodic'** subject to requirements in Section **1705A.3.3.1** or eliminated per **1705A.3.3.2.** (See Appendix for exemptions.)
	f. Not used.			
	g. Not used.			
	h. Welding of reinforcing steel.	Provide special inspection per STEEL, category 19.1(d) & (e) and/or 19.2(g) & (h) below.		
	i. Not used.			
+	**8. PRESTRESSED / POST-TENSIONED CONCRETE (in addition to Cast-In-Place Concrete tests and inspections):**			
+	**9. PRECAST CONCRETE (in addition to Cast-In-Place Concrete tests and inspections):**			
+	**10. SHOTCRETE (in addition to Cast-In-Place Concrete tests and inspections):**			
-	**11. POST-INSTALLED ANCHORS:**			
X	**a.** Inspect installation of post-installed anchors	**See Notes**	**SI***	**1616A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic)** (See Appendix for exemptions). ACI 318-14 Sections 17.8 & 26.13 * May be performed by the project inspector when specifically approved by DSA.
X	**b.** Test post-installed anchors.	**Test**	**LOR**	**1910A.5** (1909.2.7+). (See Appendix for exemptions.)
+	**12. OTHER CONCRETE:**			
+	**MASONRY**			**TMS 402-13/ACI 530-13/ASCE 5-13 Table 3.1.3 & TMS 602-13/ACI 530.1-13/ASCE 6-13 Table 5**
+	**STEEL, ALUMINUM**			**Table 1705A.2.1, AISC 303-10, AISC 360-10, AISC 341-10, AISC 358-10, AISI S100-07/S2-10**
+	**WOOD**			
-	**OTHER**			
	26. LOAD TEST FOR IDENTIFIED PRODUCT(S): _____	**Test**	**LOR**	**1709A.2** and **1709A.3**. Testing is not required for: 1) a product with a valid evaluation service report per DSA IR A-5, or 2) a product that can be justified by structural calculation.
	27. Installation torque for non-HS bolts	**Continuous**	**SI***	Applicable to communication towers identified as Essential Service Facility Projects (ESFP). Calibrated wrench use required, verified by SI during installation. **EXCEPTION: Non-ESFP may use PI without need for notification to DSA.*

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 2016 CBC Sec. 1.9.2.2.

DSA-103 Revised 5/8/2019

List of Required Structural Tests & Special Inspections - 2016 CBC

INCREMENT #

DSA File No.: 54-H9

Application No.: 02-117736

Date Submitted: 7.10.19

Revised:

Revised:

X	28 Electrical Ground Testing	Test	SI	
	29			

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 2016 CBC Sec. 1.9.2.2.

DSA-103 Revised 5/8/2019

List of Required Structural Tests & Special Inspections - 2016 CBC

INCREMENT #

DSA File No.: 54-H9

Application No.: 02-117736

Date Submitted: 7.10.19

Revised:

Revised:

List of required verified report(s):

KEY to Columns	
1 Type -	**2 Performed By -**
Continuous – Indicates that a continuous special inspection is required	**GE** – Indicates that the special inspection is to be performed by a registered geotechnical engineer or his or her authorized representative
Periodic – Indicates that a periodic special inspection is required	**LOR** – Indicates that the test or special inspection is to be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See CAC Section 4-335.
Test – Indicates that a test is required	**PI** – Indicates that the special inspection is to be performed by a project inspector
	SI – Indicates that the special inspection is to be performed by an appropriately qualified/approved special inspector

Christopher D. McLain

Name of Architect or Engineer in general responsible charge

Name of Structural Engineer (When structural design has been delegated)

Signature of Architect or Structural Engineer

2/10/2020

date

LICENSED ARCHITECT CHRISTOPHER D. McLAIN No. C-29566 REN 10-31-21 STATE OF CALIFORNIA

IDENTIFICATION STAMP
DIV OF THE STATE ARCHITECT
APP. # 02-117736

AC N/A F/LS N/A SS

DATE

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP. 02-117736 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/13/2020

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 2016 CBC Sec. 1.9.2.2.

DSA-103 Revised 5/8/2019

List of Required Structural Tests & Special Inspections - 2016 CBC

INCREMENT #

DSA File No.: 54-H9

Application No.: 02-117736

Date Submitted: 7.10.19

Revised:

Revised:

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Exempt items given in IR A-22 or the 2016 CBC (including DSA amendments) and those items identified below with an "X" by the design professional are NOT subject to DSA requirements for the structural tests / special inspections noted. **Items marked as exempt shall be identified on the approved construction documents**. The project inspector shall verify all construction complies with the approved construction documents.

Exempted by Design Prof.	Soils:
	1. Deep foundations acting as a cantilever footing designed based on minimum allowable pressures per CBC Table 1806A.2 and having no geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
	2. Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill.

Exempted by Design Prof.	Welding:
	1. Solid-clad and open-mesh gates with maximum leaf span or rolling section for rolling gates of 10' and apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
	2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds cannot be ground flush.

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 2016 CBC Sec. 1.9.2.2.

DSA-103 Revised 5/8/2019

List of Required Structural Tests & Special Inspections - 2016 CBC

INCREMENT #

DSA File No.: 54-H9

Application No.: 02-117736

Date Submitted: 7.10.19

Revised:

Revised:

	Concrete/Masonry:
	1. Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment - see item 7 for "Welding") given in CBC Section 1616A.1.18 (which replaces ASCE 7-10, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding."
	2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.
	3. Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per IR 21-1.16. Refer to construction documents for specific exemptions accordingly for each applicable wall condition.
	4. Epoxy shear dowels in site flatwork and/or other non-structural concrete.
	5. Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that section.

	3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
	4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 of listing above).
	5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 of listing above).
	6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 of listing above).
	7. Any support for exempt non-structural components given in CBC Section 1616A.1.18 (which replaces ASCE 7-10, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) <= 4' above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 2016 CBC Sec. 1.9.2.2.

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide construction facilities and temporary controls needed for the Work including, but not necessarily limited to:
1. Temporary utilities such as heat, water, electricity, and telephone;
2. Field offices;
3. Sanitary facilities;
4. Enclosures such as tarpaulins, barricades, safety devices, and canopies;
5. Temporary fencing of the construction site and/or buildings as required to secure the project;
6. Temporary protect of new and existing work;

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the Work is not part of this Section.
3. Permanent installation and hookup of the various utility lines are described in other Sections.

1.2 QUALITY ASSURANCE

A. Comply with governing regulations and rules/recommendations of utility companies and governmental agencies having jurisdiction.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

PART 2 - PRODUCTS

2.1 TEMPORARY UTILITIES

A. Water:
1. Provide necessary temporary piping and water supply and, upon completion of the Work, remove such temporary facilities.
2. Provide and pay for water used in construction.

3. Provide fire hydrants in working order and approved by the local fire agency having jurisdiction and fire access roads as indicated prior to delivering combustible materials to the job site.

B. Electricity:
1. Provide all necessary temporary poles and wiring and, upon completion of the Work, remove such temporary facility.
2. Provide area distribution boxes so located that the individual trades may furnish and use 100 ft maximum length extension cords to obtain power and lighting at points where needed for work, inspection, and safety.
3. Provide lighting as needed to permit safe and reasonable lighted working conditions.

4. Provide and pay for electricity used in construction.

C. Fire Protection: Provide for and maintain fire safety during construction and/or alteration of a building per Chapter 33 of the 2016 California Fire Code.

D. Safeguards During Construction: Provide for and maintain safeguards during construction and/or alteration of a building per Chapter 33 of the 2016 California Building Code.

E. Heating: Provide and maintain heat necessary for proper conduct of operations and temperature conditions needed for the Work.

F. Ventilation: Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and prevent accumulation of dust, fumes, vapors, or gases.

G. Telephone/Fax:
1. Make necessary arrangements and pay costs for installation and operation of telephone, FAX, internet service and copier service in the Contractor's office at the site.
2. Provide telephone and fax lines in the office of the Project Inspector for use in connection with the Work.
3. Costs of telephone and fax calls in the Inspector’s office are not in contract.

2.2 FIELD OFFICES AND SHEDS

A. Office Facilities:
1. Contractor’s Office: Provide a field office (8' by 12' minimum size) and sheds adequate in size and accommodation for Contractor's offices, supply, and storage.
2. Secure portable or mobile buildings when used. Provide steps and landings at each doorway. Meet all applicable codes and regulations.
3. Remove all facilities when they are no longer needed, but only after approval of the Architect.
4. Inspector’s Office: Provide a private space within the field office (8' by 16' minimum size), or a separate job trailer with adequate heating and cooling, power, and telephone outlets for the Project Inspector and for holding project meetings.
   a. Provide 30"x84" table and 8 chairs.
   b. Provide windows (approximately 10% of floor area) oriented to the construction areas.
   c. Provide plan table and stool for inspector.

B. Sanitary Facilities:
1. Provide temporary sanitary facilities in the quantity required for use by all personnel per local and state health and sanitary regulations.
2. Maintain in a sanitary condition at all times and in reasonable proximity of the work.

2.3 TEMPORARY ENCLOSURES

A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, lighting, and other temporary construction necessary for the safe and proper completion of the Work in compliance with pertinent safety and other regulations.

B. Provide and maintain suitable temporary sidewalks, closed passageways, fences, and other structures required by law so as not to obstruct or interfere with traffic in public streets, alley ways, or private right-of-way. Leave an unobstructed way along public and private places for pedestrians and vehicles.

C. Provide temporary partitions and ceilings as needed to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing

materials and equipment.

2.4 TEMPORARY FENCING

A. Provide and maintain temporary fencing for the duration of construction to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

B. Minimum fence height shall be 6'-0" high. Fence panels shall be stretched over 4-sided pipe frames.

2.5 VEHICULAR ACCESS AND PARKING

A. Access the site as indicated on the Drawings, or as directed by the Owner.

B. Do not use existing parking areas for the Contractor's parking or storage of materials.

C. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on the site.

D. Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Extend and relocate as the Work requires.

E. Provide and maintain access to fire hydrants, free of obstructions, with an all-weather hard surface able to support 50,000 pounds minimum fire apparatus. Fire hydrants shall be charged and accessible by local fire authorities prior to loading the site with combustible materials.

F. Employees vehicles not required for the direct construction of the Work shall be parked offsite unless otherwise authorized by the Owner.

2.6 DUST PROTECTION

A. Provide dust suppression measures, including watering of all graded or excavated material at least twice a day, stopping grading and excavation activities when the wind speed exceeds 20 mph for one hour, watering or covering all material transported off-site, and minimizing the area disturbed by grading and excavation activities.

B. Maintain adequate water and trucks to be used throughout the progress of the project to mitigate airborne dust. Maintain the site in a damp condition, not allowing excessive powdering of soil.

2.7 PROTECTION

A. Landscaping: Protect all existing trees, shrubs, lawns, and landscape work from damage, providing guards and coverings. Maintain by irrigation any existing trees, shrubs, lawns, and landscape work though-out the Contract which are within the Contractor's temporary fencing. Damaged landscaping shall be repaired or replaced at the Contractor's expense.

B. Public and Private Streets, Curbs, and Walks:
   1. Protect all existing streets, curbs, walks, and other street improvements and immediately make all necessary repairs for damage occurring thereto during the course of the Work at the Contractor's expense.
   2. Keep all public and private streets and ways clean of debris, spilled materials and products, and wet and dry earth at all times and clean at the end of each working day. Clean wet earth from vehicles prior to their leaving the site.

C. Weather: Provide protection at all times against weather--rain, winds, storms, frost, or heat--so as to maintain all work, materials, apparatus, and fixtures free from injury or damage. At the end of the day's work, cover all work likely to be damaged.
   1. Water Protection: Protect excavations, trenches, and/or building from damage from rain water, spring water, ground water, backing up of drains or sewers, and all other water at all times. Provide pumps and equipment and enclosure necessary to provide this protection.
   2. Drainage: Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations free of water.
   3. Cold Weather: During cold weather, protect all work from damage.
   4. Snow and Ice: Remove all snow and ice as may be required for proper protection and/or prosecution of the Work.

D. Installed Roofing Materials: Provide means for protection of roofing materials during construction activities. Provide a minimum of 3/4" plywood as protection for storage or materials, walking areas, and working areas. Protect from solvents, oils, or other materials harmful to the installed roofing material.

E. Existing Utilities and Services: Maintain in operation through-out the Contract all existing utilities and services serving the existing facilities occupied by the Owner or by others.

F. Existing Structures and Improvements: The Contractor shall be responsible for all existing structures and improvements within the work area, and shall provide adequate protection. Any existing structure or improvement damaged during construction shall be repaired or replaced with materials, fixtures, or equipment of the same kind, quality, and size. Any materials, and/or equipment temporarily removed for protection and not damaged, shall be reinstalled.

G. Adjacent Property: Provide necessary protection for adjacent property and the lateral support therefor in conformance with the 2016 California Building Code.

2.8 SECURITY

A. The Contractor shall be responsible for security and protection of his equipment and the site-stored and installed products whether paid for by the Owner or not, until the Owner accepts the Project.

B. On-site security lighting shall be hooded and adjusted to reduce or eliminate illumination of surrounding properties and roadways.

2.9 DEBRIS CONTROL

A. Keep site clean and orderly in appearance at all times. Do not allow debris to accumulate over the site.

B. Collect debris daily and store in a central location or container. Remove from the site monthly prior to review of payment request.

PART 3 - EXECUTION

3.1 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect.

END OF SECTION 01 5000

SECTION 01 5725 - STORM WATER POLLUTION PREVENTION PLAN

PART 1 - GENERAL

1.1 SUMMARY

A. The State Water Resources Control Board (SWRCB) regulates storm water discharges associated with construction and land disturbance activities. Certain projects are required to obtain permit coverage under California's Construction General Permit (GCP), Order No. 2009-0009-DWQ. A site-specific Storm Water Pollution Prevention Plan (SWPPP) is required to obtain permit coverage under the CGP.

B. Related Sections
   1. Section 01 5710: Erosion Control

C. Based on the State Water Resources Control Board (SWRCB) criteria, a Construction General Permit (CGP) is not required. Therefore, permit coverage has not been obtained and a SWPPP is **NOT** required, however the Contractor shall comply with the applicable sections of the California Green Building Code and shall not violate any National Pollutant Discharge Elimination System (NPDES) regulations.

1.2 REFERENCES

A. Section 5.106 of the California Green Building Code, latest edition

END OF SECTION 01 5725

SECTION 01 6200 - PRODUCT OPTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes product options available to bidders and the Contractor.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 01 2500: Substitution procedures.
3. Section 01 3300: Submittal procedures.

1.2 PRODUCT OPTIONS

A. The Contract shall be based on standards of quality established in the Contract Documents.
1. In agreeing to the terms and conditions of the Contract, the Contractor has accepted a responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet his agreed construction schedule.
2. Neither the Owner nor the Architect has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.

B. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer’s Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer’s standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer’s “standard colors” from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer’s colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

1.3 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of the agreed Time of Completion, or reason for change.

B. All additional time required by the Architect or his consultants in dealing with such delay will be charged to the Contractor at the rates listed above.

C. Equal or better material replacements caused by delay in approvals and/or ordering may cost more than the original material specified. Increased costs shall be absorbed by the Contractor and not the Owner.

END OF SECTION 01 6200

SECTION 01 6600 - STORAGE AND PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Additional procedures also may be prescribed in other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

B. **Materials not properly stored will not be paid for by the owner. Materials previously paid for but not properly stored at time of payment request will be deducted from the request.**

1.3 MANUFACTURERS' RECOMMENDATIONS

A. Except as otherwise approved by the Architect, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

1.4 PACKAGING

A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
1. Maintain packaged materials with seals unbroken and labels intact until time of use.
2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.

B. The Architect may reject as noncomplying such material and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, and other pertinent information.

1.5 PROTECTION

A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.

B. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.6 REPAIRS AND REPLACEMENTS

A. In event of damage, promptly make replacements and repairs to the approval of the Architect and at no additional cost to the Owner. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the Contract Time of Completion.

END OF SECTION 01 6600

SECTION 01 7120 - FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide such field engineering, staking services, and required certifications as required for proper completion of the Work including, but not necessarily limited to establishing and maintaining lines and levels.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Additional requirements for field engineering also may be described in other Sections of these Specifications.
3. As described in the General Conditions, the Owner will furnish survey describing the physical characteristics, legal limitations, utility locations, and legal description of the site.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. Submit the following:
1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
2. Documentation verifying accuracy of field engineering work

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.4 PROCEDURES

A. In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:
1. Locate and protect control points before starting work on the site.
2. Preserve permanent reference points during progress of the Work.
3. Do not change or relocate reference points or items of the Work without specific approval from the Architect.
4. Promptly advise the Architect when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.
    a. Upon direction of the Architect, require the field engineer to replace reference stakes or markers.
    b. Locate such replacements according to the original survey control.

END OF SECTION 01 7120

SECTION 01 7300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section establishes administrative and supervisory requirements pertaining to project coordination and general installation provisions.

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

1.2 COORDINATION

A. Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
   1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
   2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

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

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

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

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

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

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

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

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

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

F. Inspection of Conditions: Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

G. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

3.2 PREPARATION

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

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

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

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement. Comply with manufacturer’s installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in the Contract Documents.

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

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

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

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

F. Provide attachment and connection devices and methods necessary for securing Work. Allow for expansion and building movement.

G. Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

H. Recheck measurements and dimensions prior to starting installation.

I. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

J. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

K. Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.4 SITE CONDITIONS

A. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

B. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

3.5 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration until Notice of Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01 7300

SECTION 01 7330 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section establishes general requirements pertaining to cutting (including excavating), fitting, and patching of the Work.

B. Provide boring, fitting, and patching of the Work, as specified, as indicated, and as needed to:
1. Make the several parts fit properly;
2. Install new work into existing construction.
3. Uncover work to provide for installing, inspecting, or both, of ill-timed work;
4. Remove and replace work not conforming to requirements of the Contract Documents;
5. Remove and replace defective work; and
6. Remove samples of installed work for testing.

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

D. Special Requirements:
1. In addition to other requirements specified, upon the Architect's request uncover work to provide for inspection by the Architect of covered work, and remove samples of installed materials for testing.
2. Prior to cutting, notching, or boring of any structural elements, including bearing/shear walls, footings, beams, etc., not specifically detailed in the drawings, obtain approval from the Architect and DSA prior to commencement of work.
3. Do not cut or alter work performed under separate contracts without the Architect's written permission.
4. The Contractor shall provide all encroachment permits or others as required in the right-of-way of any adjacent jurisdiction.

1.2 SUBMITTALS

A. Request for Architect's Consent:
1. Prior to cutting which effects structural safety, submit written request to the Architect for permission to proceed with cutting.
2. Should conditions of the Work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Architect and secure his written permission and the required Change Order prior to proceeding.

B. Notices to Architect:
1. Prior to cutting and patching performed pursuant to the Architect's instructions, submit cost estimate to the Architect. Secure the Architect's approval of cost estimates and type of reimbursement before proceeding with cutting and patching.
2. Submit written notice to the Architect designating the time the Work will be uncovered, to provide for the Architect's observation.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For replacement of items removed, use materials complying with pertinent Sections of these Specifications.

2.2 PAYMENT FOR COSTS

A. The Owner will reimburse the Contractor for cutting and patching performed pursuant to a written Change Order, after claim for such reimbursement is submitted by the Contractor. Perform other cutting and patching needed to comply with the Contract Documents at no additional cost to the Owner.

B. For uncovering work and replacement of work for inspection by the Architect:
1. If work is not compliant, Contractor shall pay all costs,
2. If work is compliant, Owner shall pay for removal and replacement as a Change Order.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection: Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, patching, and backfilling. After uncovering the work, inspect conditions affecting installation of new work.

B. Discrepancies: If uncovered conditions are not as anticipated, immediately notify the Architect and secure needed directions. Do not proceed until unsatisfactory conditions are corrected.

3.2 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. **Water or air pressure jetting** are not permitted, unless they comply with the following requirements.
1. All surfaces of the hole can be visually inspected with 6' maximum length and,
2. all objects shall be supported continuously to prevent sagging and,
3. the hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing lab technician.

3.3 PREPARATION PRIOR TO CUTTING

A. Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work.

B. Provide protection for other portions of the work which may be affected.

C. Provide protection from the elements when needed.

3.4 CUTTING AND REMOVAL - GENERAL

A. Perform required excavating and backfilling as required under pertinent other Sections of these Specifications.
   1. Perform cutting and demolition by methods which will prevent damage to other portions of the Work and provide proper surfaces to receive installation of repair and new work.
   2. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes.

B. Remove existing work indicated to be removed, or as needed for installation of new work.

3.5 MATCHING AND PATCHING

A. Where items are removed from existing walls, ceilings, floors, partitions, or roofs to remain, repair walls, ceilings, floors, partitions, roofs, etc., disturbed by removal.

B. Where existing construction is removed, repair abutting walls, ceilings, floors, partitions, or roofs disturbed by removal.

C. Where existing construction is cut or otherwise disturbed to permit installation of new work, match and patch existing disturbed construction.

D. Use methods similar in appearance, and equal in quality to areas and surfaces being repaired.

E. Remove and replace areas, surfaces, or items which cannot be satisfactorily matched or patched.

END OF SECTION 01 7330

SECTION 01 7400 - CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Conduct daily inspection, more often if necessary, to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction, including the SWPPP requirements.

C. Contractor shall include the costs of cleaning and trash disposal in his/her bid designate it in the Schedule of Values.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

B. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General:
1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

3.2 FINAL CLEANING

A. "Clean," for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

B. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.1 above.

C. Site: Unless otherwise specifically directed by the Architect, broom clean paved areas on the site and public paved areas adjacent to the site. Completely remove resultant debris.

D. Structures:
   1. Exterior:
      a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter visible from 5'.
      b. Remove all traces of splashed materials from adjacent surfaces.
      c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
      d. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no additional cost to the Owner.
   2. Interior:
      a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter visible from 5'.
      b. Remove all traces of splashed material from adjacent surfaces.
      c. Remove paint droppings, spots, stains, and dirt from finished surfaces.
   3. Glass: Clean inside and outside.
   4. Polished surfaces: Apply polish to surfaces requiring routine application of buffed polish as recommended by the manufacturer of the material.

E. Schedule final cleaning as approved by the Architect to enable the Owner to accept a completely clean Work.

3.3 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Architect in accordance with the General Conditions of the Contract.

END OF SECTION 01 7400

SECTION 01 7425 - CONSTRUCTION WASTE MANAGEMENT AND CONTROL

PART 1 - GENERAL

1.1 SUMMARY:

A. This section specifies diversion of construction and demolition waste from the landfill. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 3110: Additional requirements for project meetings and reports.
3. Section 01 3300: Additional requirements for submittal procedures and project documentation.
4. Section 01 5000: Additional requirements related to trash and waste collection and removal facilities and services.
5. Section 01 6600: Waste prevention requirements related to delivery, storage, and handling.
6. Section 01 7330: Trash/waste prevention procedures related to cutting and patching, installation, protection, and cleaning.
7. Section 31 1000: Handling and disposal of excavated soils and land clearing debris.

C. The following sources may be useful in developing the Waste Management Plan:
1. County engineering or building departments.

1.2 SCOPE OF CONSTRUCTION WASTE MANAGEMENT AND CONTROL

A. Intent: Construction waste management and control is intended to achieve the following specific objectives:
1. Generate the least amount of trash and waste possible.
2. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
3. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

B. Construction Waste Management Requirement: Recycle and/or salvage for reuse a minimum of **50 percent** of nonhazardous construction waste using Option 1, Option 2, or Option 3 below; or meet a local construction and demolition waste management ordinance, whichever is most stringent.

C. Option 1- Construction Waste Management Plan: Provide construction waste management plan that:
1. Identifies the construction waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
2. Determines if construction waste materials will be sorted on-site (source separated) or bulk mixed (single stream).
3. Identifies diversion facilities where construction waste material collected will be taken.
4. Specifies that the amount of construction waste materials diverted shall be calculated by weight or volume, but not both.

D. Option 2 - Waste Management Company: Utilize a waste management company that can provide verifiable documentation that the percentage of construction waste material diverted from the landfill complies with this Section.

E. Option 3 - Waste Stream Reduction Alternative: The combined weight of new construction disposal that does not exceed 2 lbs/sq.ft. of building area may be deemed to meet the 50 percent minimum requirement as approved by the enforcing agency.

F. Recycling Incentive programs are mandatory for this project; Contractor is responsible for implementation:
   1. Any revenue or savings shall accrue to Contractor.
   2. Any rebates and credits shall be applied for by Owner and shall accrue to Owner.

G. Owner may decide to pay for additional recycling, salvage, and/or reuse based on Landfill Alternatives Proposal specified below.

H. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
   1. Aluminum and plastic beverage containers.
   2. Corrugated cardboard.
   3. Wood pallets.
   4. Clean dimensional wood.
   5. Excavated soils and land clearing debris, including brush, branches, logs, and stumps.
   6. Concrete.
   7. Concrete masonry units.
   8. Asphalt paving.
   9. Metals, including packaging banding, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
   10. Glass.
   11. Gypsum board and plaster.
   12. Plastic buckets.
   13. Carpet, carpet cushion, carpet tile, and carpet remnants.
   14. Asphalt roofing shingles.
   15. Paint.
   16. Plastic sheeting.
   17. Windows, doors, and door hardware.
   18. Plumbing fixtures.
   19. Mechanical and electrical equipment.
   20. Fluorescent lamps (light bulbs).
   21. Acoustical ceiling tile and panels.

I. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other Illegal dumping or burying.
   5. Incineration either on- or off-site.

J. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.3 DEFINITIONS:

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and nibble resulting from construction, remodeling, repair and demolition operations. Excavated soils and land clearing debris and hazardous or toxic waste are excluded from construction and demolition waste.

C. Hazardous: Exhibiting the characteristics of hazardous substances (i.e., ignitibility, corrosivity, toxicity or reactivity).

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period or exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life In Its Intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.4 SUBMITTALS:

A. General: Submit in accordance with Section 01 3300.

B. Landfill Alternatives Proposal: Within 10 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner, submit a projection of trash/waste that will require disposal and alternatives to landfilling, with net costs.
   1. Submit to Architect for Owner's review and approval.
   2. If Owner wishes to implement any cost alternatives, the Contract Sum will be adjusted as specified elsewhere.
   3. Include an analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.
   4. Describe as many alternatives to landfilling as possible:
      a. List each material proposed to be salvaged, reused, or recycled.
      b. List the proposed local market for each material.

c. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping tees saved due to diversion of materials from the landfill.

5. Provide alternatives to landfilling for at least the materials that cannot be recycled, salvaged, or reused as stated under Waste Management Requirements above.
6. Once Owner has determined which of the landfill alternatives addressed in the Proposal above ore acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Architect.

D. Submit Waste Management Plan within 10 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to land filling.

E. Waste Management Plan: Include the following information:
1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
   a. Identify construction waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
2. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
   a. Indicate if construction waste materials will be sorted on-site (source separated) or bulk mixed (single stream).
   b. Indicate how the amount of construction waste materials diverted shall be calculated; by weight or volume, but not both.
   c. Indicate deconstruction, salvage, and recycling strategies and processes.
3. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
4. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
   a. List each material proposed to be salvaged, reused, or recycled.
   b. List the local market for each material.
   c. State the estimated net cost versus landfill disposal.
5. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.

F. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Submit Report on a form acceptable to Owner.
3. Landfill Disposal: Include the following information:
   a. Identification of material.
   b. Amount, in tons or cubic yards of trash/waste material from the project disposed of in landfills.
   c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
   d. Include manifests, weight tickets, receipts, and Invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
   a. Identification of material.

b. Amount, in tons or cubic yards of trash/waste material from the project delivered to Incinerators.
c. State the identity of Incinerators, total amount of fees paid to Incinerator, and total disposal cost.
d. Include manifests weight tickets, receipts, and invoices as evidence of quantity and cost.

5. Recycled and Salvaged Materials: Include the following Information for each:
   a. Identification of material, including those retrieved by installer for use on other projects.
   b. Amount in tons or cubic yards, date removed from the project site, and receiving party.
   c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
   e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: include the following information for each:
   a. Identification of material and how it was used in the project.
   b. Amount, in tons or cubic yards.
   c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: include information similar to that described above, as appropriate to disposal method.

G. Recycling Incentive Programs:
1. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
2. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

PART 2 - PRODUCTS

2.1 PRODUCT SUBSTITUTIONS:

A. See Section 01 6200 - Product Requirements for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 6200:
1. Relative amount of waste produced, compared to specified product.
2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
3. Proposed disposal method for waste product.
4. Markets for recycled waste product.

PART 3 - EXECUTION

3.2 WASTE MANAGEMENT PLAN IMPLEMENTATION:

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings; particularly at:
1. Pre-bid meeting.
2. Pre-construction meeting.

3. Regular job-site meetings.
4. Job safety meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal for use by all contractors and installers.
   1. As a minimum, provide:
      a. Separate area for storage of materials to be reused on site, such as wood cut-offs for blocking.
      b. Separate dumpsters for each category of recyclable.
      c. Recycling bins at worker lunch area.
   2. Provide containers as required.
   3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
   4. Provide materials for barriers and enclosures that ore nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
   5. Locate enclosures out of the way of construction traffic.
   6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
   8. Keep recycling and trash/waste bin areas neat and clean and dearly marked In order to avoid contamination of materials.

F. Excavated Soils and Land Clearing Debris: 100% of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing shall reused or recycled, except for reuse, either on site or off site of vegetation or soil contaminated by disease or pest infestation.
   1. For a phased project, such material may be stockpiled on site until the storage site is developed.
   2. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material.
   3. See www.cdfa.ca.gov/exec/county/county_contacts.html.

G. Hazardous or Toxic Waste: Separate, store, and dispose of hazardous waste according to applicable regulations.

H. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility In order to prevent contamination of recyclable materials.

I. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

J. Salvage: Set aside, sort, and protect products to be salvaged for reuse oft-site.

END OF SECTION 01 7425

SECTION 01 7700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for an orderly and efficient transfer of the completed Work to the Owner.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 3300: Submittal procedures.
3. Section 01 4520: Payment procedures for retesting.
4. Section 01 7400: Final cleaning.
5. Section 01 7820: Operation and maintenance data.
6. Section 01 7840: Project record documents.
7. Certifications and Warranties as noted in each specification section.

1.2 QUALITY ASSURANCE

A. Prior to requesting inspection by the Architect, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Complete the following prior to requesting inspection for substantial completion.
1. Prepare and submit the list of items to be completed or corrected required by the General Conditions.
2. Closeout Submittals:
a. Prepare and submit an electronic submittal of each closeout submittals including, but not limited to, the following:
i. In-Service Certifications required by Divisions 1 through 34 of the specifications executed by the appropriate persons on form provided in this Section.
ii. Project Asbestos Certification executed by Contractor on form provided in this Section;
iii. Project record documents complying with the requirements of Section 01 7840;
iv. Project Warranty executed by the Contractor on form provided in this Section.
v. Special warranties as specified in Divisions 1 through 34 of the specifications.
vi. Maintenance agreements required by Divisions 1 through 34 of the specifications;
vii. Operation and maintenance manuals required by Divisions 1 through 34 of the specifications complying with the requirements of Section 01 7820;
viii. Manufacturer's recommended cleaning procedures required by Divisions 1 through 34;
ix. Certifications required by Divisions 1 through 34 of the specifications.
x. Test reports required by Divisions 1 through 34 of the specifications.
b. Upon the Architect’s acceptance of the Closeout Submittal, provide one complete hard copy in 3-ring binders, including “wet-signature” original documents for the Owner’s record.
3. Advise Owner of pending insurance change over requirements.
4. Obtain and submit releases from governmental agencies having jurisdiction enabling the Owner unrestricted use of the Work and access to service and utilities; include occupancy permits, operating certificates, and similar releases.
5. Deliver special tools, spare parts, extra materials, and similar items.
6. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.

7. Complete start-up testing and balancing of systems, and instruction and demonstration of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
8. Complete final clean-up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
9. Submit a list of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.
10. In the presence of the Owner and the Inspector of Record, locate all utility devices required for control, manipulation, or shut-off of building and site utility systems including, but not limited to cleanouts, valves, dampers, valve boxes, pull boxes, handholes, manholes, etc., whether exposed, concealed, or in-ground.

B. Inspection Procedures:
1. Within 5 days of receipt of Contractor's list of items to be completed or corrected, the Architect will make an "initial inspection" and provide the Contractor with an additional list of discrepancies. When the Contractor corrects the items indicated by the Architect and any other, the Contractor shall notify the Architect for the Final Acceptance Inspection.
2. All closeout submittal items as listed in paragraph 1.3.A above shall be completed prior to Notice of Completion being submitted to the Owner for acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Prior to requesting final inspection for certification of final acceptance and final payment, prepare and submit the following:
1. Final application for payment with release of liens/stop notices and supporting documentation not previously submitted and accepted.
2. Updated final statement, accounting for final additional changes to the Contract Sum;
3. Final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
4. Final liquidated damages settlement statement, where applicable.
5. Payment by the Contractor of all backcharge items, including but not limited to utilities, materials retesting, and reinspections.
6. Contractor's final verified report, DSA 6C.
7. Contractor shall coordinate switch-over of utilities following Substantial Completion and approval of the Architect. Provide proof of payment for electricity, water, gas and other utilities that are a part of this contract.

B. Inspection Procedures:
1. Within 5 days of receipt of Contractor's written request for Final Acceptance Inspection, the Architect will make a "final inspection" to review the "initial inspection" list of discrepancies and identify any additional discrepancies discovered.
2. Reinspection: Should the Contractor not have completed the Work as required by the Contract Documents, not have completed the items identified on the list of discrepancies, or should the Architect reject portions of the Work, all further inspections, time expended, and reimbursable expenses incurred by the Architect, his representatives, or consultants for final acceptance will be considered additional services and will be charged at the following rates:
   a. Project Architect: $175/hr or $350.00 per inspection minimum.
   b. Architect's Representative: $135/hr or $270.00 per inspection minimum.
   c. Consultants: The direct cost to the Architect plus 10% or $300.00 per inspection minimum.
3. The Architect will bill Owner for additional services required by the Architect and/or consulting engineers for such additional inspections, time expended, and reimbursable expenses incurred, and Owner shall be reimbursed by deducting the same amount from the final payment.
4. Determination of necessity for such reinspections will be made by consultation between the Owner and the Architect.

END OF SECTION 01 7700

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

Specification Section No._____ IN-SERVICE CERTIFICATION

PROJECT:	**PROJECT NAME** Project Address	**DATE:**
OWNER:		**PROJECT NO.:**
ARCHITECT:	Mangini Associates Inc.	**DSA FILE NO.:**
CONTRACTOR:		**DSA APPL. NO.:**
INSPECTOR:		

IN-SERVICE CONDUCTED BY:_____

MATERIALS REVIEWED (Check applicable boxes)

☐ **RECORD DRAWINGS**	☐ **SAFETY PROCEDURES**	☐ **SHUT DOWN**
☐ **WARRANTIES**	☐ **CLEANING PROCEDURES**	☐ **CONTROLS MANIPULATION**
☐ **MAINTENANCE AGREEMENT**	☐ **IDENTIFICATION SYSTEMS**	☐ **EMERGENCY PROCEDURES**
☐ **OPERATION & MAINTENANCE MANUALS**	☐ **START-UP**	☐ **NOISE/VIBRATION ADJUSTMENT**
☐ **SPECIAL TOOLS AND PARTS**	☐ **CONTROL SEQUENCES**	☐ **EFFECTIVE ENERGY UTILIZATION**

ATTENDEES (Please print name and sign below)

1. DISTRICT FACILITIES REPRESENTATIVE _____

2. SITE REPRESENTATIVE _____

3. DISTRICT MAINTENANCE REPRESENTATIVES _____ (Plumbing) _____ (Mechanical)

_____ (Electrical) _____ (Grounds)

4. OTHERS PRESENT (FOR GENERAL CONTRACTOR, ETC.) _____ _____

_____ _____

MEETING DATE: _____ **TIME OF START:** _____ **TIME OF COMPLETION:** _____

I CERTIFY THAT THE ABOVE NAMED IN-SERVICE COVERED ALL ASPECTS OF THE SPECIALTY FOR WHICH IT WAS CONVENED.

Signature _____ **Date** _____

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

PROJECT ASBESTOS CERTIFICATION

PROJECT:	**PROJECT NAME** Project Address	**DATE:**	
OWNER:		**PROJECT NO.:**	
ARCHITECT:	Mangini Associates Inc.	**DSA FILE NO.:**	
CONTRACTOR:		**DSA APPL. NO.:**	
INSPECTOR:			

TO: _____

FROM: _____

SUBJECT: **Asbestos Containing Building Materials Letter**

I hereby certify that, to the best of my knowledge, the materials furnished and/or installed by

(General Contractor)_____

or its subcontractors on the (Name of Project) _____

located at (Street Address, City, State) _____

do not contain Asbestos Containing Building Materials.

_____
Date

_____
Contractor

_____
Address

_____

_____

_____
Telephone

_____
Signature of Contractor

_____
Title

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

MANGINI ASSOCIATES INC.
4320 West Mineral King Avenue
Visalia, California 93291

www.mangini.us
(559) 627-0530 *Office*
(559) 627-1926 *Fax*

PROJECT WARRANTY

PROJECT:	**PROJECT NAME** Project Address	**DATE:**
OWNER:		**PROJECT NO.:**
ARCHITECT:	Mangini Associates Inc.	**DSA FILE NO.:**
CONTRACTOR:		**DSA APPL. NO.:**
INSPECTOR:		

_____ (Contractor) hereby warrants to the Owner that materials and equipment furnished under the Contract in the (Name of Project) _____
_____
are of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work is free from defects not inherent in the quality required or permitted, and that the Work conforms with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. This warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage.

If, within 1 year after the date of Substantial Completion of the Work or designated portion thereof, or by terms of an applicable special warranty required by the Contract Documents extending this time period, any of the Work is found to be not in accordance with the requirements of the Contract Documents or proves to be defective in materials or workmanship, the Contractor expressly agrees to correct it, without expense to the Owner, promptly after receipt of written notice from the Owner or his agent to do so unless the Owner has previously given the Contractor written acceptance of the condition. This period of 1 year shall be extended with respect to portions of the Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation of the Contractor to correct the Work shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

Nothing contained in this warranty shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of 1 year, or special extended time periods required by the Contract Documents, for correction of the Work as described above relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

In the event of the Contractor's failure to comply with the conditions of this warranty within 10 days after being notified in writing by the Owner or his agent, the Contractor hereby authorizes the Owner to proceed to have said defects repaired and made good at the Contractor's expense and the Contractor will honor and pay the costs and charges therefor upon demand.

The term "Work" means the construction and services required by the Contract Documents and includes all other labor, materials, equipment and services provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or part of the total construction performed under the Contract Documents.

_____ _____
Date Telephone

_____ _____
Contractor Signature of Contractor

_____ _____
Address Title

_____

_____

SECTION 01 7820 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. To aid the continued instruction of operating and maintenance personnel, and to provide a positive source of information regarding products incorporated into the Work, furnish and deliver the data described in this Section and in pertinent other Sections of these Specifications.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Required contents of submittals also may be amplified in pertinent other Sections of these Specifications.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. Submit an Electronic Submittal preliminary draft of the proposed Manual or Manuals to the Architect for review and comments.

C. Unless otherwise directed in other Sections, or in writing by the Architect, submit one original set of binders of the final Manual to the Architect prior to indoctrination of operation and maintenance personnel.

1.3 QUALITY ASSURANCE

A. In preparing data required by this Section, use only personnel who are thoroughly trained and experienced in operation and maintenance of the described items, completely familiar with the requirements of this Section, and skilled in technical writing to the extent needed for communicating the essential data.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE MANUALS

A. Where instruction Manuals are required to be submitted under other Sections of these Specifications, prepare in accordance with the provisions of this Section.

B. Format (Preliminary Electronic Submittal):
1. Comply with pertinent provisions of Section 01 3300.
2. Minimum components:
    a. Neatly typewritten index near the front of the Manual, giving immediate information as to location within the Manual of all emergency information regarding the installation.
    b. Complete instructions regarding operation and maintenance of all equipment involved including lubrication, disassembly, and reassembly.
    c. Complete nomenclature of all parts of the equipment.
    d. Complete nomenclature and part number of all replaceable parts, name and address of nearest vendor, and all other data pertinent to procurement procedures.
    e. All guarantees and warranties issued.

f. Manufacturers' bulletins, cuts, and descriptive data, where pertinent, clearly indicating the precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers' data with which this installation is not concerned.
g. Such other data as required in pertinent other Sections of these Specifications.

C. Format (Final Hard Copy):
1. Size: 8-1/2" x 11"
2. Paper: White bond, at least 20 lb weight
3. Text: Neatly written or printed
4. Drawings: 11" in height preferable; bind in with text; foldout acceptable; larger drawings acceptable but fold to fit within the Manual and provide a drawing pocket inside rear cover or bind in with text.
5. Flysheets: Separate each portion of the Manual with neatly prepared flysheets briefly describing contents of the ensuing portion; flysheets may be in color.
6. Binding: Use heavy-duty plastic or fiberboard covers with binding mechanism concealed inside the Manual; 3-ring binders will be acceptable; all binding is subject to the Architect's approval.
7. Measurements: Provide all measurements in U.S. standard units such as feet-and-inches, lbs, and cfm; where items may be expected to be measured within ten years in accordance with metric formulae, provide additional measurements in the "International System of Units" (SI).

D. Provide front and back covers for each Manual, using durable material approved by the Architect, and clearly identified on or through the cover with at least the following information:

OPERATING AND MAINTENANCE INSTRUCTIONS

(name and address of Work)

(name of Contractor)

(general subject of this Manual)

(space for signature of)
(the Architect, and approval date)

PART 3 - EXECUTION

3.1 OPERATION AND MAINTENANCE MANUALS

A. Preliminary:
1. Prepare a preliminary electronic submittal of each proposed Manual.
2. Show general arrangement, nature of contents in each portion, probable number of drawings and their size, and proposed method of binding and covering.
3. Secure the Architect's approval prior to proceeding.

B. Final: Complete the Manuals in strict accordance with the approved preliminary drafts and the Architect's review comments.

C. Revisions:
1. Following the indoctrination and instruction of operation and maintenance personnel, review all proposed revisions of the Manual with the Architect.
2. Following the indoctrination meeting, complete the "In-Service Certification" form and include it as part of the Operation and Maintenance Manual.

3. If the Contractor is required by the Architect to revise previously approved Manuals, compensation will be made as provided for under "Changes" in the General Conditions.

END OF SECTION 01 7820

SECTION 01 7840 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in Article 3.1 below and, upon completion of the Work, transfer the recorded changes to a set of Record Documents, as described in Article 3.2 below.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Other requirements affecting Project Record Documents may appear in pertinent other Sections of these Specifications.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. The Architect's approval of the current status of Project Record Documents may be a prerequisite to the Architect's approval of requests for progress payment and request for final payment under the Contract.

C. Prior to submitting each request for progress payment, secure the Architect's approval of the current status of the Project Record Documents.

D. Prior to submitting request for final payment, submit the final Project Record Documents to the Architect and secure his approval.

1.3 QUALITY ASSURANCE

A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Architect.

B. Accuracy of Records:
1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to show the change properly.
2. Accuracy of records shall be such that future searches for items shown in the Contract Documents may rely reasonably on information obtained from the approved Project Record Documents.

C. Make entries within 24 hours after receipt of information that the change has occurred.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of all recorded data to the final Project Record Documents.

B. In the event of loss of recorded data, use means necessary to secure data to the Architect's approval.
1. Such means shall include, if necessary in the opinion of the Architect, removal and replacement of concealing materials.
2. In such case, provide replacements to the standards originally required by the Contract Documents.

PART 2 - PRODUCTS

2.1 RECORD DOCUMENTS

A. Record Documents:
1. Job Set: Promptly following receipt of the Owner's Notice to Proceed, secure from Architect, at no charge to Contractor, one complete set of all Documents comprising the Contract, and post all addenda.
2. Post all requests for information, notice of clarifications, and change orders as they occur.
3. Show all underground utility locations and routings by horizontal and vertical dimension.
   a. Record width of trenches in cases were multiple pipes or conduits are installed.
   b. Record the number and sizes of pipes and conduit where trench combines power, fire alarm, and communications.
4. Show all overhead utility locations and routings by horizontal and vertical dimension.
5. At a time nearing completion of the Work, submit the Job Set to the Architect for review.

B. Preliminary Record Documents Submittal:
1. Make an electronic PDF format color copy of the Job Set and submit to the Architect for review.

C. Final Record Documents:
1. Upon the Architect’s acceptance of the Job Set, make one complete copy of all sheets, including copies of the backs of sheets used to post record information, and including added sheets used to post record information. This copy shall be submitted to the Architect for distribution to the Owner.
2. Include an electronic PDF format color copy of the accepted Job Set.

PART 3 - EXECUTION

3.1 MAINTENANCE OF JOB SET

A. Immediately upon receipt of the job set described in Paragraph 2.1.A above, identify each of the Documents with the title, "RECORD DOCUMENTS - JOB SET", and post all addenda.

B. Preservation:
1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the Job Set to the approval of the Architect.
2. Do not use the Job Set for any purpose except entry of new data and for review by the Architect.
3. Maintain the Job Set at the site of Work as designated by the Architect.

C. Making Entries on Drawings:
1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.
2. Date all entries.
3. Call attention to the entry by a "cloud" drawn around the area or areas affected.
4. In the event of overlapping changes, use different colors for the overlapping changes.

D. Make entries in the pertinent other Documents as approved by the Architect.

E. Conversion of Schematic Layouts:
1. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items, is shown schematically and is not intended to portray precise physical layout.
   a. Final physical arrangement is determined by the Contractor, subject to Architect's approval.
   b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items which are shown only schematically on the Drawings.
2. Show on the Job Set , by dimension accurate to within one inch, the centerline of each run of items such

as are described in subparagraph 3.1.E.1 above.

a. Clearly identify the item by accurate note such as "cast iron drain", "galv. water", and the like.
b. Show, by symbol or note, the vertical location of the item ("under slab", "in ceiling plenum", "exposed", and the like).
c. Make all identification so descriptive that it may be related reliably to the Specifications.

3. The Architect may waive the requirements for conversion of schematic layouts where, in the Architect's judgment, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Architect.

3.2 FINAL PROJECT RECORD DOCUMENTS

A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Method of Showing Changes:
1. Carefully record change data, coordinating the changes as required.
2. Clearly indicate at each affected detail and other Drawings a full description of changes made during construction, and actual location of underground and overhead utility locations and routes.
3. Call attention to each entry by drawing a "cloud" around the area or areas affected.
4. Make changes neatly, consistently, and with the proper media to assure longevity and clear reproduction.

3.3 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

END OF SECTION 01 7840

SECTION 02 0160 - EXISTING PLANTS TO REMAIN

PART 1 - GENERAL

1.1 SUMMARY

A. Provide protection of all existing plants and planted areas indicated to remain as indicated on Drawings.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 32 8420: Irrigation System.
3. Section 32 9000: Landscaping.

1.2 PROJECT CONDITIONS

A. Review: Visit and walk the site with the Owner and Landscape Architect to clarify scope of work and understand project conditions.

B. Documentation: Confirm location of all plant materials designated on Drawings as "Existing to Remain". Examine existing irrigation system to remain, and report all malfunctioning equipment, to be repaired by Owner. Record all discrepancies and all conditions which threaten existing plantings. Owner shall arrange for correction of detrimental conditions.

C. Acceptance: Commencing work shall be taken as acceptance by the Contractor of responsibility for the protection of all existing site plantings.

1.3 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Shop Drawings: Construction details for protective barriers and barricades are required.
2. Schedule: Watering schedule, where interruption of irrigation systems will exceed one watering period.
3. Record existing conditions by video recording prior to beginning any work on the project site. Provide video recording of site on DVD format.

1.4 DEFINITIONS

A. Protection: Provide all barricades as required to prevent damage to existing plant materials to remain, including but not limited to protection from mechanical damage, and soil compaction, pollution from all sources, and disruption of environmental support which would result in the loss of vigor of said plantings.

B. Drip Line: An imaginary line on the ground around a plant representing its outermost branch tips. All of the area within the drip line of existing plants to remain is to be protected from damage as specified herein, unless otherwise noted.

1.5 SCHEDULING

A. Construct all protective barriers prior to demolition and selective clearing. See Demolition Plan.

B. A demolition meeting will be called prior to demolition where the Landscape Architect and Owner will set the extent of barriers.

1.6 WARRANTY

A. General: Warrant all existing plant materials against decline resulting from damage during construction and for a period of one year.

B. Exclusions: Damage due to, Acts of God, or neglect by Owner.

1.7 REPLACEMENTS

A. General: Existing planting to remain which exhibits conditions which are determined as unacceptable due to inadequate protection during construction shall be replaced by Contractor at no expense to Owner.

B. Quality: Closely match replacements to adjacent specimens of the same species, variety, and cultivar.

C. Replacement size shall be equal to material being replaced. Contractor shall visit site prior to bidding in order to familiarize himself with possible replacement sizes.

D. Planting, Maintenance, and Warranty of Replanted Materials: See Section 32 9000.

E. When required replacement of plant material shall be performed within two working weeks of written notice from project inspector.

F. Liquidated damages will be assessed to the Contractor by the Owner for failure to complete the replacement of plant material within allotted time. The amount will be $200.00 for each calendar day the work is not completed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fertilizers, Herbicides, and Pest Control as required shall be of best industry standards as approved by the Landscape Architect.

2.2 SAFETY

A. Provide all reflective signage and/or flashers as required by all codes and ordinances affecting barricaded plantings to remain.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide barriers at the drip line of all trees designated to remain. Grouping of trees may be enclosed by a single protective fence. Similarly protect turf, groundcover, and shrub areas from construction activities.

3.2 OPERATIONS

A. Storage: Do not store materials or equipment under the branches of all existing trees nor in turf or ground cover areas to remain.

B. Traffic: Do not operate nor park equipment within the drip line of existing trees to remain. Keep foot traffic out of existing ground cover and turf areas. Protect shrub areas from cross traffic.

C. Operations: Do not permit burning, temporary or permanent dumping or storage of construction debris within drip line of existing trees to remain. Give written notification if any construction activity by any contractor threatens to damage existing plants to remain.

3.3 IRRIGATION

A. One week prior to construction start the Contractor shall install and maintain a controlled water system accessed through existing irrigation system. System shall be drip type and be configured to give the appropriate amount of water for each type of plant.

B. If the irrigation system is disrupted for any reason during construction the Contractor shall restore irrigation within twenty-four (24) hours of disrupted service.

3.4 EXCAVATING AND GRADING

A. Cut: Do not permit machine excavation within the drip line of existing trees to remain. All such work shall be by hand labor. Do not permit more than 2" of existing soil to be removed within the drip line except as authorized in writing by Landscape Architect.

B. Fill: Do not permit stockpiling of soil within the drip line of all existing trees nor on existing turf or groundcover areas. Do not permit more than 3" of fill to be placed within the drip line during grading operations without written acceptance by Landscape Architect.

3.5 REPAIR OF DAMAGED MATERIAL

A. During the course of construction, if roots two inches (2") or larger in diameter are cut, the Contractor shall take the following immediate action to minimize further damage to the plant material.
   1. Stop construction activity; inform project inspector and District to contact a qualified arborist for inspection.
   2. If the arborist determines that damage occurred the Contractor will be directed within 48 hours to perform the following:
      a. Prune plant material to I.S.A. specifications to compensate for root loss.
      b. Aerate soil to relieve compaction and to improve oxygen exchange to root system.
      c. Fertilize trees with deep water bore at rate of 1 pound of actual nitrogen per 1,000 sq. ft.
      d. Inject plant hormones (growth stimulator) through irrigation system.
   3. This process shall be implemented within 48 hours of direction by arborist. Failure to perform repairs within specified time will institute liquidated damages of $200.00 for each calendar day by which the completion of repairs is delayed.
   4. The Owner reserves the right to hire a person or persons to perform the repair work in the event the Contractor does not respond in a timely manner. The expense for this work will be billed to the Contractor at no future expense to the Owner.

3.6 MAINTENANCE OF EXISTING PLANTING

A. General: Maintain all existing plantings to remain for a period of 45 days per Standard Horticultural practices as deemed necessary by Landscape Architect.

B. Fertilizers: Do not use complete fertilizers on existing plant materials unless soils test Indicates specific nutrient deficiencies.

3.7 CLEAN UP

A. At close of construction in each area, remove all protective barriers at the direction of the Landscape Architect. Transport all barrier materials off site at no additional expense to Owner.
B. Repair all grades and restore all damaged plant materials.

END OF SECTION 02 0160

SECTION 02 3100 - SUBSURFACE UTILITY INVESTIGATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes investigation and identification of location of overhead, surface, and underground utilities by the Contractor using firm specializing in underground utility verification.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Divisions 1 through 16 of these Specifications.
2. Section 02 4200: Selective Demolition.
3. Section 31 2000: Earthwork.

PART 2 - PRODUCTS

2.1 UTILITY VERIFICATION COMPANIES

A. Use utility verification firm specializing in underground utility location.
1. Off-site utility verification: Underground Service Alert (USA), 800/642-2444.
2. On-site utility verification:
a. Utility Recording Technologies, 559-750-7022.
b. Golden State Utility, 559-896-6690.
3. Verify and stake all on-site utilities with Owner and on-site investigation prior to excavation.

PART 3 - EXECUTION

3.1 INVESTIGATION

A. Prior to demolition, trenching, and earthwork operations, identify location, routing, and elevation of known underground in the construction area and along utility trench routings with the Owner.

B. Verify existing utilities with the service providers (i.e., power, telephone, water, sewer, cable TV, etc.) to the point of connection on site (meter, transformer, etc.)

C. Locate underground utilities using electronic detection when available, utility map analysis, and on-site survey.

D. Underground utilities include but are not limited to gas, water, sewer, storm drain, electrical power and signals (fire alarm, telephone, computer, intercom, data), and sprinkler irrigation and controls.

E. Where non-metallic utilities such as storm drain lines are in the work site, snake metallic trace lines through the line prior to electronic detection.

3.2 IDENTIFICATION

A. Identify underground utilities by stakes, flags, and painted lines.

B. Document the invert elevation of all cleanouts, manholes, and drainage structures.

C. Maintain staking and marking of such utilities throughout the duration of the Work.

3.3 COORDINATION

A. Coordinate the proposed routing and elevation of pipes, conduits, and trenches that are part of the Work with existing utilities.

B. Coordinate the routing and elevation of new underground utilities with existing underground utilities. Notify the Architect immediately of any conflicts, prior to proceeding with demolition, trenching, or earthwork operations.

3.4 SITE CONDITIONS

A. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

B. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

3.5 UNFORSEEN CONDITIONS

A. Utilities and obstructions not traceable or noted on the Drawings will be considered unforeseen. Should such lines be encountered and damaged, the Contractor shall repair such condition immediately. The cost of repairs will be compensated to the Contractor on a time-and-materials basis by change order.

END OF SECTION 02 3100

SECTION 02 4210 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, carefully demolish and remove from the site those items scheduled to be so demolished and removed. Section includes:
   1. Selective demolition of built site elements.
   2. Selective demolition of building elements for alterations purposes.
   3. Abandonment and removal of existing utilities and utility structures.
   4. Removal and/or relocation of designated building equipment and fixtures.
   5. Removal of designated construction.
   6. Disposal of materials.
   7. Storage of removed materials where indicated.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
   1. Section 00 3100: Information about known hazardous materials.
   2. Section 01 1100: Work sequence, continued occupancy of the building, limitations on Contractor's use of site and premises, description of items to be removed by Owner, description of items to be salvaged or removed for re-use by Contractor.
   3. Section 01 5000: Temporary enclosures, dust control barricades, security at occupied areas, waste removal, and cleanup during construction.
   4. Section 01 5720: Temporary erosion and sedimentation control.
   5. Section 01 6600: Handling and storage of items removed for salvage and relocation.
   6. Section 01 7300: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
   7. Section 01 7330: Cutting and patching.
   8. Section 02 0160: Relocation of existing trees, shrubs, and other plants, pruning of existing trees to remain.
   9. Section 03 3540: Demolition of existing flooring to be polished and dyed.
   10. Section 07 0150: Removal of existing roofing, roof insulation, flashing, trim, and accessories.
   11. Section 31 1000: Vegetation and existing debris removal.
   12. Section 31 2000: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.2 REFERENCES

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2016.

1.3 QUALITY ASSURANCE

A. Applicable Codes: Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection. Perform demolition work in accordance with Chapter 33, 2016 California Fire Code.

B. Obtain required permits from authorities and comply with the requirements of the governing jurisdictions.

C. Do not close or obstruct egress from any building exit or site exit.

D. Do not disable or disrupt building fire or life safety systems without 3 days' prior written notice to Owner.

E. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.

1.4 PROJECT CONDITIONS

A. Conduct demolition to minimize interference with adjacent and occupied properties in the general area of the project site.

B. Cease operations immediately if operations appear to be causing any detrimental effect to adjacent properties and notify Architect. Do not resume operations until directed.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide, erect, and maintain temporary barriers as required for the work.

B. Protect any existing improvements noted to remain or not noted for demolition.

C. Mark location and termination of utilities.

3.2 EXAMINATION

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only. By careful study of the Contract Documents, determine the location and extent of selective demolition to be performed. Visit the site and verify the extent and location of selective demolition required.
   1. Verify that construction and utility arrangements are as shown.
   2. Carefully identify limits of selective demolition.
   3. Mark interface surfaces as required to enable workmen also to identify items to be removed and items to be left in place intact.
   4. Report discrepancies to Architect before disturbing existing installation.
   5. Beginning of alterations work constitutes acceptance of existing conditions.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Use of explosives is not permitted.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

7. Do not close or obstruct roadways or sidewalks without permit.
8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Demolished material shall be considered property of the Contractor and shall be completely removed from the job site except where specifically noted otherwise. Do not burn or bury materials on site.

C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

D. Do not begin removal until receipt of notification to proceed from Owner.

E. Do not begin removal until built elements to be salvaged or relocated have been removed.

F. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.

G. Remove materials as demolition progresses. Upon completion of demolition, leave areas in clean condition.

H. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
   2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

F. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and Intrusion Alarm): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. See Section 01 1110 for other limitations on outages and required notifications.
   4. Verify that abandoned services serve only abandoned facilities before removal.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove from site all materials not to be reused on site.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

3.6 REPLACEMENTS

A. In the event of demolition of items not so scheduled to be demolished, promptly replace such items to the approval of the Architect and at no additional cost to the Owner.

END OF SECTION 02 4210

SECTION 03 1510 - POST-INSTALLED ANCHORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide post-installed anchors where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. Definition: Post-installed anchors are concrete anchors installed in drilled holes after concrete has hardened and includes expansion anchors, screw anchors, and epoxy-type (adhesive) anchors.

B. Related Sections:
   1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to work of this section.
   2. Section 03 3000: Cast-in-place concrete.
   3. Section 05 5000: Metal fabrications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.

B. Product Data:
   1. Submit manufacturer's descriptive literature and product specifications for each product.
   2. Include data to indicate compliance with the specified requirements.
   3. Submit manufacturer's recommended installation procedures.
   4. Submit current ICC research or evaluation reports evidencing maximum allowable shear and withdrawal load data.

1.3 QUALITY ASSURANCE

A. Single Source Responsibility: To ensure consistent quality of anchorage, obtain concrete expansion anchors from a single manufacturer.

B. Manufacturer Qualifications: Provide concrete expansion anchors with current International Code Council Evaluation Service Reports acceptable to the Division of the State Architect, and in conformance with the 2016 California Building Code.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
   1. Hilti KB-TZ (ESR 1917).
   2. Simpson Strong-Bolt (ESR-1771).
   3. Hilti HUS-EZ (ESR-3027).
   4. SimpsonTiten HD (ESR-2713).
   5. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Finish: Type 316 stainless steel at exterior applications; zinc-plated at interior applications; mechanically galvanized or type 316 stainless steel when in contact with preservative treated lumber.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages and directions for installation from manufacturer for items to be embedded in concrete construction.

3.2 INSTALLATION

A. Fastening to In-Place Construction (New or Existing Concrete): Provide anchorage devices where necessary for securing designated items indicated on the drawings, or as necessary for a complete and proper job to in-place construction.

B. Install post-installed anchors in strict accordance with the manufacturer's written instructions.

C. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for designated items of construction. Set work accurately in location, alignment and elevation, level true and free of rack, measured from established lines and levels.

D. Concrete shall attain the specified design strength per the contract documents (2,500 psi minimum) prior to installation of post-installed anchors. Adhesive anchors shall be installed into concrete having a minimum age of 21 days at the time of installation. No anchors shall be installed into concrete that is less than 7 days old.

3.3 TESTING AND INSPECTION REQUIREMENTS

A. General Testing Requirements:
   1. For verifying satisfactory installation workmanship, an independent testing laboratory shall proof load tests for concrete expansion anchors acting in tension in the presence of the project inspector.
   2. If any anchor fails testing, test all anchors of the same type, not previously tested until 20 consecutive anchors pass, then resume the initial test frequency.
      a. If anchors are used for the support and bracing of non-structural components such as pipe, duct or conduit, the 20 consecutive anchors shall be only those anchors installed by the same trade.
   3. Continuous Inspection: Continuous inspection shall be provided during installation by project inspector.

B. Testing Frequency:
   1. Sill Plate Bolting: Test 10% of anchors.
   2. Other Structural Applications: Test all anchors.
   3. Non-structural Applications and Equipment Anchorage: Test 50% or alternate bolts in a group, including at least 1/2 of the anchors in each group.
   4. Exceptions:
      a. Undercut anchors that allow visual confirmation of full set shall not require testing.
      b. Where the factored design tension on anchors is less than 100 pounds and the anchor is clearly noted on the approved construction documents, only 10% of those anchors shall be tested.
      c. Where adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, only 25% of the dowels shall be tested if all of the following conditions are met:
         1) The dowels are used exclusively to transmit shear forces across joints between existing and new concrete.
         2) The number of dowels in any one member equal or exceeds 12.
         3) The dowels are uniformly distributed across a seismic force resisting members (such as shear walls, collectors, and diaphragms).

4) Anchors to be tested shall be selected at random by the special inspector.

d. Testing of shear dowels across cold joints in slabs on grade, where the slab is not part of the lateral force-resisting systems shall not be required.

e. Testing is not required for power actuated fasteners used to attach metal tracks of interior non-shear wall partitions for shear only, where there are at least three fasteners per segment of track.

C. Test Loads: Test loads shall be listed in the contract drawings and shall be determined by one of the following methods:

1. Twice the maximum allowable tension load or 1-1/4 times the maximum design strength of anchors as provided in the anchor's ICC-ESR or in accordance with Appendix D of ACI 318.
   a. Tension test load need not exceed 80% of nominal yield strength of anchor element ($0.8A_bF_y$).
2. Tension or torque test values from the table within the contract drawings.

D. Test Acceptance Criteria: Use the ICC-ESR for the anchor installed or the manufacturer's written instructions, acceptable to DSA. Field tests shall satisfy the following minimum requirements:

1. Hydraulic Ram Method: Anchors tested with a hydraulic jack or spring loaded devices shall maintain the test load for a minimum of 15 seconds and shall exhibit no discernible movement during the tension test, e.g. as evidence of loosening of the washer under the nut. For adhesive anchors, where other than bond is being tested, the testing devices shall not restrict the concrete shear cone type failure mechanism from occurring.
2. Torque Wrenched Method: Anchors tested with a calibrated torque wrench must attain the specified torque within 1/2 turn of the nut.
   a. Exceptions:
      1). Wedge or Sleeve type: 1/4 turn of the nut for a 3/8" sleeve anchor only.
      2). Screw Type: 1/4 turn of screw after initial seating of the screw head.

E. Testing Procedure:

1. Testing procedure shall be as required by the manufacturer’s ICC-ESR.
2. Manufacturer’s recommendation for testing may be approved by the enforcing agency, when ICC-ESR does not provide testing procedure.

END OF SECTION 03 1510

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide cast-in-place concrete, including form work and reinforcement, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. The work of this Section includes special precautions to reduce cracking in concrete slabs.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Section 03 1510: Post-installed Anchors.

C. Special Coordination Requirements: Coordinate with the work of the following sections to identify the finish flooring manufacturer's concrete slab requirements. Such requirements may be over and above the requirements of the Contract Documents and may require additional materials, means, or methods, which shall be included as part of the Work.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Mix Designs: Secure concrete mix designs from the concrete supplier or the testing laboratory in accordance with provisions of Section 01 4520, and submit to the Architect for review and approval. Distribute approved mix designs to testing laboratory, batch plant, job site, and governmental agencies having jurisdiction.
      a. Include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions based on ACI 301-10, Section 4.2.3.
      b. When ACI 301-10, Section 4.2.3 is used, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.
   2. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements for the following:
   3. Shop Drawings: Submit shop drawings for the reinforcing steel.
   4. Submit cementitious materials certification to DSA complying with CBC Section 1910A.1.
   5. Submit batch tickets of each load to the Inspector of Record.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with 2016 California Building Code except where more stringent requirements are shown or specified.

B. In accordance with CBC Section 1705A.3.5, do not place concrete until forms and reinforcement have been inspected, all preparations for placement have been completed, and preparations have been checked by the Inspector of Record, all subject to observation of the Architect, Structural Engineer and DSA.

C. Placing Record: In accordance with CBC Section 1705A.3.6, keep a concrete placing record on site recording the time and date of placing the concrete in each portion of the structure. Keep placing record until completion of the structure and make available to the inspection of the Owner, Architect, Structural Engineer, Inspector of Record, and DSA.

1.4 NOTICE CONCERNING SLAB CURLING AND SHRINKAGE CRACKING

A. The Contractor is hereby notified that concrete construction practices and concrete materials can significantly increase the potential for cracking and slab curling, which include the following:
   1. Placement of slabs over high-moisture content subgrade.
   2. Increased mix temperature.
   3. Excessive haul in transit mixture, too long a waiting period at the project site, or too many revolutions at mixing speed.
   4. Use of smaller size aggregate under conditions where larger could have been used.
   5. Use of mixture having high shrinkage characteristics.
   6. Excessive coatings on aggregate due to insufficient washing or contamination during handling.
   7. Use of aggregates of poor inherent quality with respect to shrinkage.
   8. Exceeding the maximum water/cement ratio.

B. The Contractor is responsible for choosing concrete materials and for implementing concrete construction practices which minimize slab curling and shrinkage cracking.

C. Special Concerns:
   1. The Contractor is hereby notified that the Work includes basketball, volley ball, tennis, and / or other uses which require minimum joints and minimum curling in the concrete slab playing surface.
   2. The Architect has taken normal and customary precautions in the design of the concrete slabs for these uses through the specification of concrete materials, mix, and execution criteria, and through detailing concrete joints and steel reinforcing.
   3. The Contractor is responsible to choose concrete materials and implement concrete construction practices which minimize slab curling and shrinkage cracking in these areas of special use.

1.5 SPECIAL WARRANTY

A. Manufacturer's Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 copies of a warranty from the interior slab curing product manufacturer with an extended correction period of **15-years** covering labor and materials to replace or repair floor covering that fails due to moisture migration or moisture-born alkalinity contaminates originating from the concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 FORMS

A. Design, erect, support, brace, and maintain formwork so it will safely support vertical and lateral loads which might be applied until such loads can be supported safely by the concrete structure.

B. Except for metal forms, use new materials. Materials may be re-used during progress of the Work, provided they are completely cleaned and reconditioned, recoated for each use, and capable of producing formwork of the required quality.
   1. Form Facing for Exposed to View Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
   2. Chamfer or radius outside corners of beams, joists, columns, and walls.

C. Slip Dowel System: Speed Dowel by Westec Barrier Technologies; #4 rebar dowels x 24" long at 18" on center, minimum of 12" sleeve.

D. Snap Ties: Snap Ties by Dayton/Richmond Concrete Accessories (Constar Supply 559-564-5012), with A-8 Waterseal Washer.

E. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.

2.3 REINFORCEMENT

A. Comply with the following as minimums:
1. Bars: ASTM A615, Grade 40 for #3 bars and smaller, Grade 60 for #4 bars and larger, using deformed bars for #3 and larger.
2. Bending: ACI 318-14, Section 26.6.3.
a Bars shall be limited to one shop or field bend at any location on the bar.
b. Partially embedded bars shall not be field bent, except as indicated on the Drawings or permitted by the Architect.
c. A bar bent in the incorrect location shall not be straightened; such bars shall be discarded.

B. Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in ACI 318-14.

C. Do not use reinforcement having any of the following defects:
1. Bar lengths, depths, or bends exceeding the specified fabricating tolerances;
2. Bends or kinks not indicated on the Drawings or required for this Work;
3. Bars with cross-section reduced due to excessive rust or other causes.

D. Shop fusion welded stirrup/tie cages shall be permitted provided they are in conformance with CBC 1903A.8.

2.4 CONCRETE

A. Portland Cement: ASTM C150, Type II.

B. Fly Ash: Will be used as a partial substitute for Portland cement as follows:
1. Fly ash: ASTM C618, Class N or F (Class C is not permitted).
2. Fly ash used may be included in the water/cement ratio calculation.
3. At least 15% but not more than 20% by weight of fly ash shall be substituted for Portland cement.

C. Normal Weight Aggregate: ASTM C 33, except as modified in CBC Section 1903A.6. Provide aggregates from a single source for exposed concrete.

D. Water: ACI 318-14, Section 26.4.1.3.

E. Admixtures:
1. Do not use calcium chloride admixtures.
2. Admixtures are not permitted without approval from Architect and DSA.

2.5 NORMAL WEIGHT CONCRETE DESIGN MIX

A. Proportions: Concrete mix shall be proportioned based on field experience or trial mixtures in accordance with ACI 318-14, Section 26.4.3, and ACI 301-10, Section 4.2.3.
1. Mix design submittals shall include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions through the use of one of the following:

a. Field experience under ACI 301-10 paragraph 4.2.3.4a, or
b. Trial mixtures under ACI 301-10 paragraph 4.2.3.4b.

2. When ACI 301-10, Section 4.2.3 is used as the concrete supplier's proposed basis of concrete mix proportions, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.

B. Design Professional: A registered civil or structural engineer, licensed in California, with experience in concrete mix design shall select the relative amounts of ingredients to be used as basic proportions of the concrete mixes proposed for use.
1. Mix design submittals shall include the engineer's stamp and signature.

C. Cement Content: Minimum of 5.5 sacks of cement per cubic yard.
1. Minimum of 5.0 sacks of cement per cubic yard for site concrete. Off-site concrete shall conform to governing agency standards.

D. Type A Water Reducer (interior slabs only): 28.20 oz/cy, plus or minus 20%.

E. Water/Cementitious Material Ratio:
1. Footings: Maximum of 0.56.
2. Site Concrete: Maximum of 0.67.
3. Interior Slabs/Parking Lots/Fire Lanes: Maximum of 0.50.

F. Minimum Compressive Strength:
1. Footings, interior slabs, parking lots, fire lanes and retaining walls: 3,000 psi at 28 days.
2. Site Concrete: 2,500 psi at 28 days.

G. Aggregate Gradation Optimization:
1. Workability Factor: 32-42%; **target 35%.**
2. Coarseness Factor: 52-72%; **target 60%.**
3. Fineness Modulus: 2.80 to 3.10.
4. Paste Fraction: 27% plus or minus.
5. Mortar Fraction: Passing the No. 8 sieve.
a. ¾" to 1" aggregate: 55-57%.
b. 1-1/2" aggregate: 53-54%.

H. Aggregate Gradation Limits of Combined Mixture:

Sieve Size	% Passing	
	Interior Slabs Parking Lots Fire Lanes 1-1/2"	**Footings Site Concrete Retaining Walls 1"**
2"	100	--
1-1/2"	95-100	100
1"	80-96	85-100
3/4"	65-80	70-90
3/8"	40-55	50-70
#4	35-46	35-60

#8	25-38	35-50
#30	10-20	10-20
#200	0-5	0-5

I. Slump Limits: Proportion and design mixes for slump at point of placement of 4" plus or minus 1".

J. Concrete Temperature: 90 deg F maximum at time of placement.

K. Ready-Mix Concrete: Comply with ASTM C94, and as herein specified.

2.6 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. Expansion Joint Filler: Comply with ASTM D1751 or provide resin-impregnated fiberboard conforming to ASTM D1752.

C. Non-shrink Grout:
1. Factory premixed grout; ASTM C1107.
2. Compressive strength: 7,000 psi at 28 days.

D. Dry Pack Grout: One part Portland Cement to two parts fine sand.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FORMWORK INSTALLATION

A. Construct forms to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, and level and plumb work in the finished structure.
1. **Non-Exposed Surfaces:** Where concrete surfaces are not exposed to view, construct formwork conforming to a Class B Surface, Paragraph 4.8.3 of ACI 117-10.
2. **Exposed Surfaces:** Where concrete surfaces are exposed to view, construct forms so that concrete surfaces will have a tolerance of 1/2 of the tolerance limits of a Class A Surface, Paragraph 4.8.3 of ACI 117-10.

B. Forms shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape. Forms and their supports shall be designed so as not to damage previously placed structure.

3.3 SOIL TREATMENT OF SIDEWALK AND PAVEMENT AREAS WITH HERBICIDES

A. Just prior to placing concrete for pavements and sidewalks, apply herbicide soil treatment at recommended

rates for application. Protect desirable vegetation from herbicide treatment.

B. Herbicide shall bear evidence of registration under Federal Insecticide, Fungicide, and Rodenticide Act for weed control application.

3.4 REINFORCING

A. Comply with the following, as well as the specified standards, for details and methods of reinforcing placement and supports.
   1. Clean reinforcement and remove loose dust and mill scale, earth, oil, and other materials which reduce bond or destroy bond with concrete.
   2. Position, support, and secure reinforcement against displacement by forms, construction, and the concrete placement operations. Provide metal chairs, dobies, or other aids manufactured for this purpose.
   3. Place reinforcement to obtain the required coverages for concrete protection.
   4. Unless otherwise shown or noted on the Drawings, lap bars as noted on Lap Schedule in structural drawings.
   5. Partially embedded reinforcing shall not be bent without the approval of the DSA.

3.5 EMBEDDED ITEMS

A. Do not embed piping, other than electrical conduit, in structural concrete. See structural drawings for provisions for pipes, sleeves, conduits or other penetrations into or through the footings.

B. Set bolts, inserts, and other required items in the concrete, accurately secured so they will not be displaced, and in the precise locations needed. **IN NO CASE SHALL ANY BOLT OR ANCHOR BE STABBED IN PLACE WHILE OR AFTER THE CONCRETE IS POURED.** Evidence of stabbing will necessitate testing at the expense of the contractor.

C. **Slip Dowel System:** Install in accordance with manufacturer's written recommendations.

3.6 MIXING CONCRETE

A. Transit mix the concrete in accordance with provisions of ASTM C94.
   1. Water shall only be added at the beginning of discharge and shall be a one-time addition of water. At a minimum, the drum shall be turned an additional 30 revolutions after addition of water. After discharge has begun the addition of water is prohibited.
   2. Discharge of the concrete shall be completed within 90 minutes, or before the drum has revolved 300 times after the cement has been exposed to the mixing water or aggregates.

B. Cold Weather Requirements:
   1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. All concrete materials and all reinforcement, forms, fillers, and ground with which concrete is to come in contact shall be free from frost. Frozen materials or materials containing ice shall not be used.
   2. When mixing concrete during freezing or near-freezing weather, the mix shall have a temperature of at least 55 deg F., but not more than 90 deg F. When necessary, concrete materials shall be heated before mixing. Special precautions shall be taken for the protection of transit-mixed concrete.
   3. The concrete shall be maintained at a temperature of at least 55 deg F. for not less than 72 hours after placing. After the initial curing period allow the concrete surface to dry prior to exposure. Do not permit the concrete to cool faster than the rate of 5 deg F per hour or more for the first 24 hours.

C. Hot Weather Requirements:
   1. During hot weather, proper attention shall be given to ingredients, production methods, handling,

placing, protection and curing to prevent excessive concrete temperatures or water evaporation that may impair required strength or serviceability of the member or structure.

2. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

3.7 PLACING CONCRETE

A. Concrete shall not be placed until the forms and reinforcement have been inspected, all preparations for the placement have been completed, and the preparations have been checked by the Inspector of Record, all subject to the observation of the structural engineer or Architect.

B. Preparation:
1. Remove foreign matter accumulated in the forms.
2. Rigidly close openings left in the formwork.
3. Wet wood forms sufficiently to tighten up cracks; wet other material sufficiently to maintain workability of the concrete.
4. Use only clean forms and tools.

C. Conveying: ACI 318-14, Section 26.5.2.1.
1. Concrete shall be conveyed from mixer to place of final deposit by methods that will prevent separation or loss of materials.
2. Conveying equipment shall be capable of providing a supply of concrete at site of placement without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive increments.
3. Remove rejected concrete from the job site.

D. Placing Concrete in Forms: ACI 318-14, Section 26.5.2.1.
1. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Concreting shall be carried on at such a rate that concrete is at all times plastic and flows readily into spaces between reinforcement.
2. Where concrete is placed in lifts, each lift shall be thoroughly consolidated before the next layer is placed. The rate of placement shall be rapid enough so that previously placed concrete has not yet set when the next lift of concrete is placed upon it. Do not allow flow lines, seams, and planes of weakness (cold joints) to form as a result of placement means and methods.

E. Placing Concrete Slabs:
1. Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
2. Bring slab surfaces to the correct level with a straightedge, and then strike off.
3. Use wood bullfloats or darbies to smooth the surface, leaving the surface free from bumps and hollows.
4. Do not sprinkle water on the plastic surface. Do not disturb the slab surface prior to start of finishing operations.

3.8 CONSOLIDATION

A. All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.
1. Where conditions make consolidation difficult, or where reinforcement is congested, batches of concrete adjusted to use smaller size aggregates shall be used as approved by the structural engineer and the enforcement agency.
2. Do not vibrate forms or reinforcement.
3. Do not use vibrators to transport concrete inside the forms.

4. Perform consolidation by experienced personnel.

3.9 JOINTS

A. Construction Joints (CJ):
   1. Do not use horizontal construction joints except as may be shown on the Drawings.
   2. If additional construction joints are found to be required, secure the Architect's approval of joint design and location prior to start of concrete placement.
   3. Joints shall be constructed in accordance with ACI 318-14, Section 26.5.6.

B. Isolation Joints (IJ):
   1. Do not permit reinforcement or other embedded metal items that are being bonded with concrete (except dowels in floors bonded on only one side of the joints) to extend continuously through any isolation joint, unless specifically noted.
   2. Fill isolation joints full depth with joint material approved by the Architect.
   3. Provide isolation joints as shown on plans.

C. Crack Control Joint (CCJ):
   1. Provide template or guide as required for straight sawcut.
   2. Joints shall be spaced as indicated on the Drawings, but not more than 12'-0" on center.
   3. Saw cut joints before concrete begins to cool, within 2 to 12 hours after placing.
   4. Use 1/8" thick blade and cut at least 1" deep but not less than one third (1/3) the depth of the slab.

3.10 CONCRETE SLAB FINISHING

A. Finish work shall be performed in accordance with ACI 302.1R-15, Chapter 10.

B. Finished Slab Surfaces: Except as may be shown otherwise on the Drawings, provide the following finishes at the indicated locations:
   1. Scratch Finish: Apply to monolithic slab surfaces that are to receive concrete floor topping or mortar setting bed.
   2. Float Finish: Apply to monolithic slab surfaces that are to receive trowel finish and other finishes specified hereinafter, and to slab surfaces which are to be covered with tile on a setting bed.
   3. Trowel Finish: Apply to interior monolithic slab surfaces that are to be exposed to view, unless otherwise shown, and to slab surfaces that are to be covered with resilient flooring, carpeting, thin-set tile, paint, or other thin-film finish coating system.
   4. Non-slip Broom Finish: Apply to exterior walks, stairs, drives, ramps, and similar pedestrian and vehicular areas. Coordinate required final finish with Architect before application.
      a. Medium broom finish for slopes < 5%.
      b. Heavy broom finish for slopes ≥5%.

C. Finish Concrete Slab Tolerances:
   1. Slabs shall be level unless slope is otherwise specified.
   2. Tolerances of finished slab surfaces shall comply with ACI 117.1R-14 "Class A Surface Finish Tolerance". Depressions in floor between high spots shall not be greater than 1/8" between a 10' long straight edge.
   3. Depressed surfaces shall be leveled with an approved filler and sanded smooth.
   4. High spots shall be ground down until level. Remove dislodged aggregate and patch floor.
   5. Grind or fill surface defects which would telegraph through applied floor covering systems.
   6. Owner reserves the right to test floors and concrete members for conformance to ACI 117.1R-14 Tolerance Specifications by Use of the "Dipstick Floor Profiler". Should tolerances not be within the limits specified, the Contractor shall be required to pay for all testing costs and repairs required to bring materials into compliance.

D. Exterior Flatwork Edge and Joint Finishing:

1. Finish slab edges, including those at formed joints, with an edger having a radius of 1/8".
2. Edge transverse joints prior to brooming. Brooming shall eliminate the flat surface left by the surface face of the edger.
3. Corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with the properly proportioned mortar mixture and then finished.

E. Required Grinding of Interior Slab:
1. The Contractor shall anticipate that grinding will be required as a result of curling or other slab defects. Grinding required to bring the slab surface into acceptable tolerances for finished flooring installation shall be included as part of the Work.
2. Provide a slip resistant surface after grinding and filling with a 0.6 coefficient of friction at exposed slabs and exterior flatwork.

3.11 CURING

A. ACI 318, Section 26.5.3: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Avoid rapid drying at end of final curing period.

C. Protection of Slabs After Curing: After curing is completed, do not allow water to stand on completed slabs. Remove standing water as soon as possible.

3.12 REMOVAL OF FORMS

A. ACI 318, Section 6.2.
1. Forms shall be removed in such manner as not to impair safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.

B. No portion of the forming and shoring system may be removed less than 12 hours after placing concrete. When stripping time is less than the specified curing time, measures shall be taken to provide adequate curing and thermal protection of the stripped concrete.
1. Do not remove shoring until the member has acquired sufficient strength to support its own weight, the load upon it, and the added load of construction.
2. Do not strip vertical concrete in less than 7 days.

C. Finished Surfaces:
1. Exercise care in removing forms from finished concrete surfaces so that surfaces are not marred or gouged.
2. Release sleeve nuts or clamps, and pull the form ties neatly.
3. Do not permit steel spreaders, form ties, or other metal to project from, or be visible on, any concrete surface except where so shown on the Drawings.

D. Repair of Surface Defects: Repair or replace deficient work at no additional cost to the Owner.
1. Repair tie holes and other surface defects immediately after formwork removal.
2. Where the concrete surface will be textured by sandblasting or bush-hammering, repair surface defects before texturing.
3. Repair tie holes and surface defects to match surrounding concrete color and surface texture.
4. Repair tie holes and surface defects in conformance with ACI 301-10, Paragraph 5.3.7.

3.13 SURFACE FINISH OF VERTICAL CONCRETE SURFACES

A. Unexposed Form Finish: Rub down or chip off fins or other raised areas.

B. Exposed (to view) Form Finish: Rub down or chip off and smooth fins or other raised areas.
   1. As-Cast Finish: Provide surface finish 3.0 in accordance with ACI 301-10, Paragraph 5.3.3.3.
   2. Rubbed Finish:
      a. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
      b. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
      c. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.

3.14 FINISH OF CURBS AND GUTTERS

A. Finish of Curbs and Gutters:
   1. Tool edges of gutter and top of curb with an edging tool to a radius of 1/2"
   2. Float and finish surfaces with a smooth wood float until true to grade, section and uniform in texture.
   3. Brush floated surfaces with a fine-hair brush using longitudinal strokes.
   4. Immediately after removing the front curb form, rub face of curb with wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. While still wet, brush surface in the same manner as the gutter and curb top.
   5. Finish the top surface of gutter and entrance drives to grade with a wood float.

3.15 MISCELLANEOUS CONCRETE ITEMS

A. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.

B. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

C. Dry Pack Grout:
   1. Pack solid under sill plates where indicated to provide continuous bearing.
   2. Provide dry pack prior to installation of roof framing.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. Testing of concrete materials shall comply with Section 01 4520, CBC Chapter 17A, and CBC Section 1910A.

B. The Owner will employ a testing laboratory to perform tests and to submit test reports. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Architect.

C. Sampling Fresh Concrete: Comply with requirements of ASTM C172.
   1. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
   2. Concrete Temperature: Test hourly when air temperature is 40 degrees F and below, and when 80 degrees F and above; and each time a set of compression test specimens are made.
   3. Compression Test Specimen: ASTM C31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
   4. Compressive Strength Tests: ASTM C39; one set for each day's pour, but not less than one set for each 50 cubic yards or each 2,000 square feet of surface area of slabs or walls for each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days; and one specimen retained in reserve for later testing if required.

5. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

D. Batch Plant Inspection:
   1. Continuous batch plant inspection during mixing will be required on this project for structural concrete, including but not limited to footings, foundation walls, retaining walls, columns, and floor slabs in compliance with CBC Section 1705A.3.3.
   2. Batch plant inspection may be waived in accordance with CBC Section 1705A.3.3.1.

E. Reinforcing Steel Testing **will be required on this project**, except for non-structural concrete work. Comply with CBC Section 1910A.2; testing will be waived if mill certificates are provided.

F. Slab Finish Tolerance Testing: Where requested by the Architect, test slabs for finish tolerance in accordance with ACI 117 Tolerance Specifications by Use of the "Dipstick Floor Profiler".

G. Test Results will be reported in writing to Architect and Contractor within 24 hours that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

H. Non-Destructive Testing: Rebound hammer, sonoscope, or other non-destructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

I. Additional Tests:
   1. The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect.
   2. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.
   3. The Owner shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.
   4. The Owner shall be compensated for such additional testing by deducting the additional costs from the General Contractor’s final payment.

END OF SECTION 03 3000

SECTION 05 5000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide miscellaneous metal work shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 09 9100: Field painting of steel members.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data:
a. Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
b. Submit manufacturers recommended installation procedures.
2. Shop Drawings: Submit shop drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades.

1.3 QUALITY ASSURANCE

A. Perform shop and/or field welding required in connection with the work of this Section in strict accordance with pertinent recommendations of the American Welding Society.

B. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedures" and CBC Section 2204A.1.

C. Codes and Standards: Comply with provisions of the following: California Building Code, 2016 Edition.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Comply with following standards, as pertinent.
1. Steel Sections: ASTM A36.
2. Steel Tubing: ASTM A500, Grade C cold-formed structural tubing.
3. Steel Pipe: ASTM A53, Type S, Grade B, standard weight.
4. Bolts, Nuts, and Washers: ASTM A325, Type 1, galvanized to ASTM A153 where connecting galvanized components.
5. Welding Materials: AWS D1.1; type required for materials being welded.
7. Galvanized Steel Sheet: ASTM A653; G90 coating.

2.2 FASTENERS

A. General:
1. For exterior use and where built into exterior walls, provide zinc-coated fasteners.
2. Provide fasteners of type, grade, and class required for the particular use.

B. Bolts, Nuts, and Washers: ASTM A325, Type 1, galvanized to ASTM A153 where connecting galvanized components.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

2.4 FINISHES

A. Primer: 10-99 by Tnemec or No. 5269 by Rustoleum.

B. Provide zinc coating for those items indicated or specified to galvanized, as follows:
1. ASTM A153 for galvanizing iron and steel hardware.
2. ASTM A123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strips 1/8" thick and heavier.
3. ASTM A386 for galvanizing assembled steel products.
4. ASTM A535 for galvanizing sheet steel.

C. For repair of galvanizing, use a high zinc-dust content paint complying with MIL-P-21035.

2.5 FABRICATION

A. Except as otherwise shown on the Drawings or the approved Shop Drawings, use materials of size, thickness, and type required to produce reasonable strength and durability in the work of this Section.

B. In fabricating items which will be exposed to view, limit materials to those which are free from surface blemishes, pitting, rolled trade names, and roughness.

C. Fabricate with accurate angles and surfaces which are true to the required lines and levels, forming exposed connections with hairline joints, and using concealed fasteners wherever possible.

D. Provide for anchorage of type indicated, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use. Cut, reinforce, drill, and tap miscellaneous metal work as required to receive finish hardware and similar items.

E. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

F. Curved work shall be evenly sprung.

2.6 FABRICATED ITEMS

A. Rough Hardware: Provide bent or otherwise custom fabricated bolts, plates, anchors, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting work, and for anchoring or securing

work to concrete or other structures.

1. Provide galvanized rough hardware at exterior conditions.

B. Miscellaneous Framing and Supports: Provide miscellaneous framing and supports not a part of the structural steel framework, as required to complete the work.
   1. Fabricate miscellaneous units to shapes, sizes, and profiles indicated, or if not indicated, of required dimensions to receive adjacent work. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware and similar items.
   2. Provide galvanized framing and supports at exterior conditions.

C. Steel Handrails, Guards, and Railings: Provide round pipe or square tubing as indicated on the Drawings.
   1. Round Pipe: 1-1/2" nominal diameter standard weight galvanized steel pipe, 0.145" wall thickness.
   2. Square Tubing: 1-1/2" galvanized steel square structural tubing, 0.1875" wall thickness.
   3. Wall Brackets: No. 377/378 by Julius Blum, or No. 1703-2 by R&B Wagner, with bracket filler for either gypsum board or plaster.
   4. Fabrication:
      a. Provide flush fittings with joints welded and ground smooth and flush. Weld vertical supports to horizontal members in same manner as fittings.
      b. Remove burrs from all exposed cut edges.
      c. Miter or radius all joints as required. Form elbow bends and wall returns to uniform radius, free from buckles and twists, with smooth finish surfaces, or use prefabricated bends.
      d. Provide wall returns at ends of wall mounted handrails to with 1/8" of wall.
      e. Close exposed ends by welding 3/16" minimum thickness steel plate in place or with prefabricated fittings.
      f. Provide galvanized steel sleeves for concrete embedment where indicated.
      g. Secure ends of members butted to vertical surfaces with galvanized steel flanges.
      h. Secure handrails to walls with brackets spaced at 5'-0" on center maximum.
      i. Provide vertical posts at the spacing indicated, but not more than 5'-0" on center.
      j. Welding: Accurately miter and cope intersections of posts and rails and weld all around. Thoroughly fuse without undercutting or overlap. Remove spatter, grind exposed welds and contour surfaces to match those adjacent.
      k. Provide pressure relief holes at closed ends.

D. Removable Bollards:
   1. Removable locking bollard, ground sleeve, and sleeve top and lid, powder-coated factory finish, RPL4 by TrafficGuard Direct, Inc., www.trafficguard.net or approved equal.
   2. Bollard completely removes from the ground sleeve and provides flush surface.
   3. Install bollard and ground sleeve in conformance with the manufacturer's written installation instructions. Provide gravel base for drainage of bollard.

2.7 SHOP PAINTING

A. Surface Preparation: Prepare ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
   1. Exteriors (SSPC Zone 1B): SSPC-SP6, Commercial Blast Cleaning.
   2. Interiors (SSPC Zone 1A): SSPC-SP3, Power Tool Cleaning.

B. Cleaning: Clean ferrous and galvanized metal surfaces with proper solvents to remove all grease and other foreign matter which will hinder and/or prevent proper finishing and installation.

C. Application: Apply 1 coat of shop primer to the dry film thickness recommended by the manufacturer to

surfaces of metal fabrications except those which are indicated to be embedded in concrete or masonry and in compliance with requirements of SSPC-PA1, Paint Application Specification No. 1, for shop painting.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.3 INSTALLATION

A. General:
   1. Set work accurately into position, plumb, level, true, and free from rack.
   2. Anchor firmly into position.
   3. Where field welding is required, comply with AWS recommended procedures of manual-shielded metal-arc welding for appearance and quality of weld and for methods to be used in correcting welding work.
   4. Grind exposed welds smooth, and touch up shop prime coats.
   5. Do not cut, weld, or abrade surfaces which have been hot-dip galvanized after fabrication and which are intended for bolted or screwed field connections.

B. Primer Repair: Immediately after erection, clean the field welds, bolted connections, and abraded areas of shop priming. Paint the exposed areas with same material used for shop priming.

C. Galvanizing Repair: Repair all damage to galvanizing as a result of fabrication, handling, and installation, with 2 coats of cold galvanizing paint in accordance with the manufacturer's written instructions.

D. Pipe Railings and Handrails: Unless otherwise indicated or approved by the Architect:
   1. Secure to wall with approved fasteners into solid blocking.

END OF SECTION 05 5000

SECTION 08 1110 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide hollow metal doors, and hollow metal door and window frames, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

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

2. Section 08 7100: Hardware requirements and templates.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturers recommended installation procedures.
3. Shop Drawings: Submit details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.

1.3 QUALITY ASSURANCE

A. Provide all products of this Section from a single manufacturer.

B. Comply with ANSI/SDI A250.8-2003 and HMMA 861-14.

1.4 FIRE AND SMOKE RATINGS

A. Fire and Smoke Rated Door Assemblies: Where fire-rated or smoke-rated assemblies are indicated or required, provide door and frame assemblies that have been tested, listed, and labeled by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.
1. Side-hinged or Pivoted Swinging Doors: UL 10C.
2. Doors in Fire-rated Corridors and Smoke Barriers: 20 minute fire protection rating; UL 10C without hose stream test.
3. Door in Exit Enclosures and Exit Passageways: UL 10C; maximum transmitted temperature end point of not more than 450ºF above ambient at end of 30 minutes of standard fire test exposure.
4. Smoke and Draft Control Doors: UL 10C and UL 1784.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Steelcraft, (805) 837-4111.
2. Stiles Custom Metal, Inc., (209) 538-3667.

3. Ceco Door Products, (510) 489-1700.
4. Curries, (559) 432-5537.
5. Security Metal Products, (310) 641-6690.
6. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 METAL DOORS

A. Exterior Flush Doors:
   1. ANSI/SDI A250.8, Level 3, Model 2 (seamless), minimum 16 gauge (0.067") faces.
   2. Top Closure: 16 gauge flush end channel closure with seal against moisture entry.
   3. Bottom Closure: 16 gauge recessed end channel with drainage openings.
   4. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   5. Reinforce doors internally with 18 gauge steel hat section ribs.
      a. Weld reinforcing to each door face with spot welds to faces spaced 4" on center.
      b. Ends of ribs welded together full width of the supporting web span.
      c. Insulate space between ribs with 2 lb. density polyurethane bonded to both faces; ASTM C591.
   6. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.

B. Exterior Stile-and-Rail Doors: Unitized, true tube type construction with joints continuously welded and ground smooth.
   1. ANSI/SDI A250.8, Level 3, Model 3, minimum 16 gauge (0.067") faces.
   2. Core: 2 lb. density polyurethane bonded to both faces; ASTM C591, U-factor of 0.10.
   3. Top Closure: Flush end channel closure with seal against moisture entry.
   4. Bottom Closure: Recessed end channel with drainage openings.
   5. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   6. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.

C. Interior Doors: Full flush or stile-and-rail design as indicated.
   1. ANSI/SDI A250.8, Level 3, Model 2 (seamless), minimum 16 gauge (0.053") faces.
   2. Core: 2 lb. density polyurethane bonded to both faces; ASTM C591, U-factor of 0.10.
   3. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   4. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.

D. Finish:
   1. After fabrication, fill all tool marks and surface imperfections, sand and dress smooth.
   2. Grind, fill, and dress all weld joints.
   3. Coat surface with factory primer for field finishing; ANSI/SDI A250.10.

2.3 METAL FRAMES

A. Type and Design:
   1. Provide frames in the dimensions and types shown on the Drawings, non-labeled or labeled as indicated, in 16 gauge (0.053") for interior frames and 14 gauge (0.067") for exterior frames.
   2. Galvanizing: Hot-dipped zinc coating; ASTM A653 with A60 or G60 coating.
   3. **Face welded construction.**
   4. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.
   5. Reinforce for finish hardware provided under Section 08 7000; ANSI/SDI A250.8.
   6. Frames Wider than 48": Reinforce with steel channel fitted tightly into frame head, flush with top.
   7. Frames Installed Back-to-Back: Reinforce with steel channels anchored to floor and overhead structure.

B. Finish:
   1. After fabrication, fill all tool marks and surface imperfections, sand and dress smooth.
   2. Grind, fill, and dress all weld joints.
   3. Coat surface with factory primer for field finishing; ANSI/SDI A250.10.
   4. Remove all areas of rust to bare metal; reprime prior to finish paint.

C. Frame Anchors:
   1. Wood Stud Anchor: 18 gauge galvannealed steel, "lock-in" type.
   2. Closed Metal Stud Wall Anchor: 18 gauge galvannealed steel, "lock-in" or factory welded type.
   3. Wire Masonry Anchors: 3/16" diameter wire, "lock-in" type.
   4. Masonry T-Anchors: 18 gauge galvannealed steel, "lock-in" type.
   5. Existing Wall Anchor: 18 gauge galvannealed steel, "lock-in" or factory welded type.
   6. Base Anchor: 16 gauge galvannealed steel, welded-in or adjustable; provide a minimum of 2 fasteners in each anchor.
   7. Mullion Base Anchor: 16 gauge galvannealed steel, mullion slides over; provide a minimum of 2 fasteners in each anchor.
   8. Corner Post Base Anchors: 12 gauge galvannealed steel, corner post slides over; provide a minimum of 2 fasteners in each anchor.

2.4 FINISH HARDWARE

A. Coordinate anchorage hardware and secure templates from the finish hardware supplier.

2.5 PREPARATION FOR HARDWARE

A. Coordinate anchorage hardware and secure templates from the finish hardware supplier.

B. Reinforcement: Reinforce components for hardware installation in accordance with ANSI/SDI A250.8 except where more stringent requirements are called for within this specification.
   1. Provide box or channel type lock and closer reinforcements, continuous from top to bottom of door and welded to face sheets.

C. Punch single leaf frames to receive 3 silencers; provide one silencer per leaf at the head of double leaf frames unless gasketing is specified for that specific opening.

D. Factory prepare hardware locations in accordance with Section 08 7100.

E. Plaster Guards: 26 gauge galvanized steel plaster/dust guards, welded to frame at finish hardware cutouts where mortar, plaster, dust or other materials might obstruct hardware operation and to close off interior of openings.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FIRE RATED ASSEMBLIES

A. Install fire-rated doors and frames in accordance with their listings and NFPA 80.
   1. Install smoke and draft control doors in accordance with NFPA 105.

3.3 FRAME INSTALLATION

A. Install frames and doors in accordance with the manufacturer's written recommendations and ANSI/SDI A250.8.

B. Set welded frames in position prior to beginning metal stud partition work; brace frames until permanent anchors are set.

C. Set anchors for frames as work progresses. Install anchors at hinge and strike levels. Place frames prior to construction of enclosing walls and ceilings; provide minimum 3 anchors per jamb at hinge and strike locations.

D. Set frames accurately into position, plumbed (within 1/8" in 10'), aligned, and braced securely until permanent anchors are set.
   1. Use temporary setting spreaders at all locations. Use intermediate spreaders to assure proper door clearances and header braces for grouted frames.

3.4 DOOR INSTALLATION

A. Install doors per manufacturer's recommendation.

B. Install hollow metal doors in frames using hardware specified in Section 08710 Finish Hardware.

C. Clearances at edge of doors.
   1. Between door and frame at head and jambs: 1/8".
   2. At meeting edges pairs of doors and at mullions: 1/8".
   3. At sills without thresholds: 5/8" maximum above finish floor.
   4. At sills with thresholds: 1/8" above threshold.

3.5 ADJUST AND CLEAN

A. Remove dirt and excess sealants, mortar or glazing compounds from exposed surfaces.

B. Final Adjustments: Adjust moving parts for smooth operation.
   1. Check and readjust operating finish hardware items in hollow metal work just prior to final inspection.
   2. Leave work in complete and proper operating condition.
   3. Remove defective work and replace with work complying with the specified requirements.

C. Immediately after erection, sand smooth all rusted and damaged areas of prime coat, and apply touchup of compatible air-drying primer submitted by the manufacturer.

D. Fill all dents, holes, etc. with metal filler, sand smooth and flush with adjacent surfaces - reprise and paint to match specified finish.

END OF SECTION 08 1110

SECTION 08 7100 - FINISH HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Door Hardware, including electric hardware.
2. Card Access control system.
3. Power supplies for electric hardware.

B. Related Sections:
Section 06 2000 - Rough Carpentry: Finish Hardware Installation
Section 07 9200 - Joint Sealers – exterior thresholds
Section 08 1100 - Metal Doors and Frames
Section 16 2000 - Electrical Power

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.
1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Installation.
6. Rough hardware.
7. Conduit, junction boxes & wiring.
8. Folding partitions, except cylinders where detailed.
9. Access doors and panels, except cylinders where detailed.
10. Corner Guards.

1.2 REFERENCES:

Use date of standard in effect as of Bid date.

A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
B. ADA – Americans with Disabilities Act of 1990
C. BHMA – Builders Hardware Manufacturers Association
D. DHI – Door and Hardware Institute
E. NFPA – National Fire Protection Association
NFPA 80 – Fire Doors and Windows
NFPA 105 – Smoke and Draft Control Door Assemblies
NFPA 252 – Fire Tests of Door Assemblies

F. UL – Underwriters Laboratories
UL10C – Positive Pressure Fire Tests of Door Assemblies.
UL 305 – Panic Hardware
G. WHI – Warnock Hersey Incorporated State of California Building Code
H. Local applicable codes
I. SDI – Steel Door Institute
J. NAAMM – National Association of Architectural Metal Manufacturers

1.3 SUBMITTALS & SUBSTITUTIONS

A. SUBMITTALS: Submit six copies of schedule per Section 01 3300. Organize vertically formatted schedule into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Type, style, function, size, quantity and finish of hardware items.
2. Use BHMA Finish codes per ANSI A156.18.
3. Name, part number and manufacturer of each item.
4. Fastenings and other pertinent information.
5. Location of hardware set coordinated with floor plans and door schedule.
6. Explanation of abbreviations, symbols, and codes contained in schedule.
7. Mounting locations for hardware.
8. Door and frame sizes, materials and degrees of swing.
9. List of manufacturers used and their nearest representative with address and phone number.
10. Catalog cuts.
11. Manufacturer’s technical data and installation instructions for electronic hardware.

B. Bid and submit manufacturer’s updated/improved item if scheduled item is discontinued.

C. Make substitution requests in accordance with specification section 01 2580. Include product data and indicate benefit to the Project. Furnish operating samples on request.
1. Items listed with no substitute manufacturers have been requested by Owner to meet existing standard.
D. Contract Closeout Submittals: Comply with requirements of Section 01 7700.
1. Operation and maintenance manuals in accordance with requirements of Section 01 7820, for each type of hardware.

E. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4 QUALITY ASSURANCE:

A. Qualifications:
1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course of work for project hardware consultation to Owner, Architect and Contractor.
a) Responsible for detailing, scheduling and ordering of finish hardware.

B. Hardware: New, free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

D. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.
1. Where scheduled item is now obsolete, bid and furnish manufacturer's updated item at no additional cost to the project.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Delivery: coordinate delivery to appropriate locations (shop or field).
1. Permanent keys and cores: secured delivery direct to Owner's representative.

B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.6 PROJECT CONDITIONS:

A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical as the same operation and quality as type specified, subject to Architect's approval.

1.7 SEQUENCING AND COORDINATION:

A. Coordinate with concrete.

B. Reinforce walls for wall-mounted hardware, including wall stops and stainless steel guard rails.

C. Coordinate finish floor materials and floor-mounted hardware.

D. Conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.

E. Furnish manufacturer templates to door and frame fabricators.
1. Ensure proper blocking in wood doors to support wood screws for panic hardware and door closers.
2. Ensure proper reinforcement in metal doors and frames to support machine screws for panic hardware and door closers.

F. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.
1. Confirm that wood door manufacturers furnish necessary UL10C compliant seal packages.

1.8 WARRANTY:

A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties:

1.	Locksets:	Three years.
2.	Exit Devices:	Three years.
3.	Closers:	Ten years.
4.	Other Hardware:	Two years.

1.9 COMMISSIONING:

A. Conduct these tests prior to request for certificate of substantial completion:

1. Test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
2. Test electronic hardware systems for satisfactory operation.

1.10 REGULATORY REQUIREMENTS:

A. Locate latching hardware between 34” to 44” above the finished floor, per California Building Code, Section 1010.1.9.2 and 11B-404.2.7.

1. Locate panic hardware between 36” to 44” above the finished floor.

B. Handles, pull, latches, locks, other operating devices: readily openable from egress side without tight grasping, tight pinching, or twisting of the wrist to operate. California Building Code 1010.1.9.1 and 11B-309.4.

C. Adjust doors to open with not more than 5.0 lbs pressure to open at exterior doors and 5.0 lbs at interior doors. As allowed per California Building Code, Section 11B-404.2.9, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15 lbs.

D. Adjust door closer sweep periods so that from an open position of 90 degrees, the door will take at least 5 seconds to move to a point 12 degrees from the latch, measured to the landing side of the door, per California Building Code Section 11B-404.2.8.1.

E. Smooth surfaces at bottom 10” of push sides of doors, facilitating push-open with wheelchair footrests, per California Building Code Section 11B-404.2.10.

F. Door opening clear width no less than 32”, measured from face of frame stop, or edge of inactive leaf of pair of doors, to door face with door opened to 90 degrees. Hardware projection not a factor in clear width if located above 34” and the hardware projects no more than 4”. California Building Code Section 11B-404.2.3, 11B-404.2.4, and 1010.1.1.

G. Door opening clear height no less than 80” measured from top of sill to bottom of frame header stop. Projections into clear opening height not to exceed 4”. California Building Code Section 11B-404.2.3 and 1010.1.1.1.

H. Thresholds: floor or landing no more than 1/2” below the top of the threshold of the doorway. Change in level between 1/4“ and 1/2”: beveled to slope no greater than 1:2 (50 percent slope). California Building Code Section 11B-404.2.5.

I. Floor stops: Do not locate in path of travel. Locate no more than 4” from walls, per DSA Policy #99-08 (Access).

J. Pairs of doors: limit swing of one leaf to 90 degrees to protect persons reading wall-mounted tactile signage.

K. New Buildings on a K-12 Public School campus shall be provided with locks which allow the doors to classrooms and any other room with an occupant load of five or more persons to be locked from the inside. Locks shall conform to the specification and requirements of Section 1010.1.11. Exceptions include doors that are normally locked form the outside, relocatable moved within the same campus, and reconstruction projects.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

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

ITEM:	MANUFACTURER:	ACCEPTABLE SUB:
Hinges	(IVE) Ives	Bommer
Continuous Hinges	(IVE)Ives	Select
Locks	(SCH) Schlage	Owner’s Standard
Electric Strikes	(TRN) Trine	Owner’s Standard
Access Control Locks	(BES) Best Access Systems	Owner’s Standard
Exit Devices	(VON) Von Duprin	Owner’s Standard
Closers	(NOR) Norton	Owner’s Standard
Power Supplies	(SCE) Schlage Electronics	Best
Auto Flush Bolts	(IVE) Ives	Trimco
Coordinators	(IVE) Ives	Trimco
Silencers	(IVE) Ives	Trimco

Push & Pull Plates	(IVE) Ives	Trimco
Kickplates	(IVE) Ives	Trimco
Stops & Holders –	(IVE) Ives	Trimco
Overhead Stops	(GLY) Glynn-Johnson	None available
Thresholds	(NGP) National Guard	Reese
Seals & Bottoms	(NGP) National Guard	Reese

2.2 HINGING METHODS:

A. Note: drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.

B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.

C. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.
1. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins.
2. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.

D. Continuous Hinges:
1. Pinned steel/stainless steel type: continuous stainless steel, 0.25-inch diameter stainless-steel hinge pin.
a) Use engineered application-specific wide-throw units as needed to provide maximum swing degree of swing, advise architect if required width exceeds 8 inches.

2.3 LOCKSETS and LATCHSETS:

A. Mortise Locksets and Latchsets: as scheduled.

1. Chassis: cold-rolled steel, handing field-changeable without disassembly.
2. Latchbolts: 3/4 inch throw stainless steel anti-friction type.
3. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable.
   a) Spindles: security design independent breakaway. Breakage of outside lever does not allow access to inside lever's hubworks to gain wrongful entry.
4. Thumbturns: accessible design not requiring pinching or twisting motions to operate.
5. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
6. Scheduled Lock Series and Design: Schlage L series, 06A design.
7. Certifications:
   a) ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
   b) ANSI/ASTM F476-84 Grade 31 UL Listed.
8. Comply with CBC Section 11B-309.4.

2.4 EXIT DEVICES / PANIC HARDWARE

A. General features:
1. Independent lab-tested 1,000,000 cycles.
2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
3. 0.75-inch throw deadlocking latchbolts.
4. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
5. No exposed screws to show through glass doors.
6. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
7. Releasable in normal operation with 5-lb. maximum operating force.
8. Flush end cap design as opposed to typical "bottle-cap" design end cap.
9. Comply with CBC Section 11B-309.4.

2.5 CLOSERS

A. Surface Closers:

1. Full rack-and-pinion type.
2. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
3. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
4. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 11B-404.2.9, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.
5. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.

2.6 OTHER HARDWARE

A. Automatic Flush Bolts: Low operating force design.

B. Overhead Stops: Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

C. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

D. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.

E. Seals: Finished to match adjacent frame color. Resilient seal material: polypropylene, nylon brush, or solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material’s thickness and durability.

Proposed substitutions: submit for approval.

1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
2. Non-corroding fasteners at in-swinging exterior doors.

F. Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.

G. Thresholds: As scheduled and per details. Comply with CBC Section 11B-404.2.5. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

1. Exteriors: Seal perimeter to exclude water and vermin. Use butyl-rubber or polyisobutylene sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
2. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

H. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

I. Through-bolts: Do not use. Coordinate with wood doors; ensure provision of proper blocking to support wood screws for mounting panic hardware and door closers. Coordinate with metal doors and frames; ensure provision of proper reinforcement to support machine screws for mounting panic hardware and door closers.

J. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

2.7 FINISH:

A. Generally BHMA 626 Satin Chromium.

1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.

B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

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

2.8 KEYING REQUIREMENTS:

A. Key System: Best construction and permanent cores by owner.
1. Provide quantity list of doors requiring cylinder cores with door numbers to owner 30 days prior to hardware installation.
2. Coordinate and schedule delivery of cores with owner.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

A. Experienced craftsperson with a resume of successful projects. Can readily differentiate between number 2 and number 3 phillips-drive screws and screwdrivers. Can readily differentiate between #10-24 machine screws and drywall screws, and can explain correct usages of these items.

3.2 PREPARATION:

A. Ensure that walls and frames are square and plumb before hardware installation.

B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
1. Notify Architect of any code conflicts before ordering material.
2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 34 inches to 44 inches above the finished floor, per CBC Section 11B.2.7.

C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.

3.3 INSTALLATION

A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
   1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
   2. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
   3. Replace fasteners damaged by power-driven tools.

B. Locate floor stops no more that 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.

C. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.

3.4 ADJUSTING

A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
   1. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner's satisfaction.
   2. Adjust doors to fully latch with no more than 1 pound of pressure.

3.5 DEMONSTRATION:

A. Demonstrate mechanical hardware and electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just

prior to substantial completion.

B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.7 SCHEDULE OF FINISH HARDWARE

A. See door schedule in drawings for hardware set assignments.

HW SET: 01

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY SET	L9040 06A L583-363	626	SCH
1	EA	SURFACE CLOSER	P7500	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	DOME STOP	FS438 435 436 437 AS REQU'D	626	IVE
1	EA	THRESHOLD	SEE ARCHITECTURAL DAWINGS	AL	
3	EA	SILENCER	SR64	GRY	IVE

END OF SECTION 08 7100

SECTION 09 9100 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. General: Paint and finish all exposed surfaces using the combination of materials listed on Painting Schedule in Part 3 of this Section, as specified herein, and as needed for a complete and proper installation.
   1. Surface preparation, priming, and painting specified in this Section are in addition to shop priming and surface treatment specified in other sections.
   2. Paint exposed surfaces whether or not colors are designated in schedules. Paint exposed surfaces to match adjacent materials or areas, in the color selected by the Architect.

B. Work Included: The following list is not totally inclusive and does not exclude work not stated herein but required to be painted in the specifications, Finish Schedule, and drawings. Unless otherwise specified, work to be painted under this Section includes, but is not limited to:
   1. Work specifically noted as requiring a paint finish in the drawings and specifications, and on the Finish Schedule.
   2. Concrete.
   3. Interior and exterior metal fabrications, both galvanized and shop primed. From 8’-0” above finished ground surface and higher. (Refer to section 09 9600 for coating below 8’-0”).
   4. Interior and exterior ferrous metal.
   5. Interior and exterior galvanized metal.
   6. Galvanized flashings and sheet metal.
   7. Outdoor recreation equipment.
   8. Exposed surfaces of glazing stops, including those visible after glazing is installed.
   9. Exposed electrical conduit, raceways, fittings, panels, and switchgear.

C. Work Not Included:
   1. Unless otherwise indicated, painting is not required on surfaces in concealed areas and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces, and duct shafts.
   2. Surfaces of prefinished metals, anodized aluminum, stainless steel, chromium plate, copper, bronze, and similar finished materials will not require painting under this Section unless indicated on the Drawings.
   3. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts, unless otherwise indicated.
   4. Do not paint over required labels or equipment identification, performance rating, name, or nomenclature plates.
   5. Do not paint concrete which has been sandblasted unless specifically noted for painting.
   6. Do not paint galvanized gratings.
   7. Exposed exterior metal fabrications from finished ground surface to 8’-0” above.
   8. Exterior metal stairs and steel railings.

D. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
   2. Priming or priming and finishing of certain surfaces may be specified to be factory-performed or installer-performed under pertinent other Sections.
   3. Section 32 1720: Painting for pavement markings.

E. Definitions: "Paint," as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.
   3. Samples: Following the selection of colors and glosses by the Architect, submit Samples for the Architect's review.
      a. Provide four Samples of each color and each gloss for each material on which the finish is specified to be applied, approximately 8" x 10" in size.
      b. Provide wood stain samples on specified wood for color selection or approval.
      c. If so directed by Architect, submit Samples during progress of the Work in the form of actual application of the approved materials on actual surfaces to be painted.
      d. Revise and resubmit each Sample as requested until the required gloss, color, and texture are achieved. Such Samples, when approved, will become standards of color and finish for accepting or rejecting the work of this Section.
      e. Do not commence finish painting until approved Samples are on file at the job site.

B. Contract Closeout Submittals: Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. Comply with applicable codes and regulations of governmental agencies having jurisdiction, including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this specification, comply with the more stringent provisions.

B. Paint Coordination:
   1. Provide finish coats which are compatible with the prime coats actually used and specified.
   2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.
   3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
   4. Provide barrier coats over noncompatible primers, or remove the primer and reprime as required.
   5. Notify the Architect in writing of anticipated problems in using the specified coating systems over prime-coatings supplied under other Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

A. General:
   1. Do not store flammable materials inside buildings.
   2. Mix paint in a location and manner that will protect the environment and facilities.
   3. Provide ventilation needed to comply with OSHA requirements.

1.5 SITE CONDITIONS

A. Do not apply exterior materials during fog, rain, or mist, or when inclement weather is expected within the dry time specified by the manufacturer. No exterior or interior painting shall be performed until the surfaces are thoroughly dry and cured. Do not apply paint when temperature is below 50 deg F. Avoid painting surfaces when exposed to direct sunlight.

1.6 EXTRA MATERIALS

A. Upon completion of the work of this Section, deliver to the Owner an extra stock equaling 5% of each color, type, and gloss of paint used in the Work, tightly sealing each container, and clearly labeling with contents and location where used.

B. Deliver materials to the Inspector of Record along with an inventory list of items provided. Obtain and forward to the Architect, a signed receipt from the Inspector accepting delivery.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

A. Products specified are for establishing the type, design, and quality required and are based on products of **Dunn-Edwards.** Other product systems approved for use are by Pittsburg Paints**,** Sherwin-Williams, and Frazee. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.
   1. Where products are proposed other than Dunn-Edwards, submit a new painting schedule compiled in the same format used for the Painting Schedule included in this Section.
   2. Approved specifications of materials for the other referenced manufacturers may be obtained from the Architect.

B. Undercoats and Thinners:
   1. Provide undercoat paint produced by the same manufacturer as the finish coat, unless specified otherwise.
   2. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.
   3. Provide undercoat, finish coat, and thinner material as parts of a unified system of paint finish.

C. Paint Systems: The specified standard is 100% acrylic premium top-of-the line paint, except where surfaces are specified to receive industrial coatings.

2.2 COLOR SCHEDULES

A. Refer to the Finish Schedule on the Drawings.

2.3 APPLICATION EQUIPMENT

A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and in accordance with all current Environmental Protection Agency standards and regulations.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 MATERIALS PREPARATION

A. Mix, prepare, and store painting and finishing materials in accordance with the manufacturer's written recommendations.

3.3 SURFACE PREPARATION

A. General:
1. Perform preparation and cleaning procedures in strict accordance with the paint manufacturers' recommendations.
2. Remove removable items which are in place and are not scheduled to receive paint finish.
3. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
4. Clean each surface to be painted prior to applying paint or surface treatment.
5. Remove dirt and other foreign substances. Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 200 degrees F, prior to start of mechanical cleaning.
6. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.

B. Metal:
1. Thoroughly clean surfaces until free from dirt, oil, and grease per SSPC-SP 1. Remove all mill scale, rust formation, etc.
2. On galvanized surfaces, use solvent for the initial cleaning, and then treat the surface thoroughly with etching solution. Remove etching solution completely before proceeding. **Prime etched metals the same day cleaning was performed.** If any oxidation (white rust) has formed, sand and remove all forms of contamination. If the galvanized has been passivated or stabilized, the surface must be abraded, i.e. Brush-Off Blast Clean per SSPC-SP7 or chemically treated.
3. Allow to dry thoroughly before application of paint.
4. Primers specified for structural steel and metal fabrications are standalone systems. Apply full paint system as specified in this Section even if metal comes preprimed or shop primed.

C. Prefinished Metal:
1. Solvent clean per SSPC-SP 1. Abrade substrate to remove gloss and obtain minimum surface profile of 1.0 mil. Solvent wipe to remove dust.

D. Concrete:
1. Thoroughly clean surfaces.
2. Prior to painting, the material shall be dry to the extent that a proper, long lasting, and non-blistering bond will be assured. Should the dryness of the substrate be in question, test the substrate in the presence of the paint manufacturer's representative. Do not paint substrate in question until dryness condition improves to meet the paint manufacturer's requirements.

E. Masonry and Cement Plaster:
1. Allow to dry at least 30 days prior to cleaning in preparation for painting.
2. Remove glaze, efflorescence, laitance, surface deposits, and other foreign matter.

F. Gypsum Board: Remove all sanding dust.

G. Wood, Painted Finish:
1. Remove surface deposits of sap and pitch by scraping and cleaning with mineral spirits.
2. Seal all knots and pitch pockets with the paint manufacturer's recommended materials prior to prime coat.

3. Sand smooth all wood surfaces exposed to view, using the proper sandpaper and remove dust. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
4. After prime coat is dry, fill cracks, holes, and scratches with suitable wood filler or spackling compound. When dry, sand flush with surface.
5. Do not proceed with painting of wood surfaces until the moisture content of the wood is 12% or less as measured by a moisture meter.

H. Wood, Stained Finish:
1. Apply paste wood filler to open grained wood prior to sanding.
2. Sand smooth all wood surfaces exposed to view, using the proper sandpaper and remove dust. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
3. Apply wash coat of sealer, sand and remove dust.
4. Lightly sand and clean between finish coats as recommended by the paint manufacturer.
5. Seal tops, bottoms, and edges of cutouts on wood doors.

3.4 PAINT APPLICATION

A. General:
1. Touchup or reprime shop-applied prime coats which have been damaged, and touchup bare areas prior to start of finish coats application.
2. Slightly vary the color of succeeding coats.
   a. Do not apply additional coats until the completed coat has been inspected and approved.
   b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of five feet.
4. On removable panels and hinged panels, paint the back sides to match the exposed sides.
5. Finish to be smooth.

B. Priming: Primers specified for structural steel and metal fabrications are standalone systems. Apply full paint system as specified in this Section even if metal comes preprimed or shop primed.

C. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.

D. Brush Applications:
1. Brush out and work the brush coats onto the surface in an even film.
2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.
3. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

E. Spray Application:
1. Except as specifically otherwise approved by the Architect, confine spray application to wall surfaces, large expanse areas and similar surfaces where hand brush work would be inferior.
2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
3. Do not double back with spray equipment to build up film thickness of two coats in one pass.
4. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

F. Roller Application:
1. Apply paint with short nap roller on all metal doors. Color as specified (same interior and exterior).

2. Remove all surface applied door trim prior to painting.
3. Roller marks, lap marks, runs, sags, fuzz, lint or other surface imperfections will not be acceptable.
4. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

G. For completed work, match the approved Samples as to texture, color, and coverage. Remove, refinish, or repaint work not in compliance with the specified requirements.

H. Exposed Mechanical and Electrical Items:
1. Finish electric panels, access doors, conduits, pipes, ducts, grilles, registers, vents, exposed plumbing vents and flues, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
2. Paint visible duct surfaces behind vents, registers, and grilles flat black.
3. Exposed vents and flues: Apply two coats of heat-resistant paint approved by the Architect.
4. Factory finished items that match color scheme may be approved for leaving unpainted by Architect.

I. Exposed Pipe and Duct Insulation:
1. Apply one coat of latex paint on insulation which has been sized or primed under other Sections; apply two coats on such surfaces when unprepared.
2. Match color of adjacent surfaces unless otherwise noted.
3. Remove band before painting, and replace after painting.

J. Hardware: Paint prime coated hardware to match adjacent surfaces, unless otherwise noted. Paint metal portions of head seals, jamb seals, and astragal seals to match the color of the door frame unless otherwise directed by the Architect.

K. Wet Areas:
1. In toilet rooms and contiguous areas, add an approved fungicide to paints.
2. For oil base paints, use 1% phenolmercuric or 4% tetrachlorophenol.
3. For water emulsion and glue size surfaces, use 4% sodium tetrachlorophenate.

L Miscellaneous:
1. Use "stipple" finish where enamel is specified.
2. Ferrous Metal: When metal comes shop primed or preprimed, always reprime with a solvent primer or Direct-to-Metal (DTM) primer. Sand or remove all visible rust.
3. Wood Trim: Backprime exterior wood trim prior to installation with the paint manufacturer's recommended exterior wood primer.
4. Touch-up shall be performed using the same application method as the original final coat application.

3.5 PROTECTION

A. Protect floors, furnishings, equipment, finish hardware, name or information plates, dials, gauges, tile, or other such surfaces not requiring painting from spotting, spillage, or damage of any kind. Clean, repair, or replace any damaged surfaces as directed by the Architect.

B. Remove, loosen, or mask hardware, fixture canopies, outlet covers, switch plates, and other similar items as required for painting work and then replace.

C. Using workmen skilled in these trades, move equipment adjacent to walls to permit wall surfaces to be painted, and following completion of painting, replace and reconnect.

3.6 CLEANING

A. Upon completion of all paint work, clean paint from all glass surfaces leaving a sharp clean line.

B. Remove paint spots, oil, or stains.

3.7 PAINTING SCHEDULE

A. General: Provide paint systems as specified below.
1. Products specified in this schedule are based upon products of **DUNN-EDWARDS** and are specified for establishing the type and quality of products required. Refer to Paragraph 2.1.A of this Section.
2. See Finish Schedule for colors and gloss.
3. Abbreviations: (F) = Flat, (LL) = Low Luster, (SGE) = Semi-Gloss Enamel; (ESE) = Eggshell Enamel; (GE) = Gloss Enamel; (SL) = Stain/Lacquer

B. Exterior Metal, Ferrous (SGE):
1. First coat: 43-5 Corrobar, White anti-corrosion primer
2. Second coat: Syn-Lustro W9, 100% acrylic gloss enamel
3. Third coat: Syn-Lustro W9, 100% acrylic gloss enamel
4. **Note:** No clear, tint, or deep base. Only blending bases or factory ground colors will be allowed.

C. Exterior Metal, Galvanized and Aluminum (SGE):
1. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
2. First coat: QD 43-7 Galv-Alum, white anti-corrosion primer
3. Second coat: Syn-Lustro W9, 100% acrylic gloss enamel
3. Third coat: Syn-Lustro W9, 100% acrylic gloss enamel
5. **Note:** No clear, tint, or deep base. Only blending bases or factory ground colors will be allowed.

D. Exterior Metal, Prefinished Aluminum (SGE):
1. First coat: RustGrip 2300
2. Second coat: UreGrip 3300 VOC
3. Third coat: UreGrip 3300 VOC

E. Exterior Metal, Prefinished Ferrous (SGE):
1. First coat: RustGrip 2300
2. Second coat: UreGrip 3300 VOC
3. Third coat: UreGrip 3300 VOC

F. Exterior Cement Plaster and Concrete (LL):
1. First coat: W709 Eff-Stop, concrete sealer
2. Second coat: W701 Evershield, 100% acrylic paint
3. Third coat: W701 Evershield, 100% acrylic paint

G. Exterior Concrete Block (F):
1. First coat: W305 Blocfil, prepared latex block filler
2. Second Coat: W701 Evershield, 100% acrylic paint
3. Third coat: W701 Evershield, 100% acrylic paint

H. Exterior Wood (SGE):
1. First coat: W708 E-Z Prime
2. Second coat: W901E Permasheen, 100% acrylic semi-gloss enamel
3. Third coat: W901E Permasheen, 100% acrylic semi-gloss enamel

I. Exterior Wood - Solid Color Stain (F):
1. First coat: W703 Acri-Hues, acrylic latex stain
2. Second coat: W703 Acri-Hues, acrylic latex stain

J. Interior Primer Only behind FRP or VWC:
   1. Gypsum Drywall: W500 Sierra sealer/undercoater
   2. Concrete Block: W305 Blocfil, prepared latex block filler

K. Interior Flat Wall Paint (F):
   1. Gypsum Drywall:
      a. First coat: W101 Vinylastic, Pigmented wall sealer
      b. Second coat: W401 Decovel, flat wall finish
      c. Third coat: W401 Decovel, flat wall finish
   2. Concrete Block:
      a. First coat: W305 Blocfil, prepared latex block filler
      b. Second coat: W401 Decovel, flat wall finish
      c. Third coat: W401 Decovel, flat wall finish
   3. Acoustic Surfaces:
      a. First Coat: W615 Acoustikote, latex ceiling paint
      b. Second Coat: W615 Acoustikote, latex ceiling paint (If required for complete coverage)

L. Interior Egg-Shell Enamel (ESE):
   1. Gypsum Drywall:
      a. First coat: W500 Sierra sealer/undercoater
      b. Second coat: W540 Sierra 100% acrylic eggshell enamel
      c. Third coat: W540 Sierra 100% acrylic eggshell enamel
   2. Concrete Block:
      a. First coat: W305 Blocfil, prepared latex block filler
      b. Second coat: W440 Decosheen, eggshell latex enamel
      c. Third coat: W440 Decosheen, eggshell latex enamel
   3. Cement Plaster:
      a. First coat: W101 Vinylastic, Pigmented wall sealer
      b. Second coat: W440 Decosheen, eggshell latex enamel
      c. Third coat: W440 Decosheen, eggshell latex enamel
   4. Ferrous Metal:
      a. First coat: 43-5 Corrobar, White anti-corrosion primer
      b. Second coat: W540 Sierra 100% acrylic eggshell enamel
      c. Third coat: W540 Sierra 100% acrylic eggshell enamel
   5. Galvanized Metal:
      a. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
      b. First coat: W713 multi-purpose primer
      c. Second coat: W540 Sierra 100% acrylic egghshell enamel
      d. Third coat: W540 Sierra 100% acrylic egghshell enamel

M. Interior Semi-Gloss Enamel (SGE):
   1. Ferrous Metal:
      a. First coat: 43-5 Corrobar, White anti-corrosion primer
      b. Second coat: W550 Sierra 100% acrylic semi-gloss enamel
      c. Third coat: W550 Sierra 100% acrylic semi-gloss enamel
      d. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.
   2. Galvanized Metal:
      a. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
      b. First coat: W713 multi-purpose primer
      c. Second coat: W550 Sierra 100% acrylic semi-gloss enamel
      d. Third coat: W550 Sierra 100% acrylic semi-gloss enamel

e. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.

3. Wood Doors and Trim:
   a. First coat: W707 Unikote, latex enamel undercoat
   b. Second coat: W450 Decoglo, latex semi-gloss enamel
   c. Third coat: W450 Decoglo, latex semi-gloss enamel
4. Concrete Block:
   a. First coat: W305 Blocfil, prepared latex block filler
   b. Second coat: W450 Decoglo, latex semi-gloss enamel
   c. Third coat: W450 Decoglo, latex semi-gloss enamel
5. Gypsum Drywall:
   a. First coat: W500 Sierra sealer/undercoater
   b. Second coat: W550 Sierra 100% acrylic semi-gloss enamel
   c. Third coat: W550 Sierra 100% acrylic semi-gloss enamel

N. Interior Gloss Enamel (GE):
1. Ferrous Metal:
   a. First coat: 43-5 Corrobar, white anti-corrosion primer
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel
2. Galvanized Metal:
   a. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
   b. First coat: W713 multi-purpose primer
   c. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   d. Third coat: W960 Permagloss, 100% acrylic gloss enamel
   e. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.
3. Wood Doors and Trim:
   a. First coat: W707 Unikote, latex enamel undercoat
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel
4. Concrete Block:
   a. First coat: W305 Blocfil, prepared latex block filler
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel
5. Gypsum Drywall:
   a. First coat: W101 Vinylastic, pigmented wall sealer
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel

O. Stain and Lacquer (SL):
1. Wood Doors and Trim (transparent):
   a. Stain: LQ120 Decolac, lacquer stain (tint as selected by Architect)
   b. First coat: LQ101 Decolac, high solids sanding sealer
   c. Second coat: LQ104 Decolac, high solids semi-gloss lacquer
   d. Third coat: LQ104 Decolac, high solids semi-gloss lacquer
2. Wood Trim (opaque):
   a. First coat: W703 Acri-Hues, acrylic latex stain
   b. Second coat: W703 Acri-Hues, acrylic latex stain

P. Acoustic Surfaces:
1. First coat: W615 Acoustikote
2. Second coat: W615 Acoustikote as required for complete coverage

Q. Exposed (Sealed) Concrete Floors:
1. "Rainguard Regular": Coatings as required to seal the floor.

manufacturer’s recommendations.

END OF SECTION 09 9100

SECTION 10 1400 - SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide identifying devices where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:

1. Restroom signage.
2. Accessibility signage.

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

2. Section 10 1410: Project plaque.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings showing details of installation and anchorage sufficient to enable proper interface with the work of other trades.
4. Samples:
   a. Provide color chip samples to match colors specified.
   b. Provide sample of sign for example of quality and design characteristics.

1.3 QUALITY CONTROL

A. Code References:
1. Raised Characters: 11B-703.2.
2. Braille: Section 11B-703.3.
3. Visual Characters: Section 11B-703.5.
4. Pictograms: Section 11B-703.6.
5. Symbols of Accessibility: Section 11B-703.7.
6. International Symbol of Accessibility: Section 11B-703.7.2.1.
7. Inspection of new Tactile Signs per CBC 11B-703.1.1.2.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Acceptable Products: Design of plexiglass signs is based on the use of manufacturer’s standard products: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work

include, but are not limited to, the following:

1. ASI Sign Systems.
2. Inland Pacific.
3. Innerface Architectural Signage, Inc..
4. Mohawk Sign Systems.
5. Vomar Products, Inc.
6. Best Signs, Inc.

2.2 SIGNS

A. **Type "A" - Restroom Signs**:

1. Type A1: MEN - 12" equilateral triangle.
2. Type A2: WOMEN - 12" diameter circle.
3. Type A3: UNISEX - 12" diameter circle with equilateral triangle inscribed. Triangle color shall contrast with circle color. Circle color shall contrast with door color.
4. Type A4: Restroom, with raised wheelchair logo, 3/4" high raised text and braille.
   a. Braille: Contracted (Grade 2) braille symbols on sign A4 per CBC Section 11B-703.3.
5. Material:
   a. Types A1, A2, and A3: 1/4" thick acrylic plastic, 1/4" radius corners.
   b. Type A4: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
6. Color: Black with white silk screened lettering and graphic, see detail.
7. Attachment: Epoxy and vandal resistant screws.
8. Text: See graphics/text detail on the drawings.
9. Letter Style: Calibri, all capital letters.

B. **Type "B" - Room Name, Room Number, or Tactile Exit Signs:**

1. Type B1: 4"H x Length As Required (LAR).
2. Type B2: 4"H x LAR.
3. Type B3: 5-1/2"H x LAR.
4. Type B4: 4"H x LAR, text: “EXIT”
5. Material: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
6. Color: Black with white lettering.
7. Attachment:
   a. Exterior: Epoxy and minimum of 2 vandal resistant screws
   b. Interior: Epoxy
8. Letter style: Calibri, all capital letters.
9. Text: Refer to the Door Schedule and related details on the Drawings.
10. Numeral height: 2"
11. Letter height: 1".
12. Braille: Contracted (Grade 2) braille symbols on all room name and number signs per Section 11B-703.3.

C. **Type "C" - Building Access Sign:**

1. Material: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
2. Color: International Blue with white International Symbol of Accessibility logo.
3. Attachment: Epoxy with vandal resistant screws.
4. Size: 8" x 8"
5. Braille: Contracted (Grade 2) braille notation per CBC Section 11B-703.3.

2.3 BRAILLE REQUIREMENTS

A. Braille Symbols:
1. Contracted (Grade 2) braille.
2. Braille Dots:
a. Base diameter: 0.059” to 0.063”.
b. Distance between two dots in the same cell: 0.100”.
c. Distance between corresponding dots in adjacent cells: 0.300”.
d. Raise dots 0.025” to 0.037” above the background.
e. Distance between corresponding dots from one cell directly below: 0.395” to 0.400”.
f. Dots shall have domed or rounded tops.

2.4 TACTILE CHARACTER REQUIREMENTS

A. Raised Character Proportions per CBC Section 11B-703.2.4 and 11B-703.2.6:
1. Width of upper case letter "O" shall be a minimum of 60% and a maximum of 110% of the height of the upper case letter "I".
2. Stroke thickness of upper case letter "I" shall be 15% maximum of the height of the character.

B. Visual Character Proportions per CBC Section 11B-703.5.4 and 11B-703.5.7:
1. Width of upper case letter "O" shall be a minimum of 60% and a maximum of 110% of the height of the upper case letter "I".
2. Stroke thickness of upper case letter "I" shall be a minimum of 10% and a maximum of 20% maximum of the height of the character.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturers' recommendations as approved by the Architect, using only the approved mounting materials, and locating all components firmly into position, level and plumb.

B. Mounting Location and Height. Install signs on the nearest wall adjacent to the latch side of the door. Where there is no wall or space on the latch side, including at double doors, place signs on the nearest adjacent wall, preferably on the right.
1. Mount signs 48" minimum above the finish floor or ground surface, measured from the baseline of the lowest line of Braille and 60" maximum above the finish floor or ground surface measured from the baseline of the highest line of raised characters.
2. Determine mounting location such that a person may approach within 3" of signage without encountering protruding objects or standing within the swing of the door.

C. At locations where an exit sign and a room identification sign are back to back on glass, align both signs and make signs the same size.

D. At locations where a sign is mounted on glass with no opposing sign, provide blank sign of the same size to

conceal mounting adhesive.

E. Where signs are mounted on split-faced masonry, grind masonry to provide smooth surface to mount signs.

END OF SECTION 10 1400

SECTION 10 1410 - PLAQUES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide project plaque where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 10 1400: Signage.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings showing details of installation and anchorage sufficient to enable proper interface with the work of other trades.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500

B. Design is based on use of standard products manufactured by:
a. Ark Ramos.
b. Metal Arts.
c. Oregon Brass Works.

2.2 BUILDING PLAQUE

A. Provide and install a building plaque with the following attributes:
1. Plaque size: 18" x 24" bronze
2. Letter sizes: To be determined.
3. Letter style: Calibri.
4. Type border: Flat band edge (Metal Arts designation).
5. Field texture: Leatherette.
6. Color/Finish: Black oxidized field, satin polished letter faces and border, 2 coats clear metal laquer.
7. Type mounting: Concealed.
8. Text: To be determined, allow for 300 letters and numerals.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturers' recommendations as approved by the Architect, using only the approved mounting materials, and locating all components firmly into position, level and plumb.

END OF SECTION 10 1410

SECTION 10 2810 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide toilet accessories where indicated on the Drawings, as specified herein, and as needed for a complete and proper installation.

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

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit dimensioned drawings as required to depict the space required for these items, and their interface with the work of other trades.

B. Contract Closeout Submittals: Operation and Maintenance manuals in accordance with requirements of Section 01 7820.

1.3 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, submit 2 original copies of the manufacturer's 15 year mirror silver spoilage warranty.

PART 2 - PRODUCTS

2.1 TOILET ACCESSORIES

A. Basis of Design: Bobrick Contura Series.
1. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Provide all listed products by one manufacturer:

GB-1: Grab Bar constructed of 18 gauge type 304 satin-finish stainless steel, horizontal 2-wall type, concealed mounting, stainless steel, 1-1/2" outside diameter; Bobrick B-6897 .

GM-1: Float Glass Mirror; satin finish stainless steel angle frame with corners mitered, ground, and polished smooth; 1/4" thick float glass mirror with silver coating sealed with electrolytic copper plating; concealed theft resistant mounting. 15-year silver spoilage warranty; Bobrick B-290. Sizes as indicated.

PT-1: Paper towel dispenser, with Towelmate surface mounted satin-finish stainless steel; tumbler lock on top of cabinet radius contoured front door, with one piece drawn cover; Bobrick B-262.

SD-1: Liquid Soap Dispenser surface mounted; dispenses all-purpose soap corrosion resistant valves, contoured front with drawn cover satin stainless steel, with vessel attached to back; Bobrick B-4112.

SND-1: Sanitary Napkin Disposal; satin stainless steel finish with drawn cover, one piece construction, secured to cabinet with full-length stainless steel piano-hinge; Bobrick B-270.

TP-1: Toilet Paper Dispenser surfaced mounted multi-roll dispenser; with contoured front, with one piece drawn cover and theft resistant heavy duty spindles; Bobrick B-4288.

TSC-1: Toilet Seat Cover Dispenser; satin stainless steel contoured front, beveled flanges, no exposed corners or edges; Bobrick B-4221.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. All fixtures shall be provided with vandal-resistant screws and attachments.

C. General Contractor shall provide solid wood, metal or masonry backing as required for all wall-mounted fixtures.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install each item in its proper location, firmly anchored into position, level and plumb, and in accordance with the manufacturer's recommendations.

END OF SECTION 10 2810

SECTION 10 7500 - FLAGPOLES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide internal halyard flagpoles and foundations where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

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

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.
   3. Shop Drawings: Indicate typical layout including dimensions, base design, and base connection to foundation, anchoring and support system, and electrical grounding system. Submit detailed drawings of special accessory components not included in manufacturer's product data.

B. Contract Closeout Submittals: Operation and Maintenance manuals in accordance with requirements of Section 01 7820.

PART 2 - PRODUCTS

2.1 FLAGPOLES

A. Approved Manufacturers:
   1. American Flagpole Division of Kearney-National, Inc.
   2. Acme Flagpoles Company Division of Lingo, Inc.
   3. Babcock-Davis Associates, Inc.
   4. The Morgan-Francis Co., Inc.
   5. Pacific Coast Flagpole Co.
   6. Pole-Tech Co. Inc.
   7. Interstate Pole Industries.
   8. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Provide flagpoles, accessories, bases, and anchorage devices as complete units furnished by one manufacturer, and with the following attributes:
   1. Overall dimensions: 34'-0" high, with 7" butt and 3-1/2" top diameter, wall thickness of 0.188", and 42" ground set; brushed satin aluminum finish.
   2. Design:
      a. Cone tapered sections above cylindrical butt sections, manufactured from seamless aluminum tube of 6063-T6 alloy, heat treated and age hardened.
      b. Clear anodized aluminum 5" dia.ball with flush seam. Cast aluminum single stationary truck.
      c. Internal Halyard: 5/16" diameter braided polypropolene rope with 2 chrome plated bronze swivel snaphooks, plastic covered counterweight, and beaded sling.

d. Cam Cleat: Manually operated cam cleat includes a flush access door with cylinder lock and continuous piano hinge mounted at a maximum of +48" above finish grade. Operable mechanism shall not require tight grasping, pinching, or twisting to operate.
e. Collar: Spun aluminum flash collar finished to match pole.

3. Foundation Sleeve: 16 gage galvanized corrugated steel tube with 3/16" thick steel base and support plate, steel centering wedges, and lightning spike. Provide shop coat of asphaltic paint inside and outside.

C. Provide lightning protection system as standard with the approved manufacturer and as approved by governmental agencies having jurisdiction.

2.3 FOUNDATIONS

A. Provide the services of an engineer properly licensed to perform such work at the location of the Work, and design a ground set foundation for each flagpole to comply with pertinent requirements of governmental agencies having jurisdiction.

B. Provide such drawings and calculations as are required, make necessary arrangements and pay such costs as are involved, and secure approvals of governmental agencies having jurisdiction.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install the flagpoles and accessories in strict accordance with the manufacturers' recommendations as approved by the Architect, aligning plumb to a vertical tolerance of one in 1000, and adjusting operating components for optimum smoothness of operation.

END OF SECTION 10 7500

SECTION 11 6820 - EXTERIOR COURT ATHLETIC EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Provide outdoor recreation equipment where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 31 2000: Earthwork
3. Section 32 1720: Site Painting and Markings

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Submit manufacturer's recommended installation procedures.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Outdoor equipment products in this section are by LA Steelcraft. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other approved manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Acceptable manufacturers:
1. LA Steelcraft
2. Porter
3. Playground Products

2.2 BASKETBALL

A. Single standard, Model 12C56 by LA Steelcraft, 5-9/16" post, 6' extension; backboard 07 with 2" wide target and border, Model 600N goal with nylon net.
1. Footing: 30" dia. x 54" deep concrete.
2. Finish: Galvanized.
3. Post Pads: Model PP-656 by LA Steelcraft.

2.3 VOLLEYBALL

A. Volleyball Posts and Sleeves:
1. Pair 3-1/2" posts per court, with cast in sleeve for 3-1/2" O.D. post with locking and sealing steel cap and wrench (1 per set), welded bottom drain pipe, and steel rod post support.
2. Footing: 18" dia. x 39" deep, 3000 psi concrete.
3. Acceptable Products: Combination Volleyball/Badminton Post Model VBBM3-BG with Model 350E cast-in

sleeve by LA Steelcraft.

B. Volleyball Nets:
1. One net per court, 4" sq. mesh, #42 black nylon, white top, bottom and end binding, 5/32" vinyl covered aircraftt cable through top and bottom, 3000 pund break strength, with wood dowel in end binding. 32' long x 39" wide.
2. Acceptable Products: Model E-COMP-32 by LA Steelcraft

2.4 SOFTBALL

A. Backstop:
1. Permanent Backstop: Model 1235T by LA Steelcraft, with 18" dia. x 30" deep concrete footings by General Contractor.
2. Rear Panel: Series RP3-35T, by LA Steelcraft.
3. Side Panels: Pair of WP3-35T, by LA Steelcraft.
4. Protective Side Panels: 30'-0" long by 6'-0" high permanent chainlink side panels each side with 12" dia. x 24" deep concrete footings.
5. Benches: (2) 15'-0" long, Model LBA-15P by LA Steelcraft, one each side with 12" dia. x 18" deep concrete footings.

2.5 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.3 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturers' recommendations as approved by the Architect, and with the requirements of governmental agencies having jurisdiction.
B. Install equipment plumb, level, straight, square, accurately aligned, correctly located, to proper elevation, and secure.

C. Install equipment using manufacturer's supplied hardware and fasteners

D. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.

E. Remove and replace damaged components that cannot be successfully repaired, as determined by Architect.

END OF SECTION 11 6820

SECTION 21 0000 - FIRE SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 GENERAL MECHANICAL PROVISIONS:

A. The General Mechanical Provisions, Section 22 0500, shall form a part of this Section with the same force and effect as though repeated here.

1.2 SCOPE:

A. General: Provide all labor, materials and services necessary for complete, lawful and operating fire sprinkler systems as shown or noted on the drawings or as specified here.

B. Design/Calculations: The sprinkler system has been designed and sized by hydraulic calculations in accordance with 2016 NFPA No. 13 and fire authority requirements. Calculations have been included in submittals. Provide current fire flow information from flow test at nearest fire hydrant. Fire flow test shall be done within 6 months of installation of sprinkler system.

C. Preparation of Drawings and Material Data Sheets: A complete fire sprinkler submittal (drawings, specifications, materials and hydraulic calculations) has been prepared. Hydraulic calculations shall conform to 2016 NFPA 13, paragraph 23.3.5 in all respects.

D. Coordination Drawings: Contractor shall submit coordination drawings with Contractor title block to Engineer for review, in addition to materials submittals. Deviations between bid documents and coordination drawings shall be specifically noted on drawings (highlighted, clouded, etc.). Any contractor requested design changes to these documents, including layout, materials, or calculations, may be considered a substitution and shall comply with paragraph 1.4 below.

1.3 WORK SPECIFIED ELSEWHERE:

A. Electrical wiring.

B. Fire alarm system.

C. Painting of exposed piping.

1.4 DESIGN CHANGES/SUBSTITUTIONS:

A. General: Design changes or substitutions of fire sprinkler system shall be submitted to Engineer for review.

B. Significant changes in design or substitution of materials may require a construction change document, requiring resubmission to DSA/FLS, as determined by the Engineer and/or DSA District Engineer. Contractor shall bear all expenses incurred due to preparation and processing of design substitutions, up to and including submission to, and obtaining approval from, DSA/FLS. Refer to Section 23 00 00, 1.11, B, and DSA Policy PL 10-01 and Interpretation of Regulations IR A-6, available from http://www.dsa.dgs.ca.gov.

C. Any substitution of “Flexible” type piping in lieu of “Rigid” pipe or any changes to size, manufacturer or lengths of “Flexible” type piping will require resubmittal of piping plans, product data sheets and hydraulic calculations to DSA/FLS for review and approval.

PART 2 - PRODUCTS

2.1 STANDARDS:

A. All materials shall be in accordance with 2016 NFPA No.13 "Standard for the Installation of Sprinkler Systems". Underground mains shall be in accordance with 2016 NFPA No. 24 "Standard for the Installation of Private Fire Service Mains and Their Appurtenances".

2.2 PIPING MATERIALS:

A. General: The pressure rating of all piping, valves, flanges and other piping accessories shall be in accordance with code and fire authority requirements. Pressure ratings shall exceed the highest possible working pressure.

B. Piping:
1. Underground: Polyvinyl chloride, AWWA C900, with rubber ring joints, ASTM D1869, FM Class 200. Cast or ductile iron fittings, AWWA C110 or C153, Class 250 or higher, with rubber ring joints, ASTM D1869.
2. Above Grade:
a. 2" and Smaller: Threaded black steel pipe, ASTM A53, schedule 40. 175 psi WOG (min.) black cast iron threaded fittings, ANSI B16.4, UL listed. Unions shall be Class 150 malleable iron threaded, ANSI B16.3.
b. 2-1/2" and Larger: Welded or grooved black steel pipe, ASTM A53, schedule 10. Standard weight carbon steel welding fittings, ANSI B16.9. Flanges shall be steel, ANSI B16.5. Roll grooved pipe couplings may be used for assembling welded sections, Victaulic, Grinnell, Gruvlok.

C. Gate Valve:
1. 2" and Smaller: All bronze, rising stem. UL listed.
2. 2-1/2" and Larger: Iron body, bronze mounted, outside screw and yoke. UL listed. (UL listed butterfly valves may be substituted for 4" and larger gate valves above grade.)

D. Check Valve:
1. 2" and Smaller: All bronze swing check. UL listed.
2. 2-1/2" and Larger: Iron body, bronze mounted swing check. UL listed.

E. Drain Valve: All bronze angle globe valve. UL listed.

F. Anchors and Hangers: Shall comply with 2016 NFPA No. 13.

2.3 SPRINKLER HEAD:

A. Automatic sprinkler head, concealed type in areas with finished ceilings and recessed or suspended lighting, semi-recessed in areas with finished ceilings and surface lighting, upright or pendent heads elsewhere (as allowed by NFPA 13). Heads in finished areas shall be Victaulic FireLock V38 quick response concealed, Tyco RFII quick response concealed, or Globe Fire Sprinkler Corp., Quick Response GL Series Concealed Pendent, with chrome-finish metal cover plate. Heads elsewhere shall be quick response, Victaulic FireLock V27, Tyco, Model TY-FRB or Globe Fire Sprinkler Corp., Model GL Quick Response, with standard finish. UL listed. Temperature ratings shall be in accordance with NFPA No. 13. Provide extra heads (of each type installed) in accordance with code requirements. Exposed heads installed with deflector lower than 7'-6" above floor shall have wire guards.

2.4 ALARM VALVE ASSEMBLY:

A. Standard wet type alarm valve assembly complete with trim as required by the authority having jurisdiction. Provide flow switch and Electric Bell for connection to alarm system. Provide tamper switch. UL listed. Coordinate Electric Bell with Divisions 26 and 28.

2.5 FIRE HYDRANT:

A. Fire hydrant shall be in accordance with fire authority.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION:

A. General: Piping shall be concealed in walls, above the ceilings or below grade unless otherwise noted. Exposed piping shall run parallel to room surfaces; location shall be approved by the Architect. No structural member shall be weakened by cutting, notching, boring or otherwise, unless specifically allowed by structural drawings and/or specifications. Where such cutting is required, reinforcement shall be provided as specified or detailed. Depth of cover in traffic areas shall be 36 inches (minimum).
1. Installer Certification: Installation shall be performed by certified fire sprinkler fitter(s) as required by CCR, Title 19, Divisions 1, Chapter 5.5. See CAL FIRE – Office of the State Fire Marshall Information Bulletin 17-002 for more information. The Bulletin can be downloaded from the following: http://osfm.fire.ca.gov/informationbulletin/pdf/2017/IB_AESCert_final_05_25_17.pdf

B. Standards: All piping shall be installed in accordance with NFPA No. 13 "Standard for the Installation of Sprinkler Systems". Underground mains shall be installed in accordance with NFPA No. 24 "Standard for the Installation of Private Fire Service Mains and Their Appurtenances".

C. Miscellaneous:
1. Escutcheons: Provide chrome plated metal escutcheons where piping penetrates walls, ceilings or floors in finished areas.
2. Pattern: Sprinklers shall be installed in a symmetrical pattern with lighting fixtures and with ceiling pattern. Heads located in lay-in ceilings shall be centered in panel, unless shown otherwise on drawings.
3. Pipe Sleeves: All piping passing through concrete shall be provided with pipe sleeves. Allow 1" annular clearance between sleeve and pipe for piping 3" and smaller and 2" annular clearance for piping 4" and larger.
4. Access: Provide access doors as required for all valves, devices, etc.
5. Pipes Passing through Fire Rated Surfaces: Pipes passing through fire rated walls, floors, ceilings, partitions, etc. shall have the annular space surrounding the pipe, or pipe insulation sealed with fire rated materials in accordance with the requirements of 2016 CBC Section 714.
6. Concrete Thrust Blocks: Shall be constructed at all valves, tees, elbows, bends, crosses, reducers and dead ends in loose-joint pipe. Blocks shall cure a minimum of 7 days before pressure is applied. Concrete shall be 3000 psi mix.
7. Electrical Equipment: Piping shall not be run over electrical panels, motor control centers or switchboards, except where specifically allowed by CEC.

3.2 IDENTIFICATION:

A. All controls, piping, valves and equipment shall be labeled for function and service in accordance with NFPA No. 13 and No. 24.

3.3 TESTS AND ADJUSTMENTS:

A. Unless otherwise directed, tests shall be witnessed by a representative of the Architect and an inspector of the authority having jurisdiction. Contractor shall notify fire authority at least 48 hours prior to testing. At various stages and upon completion, the system must be tested in the presence of the enforcing agency. Work to be concealed shall not be enclosed until prescribed tests are made. Should any work be enclosed before such tests, the Contractor shall, at his expense, uncover, test and repair all work to original conditions. Leaks and defects shown by tests shall be repaired and the entire work retested. Test all systems in accordance with fire authority requirements and NFPA No. 13 and No. 24.

B. Backflow Preventer: All backflow preventers shall be tested according to manufacturer's recommendations and the USC Cross Connection Control and Hydraulic Research Manual (8th Edition). Testing shall be performed by an AWWA Certified Backflow Prevention Assembly Tester. Contractor shall certify in writing to the Architect the date which backflow preventers were tested and by whom test was witnessed.

3.4 CERTIFICATION:

A. At completion of the project, a Contractor’s Material and Test Certificate, indicating installation and testing in accordance with referenced standards, shall be completed. Copies shall be prepared by Contractor for the approving authorities, Owner and Contractor. Deliver certificates to Owner through Architect.

END OF SECTION 21 0000

SECTION 22 0000 - PLUMBING

PART 1: - GENERAL

1.1 GENERAL MECHANICAL PROVISIONS:

A. The General Mechanical Provisions, Section 22 0500, shall form a part of this Section with the same force and effect as though repeated here.

1.2 SCOPE:

A. Included: Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
1. Sanitary sewer system.
2. Domestic water system.
3. All equipment as shown or noted on the drawings or as specified.
4. Demolition as indicated on drawings. Where demolition is called for, remove all equipment, piping, braces, housekeeping pads, supports and related items no longer required.
5. Lead Free: All equipment, fixtures, valves and fixture stops providing water for human consumption installed after January 1, 2010, must meet the new “Lead Free” requirements for the State of California.

B. Work Specified Elsewhere:
1. Concrete and reinforcing steel unless specifically called for on the drawings or specifications.
2. Painting unless specifically called for in the drawings or specifications.
3. Carpentry.

PART 2: - PRODUCTS

2.1 PIPING MATERIALS:

A. Sanitary Sewer:
1. Soil, Waste and Vent Piping (Non-Pressurized):
a. Within Five Feet of Building Walls: Standard weight coated cast iron pipe and fittings. Plain end, CISPI 301, ASTM A888, or hub end with rubber gaskets, ASTM A74, ASTM C564. ABI, Tyler, Charlotte. Couplings shall be heavy-duty shielded couplings, Type 304 stainless steel, with neoprene gasket, ASTM C-1540. Husky HD 2000, Clamp-All 80, Mission HeavyWeight. MG Couplings are also acceptable. Size 2" and smaller above grade may be standard weight galvanized steel, ASTM A53, with coated cast iron recessed drainage fittings, ANSI B16.12. 2" and smaller exposed to view shall be galvanized steel, ASTM A53, with coated cast iron recessed drainage fittings, ANSI B16.12.
Where required by soil conditions, as determined by the method described in ASTM A74-09, Appendix X2, below grade cast iron pipe and fittings shall have 8 mil (minimum) Polyethylene Encasement (Poly Wrap), Per ANSI/AWWA C105/A21.5.
b. Outside Building: Polyvinyl chloride (PVC), SDR-35, ASTM D3034 with PVC fittings with rubber ring joints. Piping within 10 feet of water piping shall be solid wall Schedule 40 PVC, ASTM D1785, D2665, with solvent weld DWV fittings, ASTM D2665, D3311. Piping with less than 24" of cover outside building walls shall be cast iron, as specified above.
2. Cleanouts: Comparable models of Josam, Wade, Mifab or Zurn are acceptable. Grease plug prior to installation. Floor Cleanouts: Smith 4023 with nickel bronze top in finished areas; Smith 4223 in utility

areas. Wall Cleanouts: Smith 4532 with stainless steel cover and screw. Pipe Cleanouts: Iron body with threaded brass plug. Site cleanouts more than 5' outside building may be PVC with PVC plug.

3. Cleanout Box: Precast reinforced concrete. Cast iron lid marked for service. Christy F8 in foot traffic areas; G5 in roadways. Provide with PVC pipe extension down to top of pipe.

B. Water:

1. Cold Water Piping: Materials used in the water system, except valves and similar devices, shall be of like material, except where otherwise approved by Engineer and Authority Having Jurisdiction, prior to start of work.
   a. Within Five Feet of Building Walls, and All Above Grade:
      (1) Schedule 40 galvanized steel pipe, ASTM A53. 150 psi galvanized malleable iron screwed fittings, ANSI B16.3.

   -or- (2) Hard temper seamless copper, ASTM B88. Wrought copper fittings, ANSI B16.22. Type L with brazed joints (1100F, min.). 1-1/2" and smaller above grade may be soldered, 95-5 tin-antimony solder. All nipples shall be red brass (85% copper).

   b. Outside Building - Below Grade:
      (1) Same as Inside Building. Galvanized steel shall have protective coating.

   -or- (2) 3" and Smaller: Schedule 80 Polyvinyl chloride (PVC), ASTM D1785, with Schedule 80 PVC solvent weld fittings, ASTM D2466 where approved by administrative authority.

2. Valves and Specialties:
   a. General: Manufacturer's model numbers are listed to complete description. Equivalent models of Crane, Kitz, Milwaukee, Nibco, Stockham, Walworth or Watts are acceptable. All valves of a particular type or for a particular service shall be by the same manufacturer. Provide a minimum of two operating "T" handles for underground valves for each underground system where valves are required. The lengths of the handles are dependent upon the depth of the valves and the ability of the handles to fully open and/or close the valves. At least one "T" handle for each system shall be on site at the beginning of the installation of a particular system for emergencies, and the Construction Manager shall have access to these "T" handles and valves.
   b. Gate Valve: 2" and Smaller: All bronze. Non-rising stem. Threaded bonnet. Wedge disk. Malleable iron handwheel. 200 psi CWP. Nibco T-113-LF. 2-1/2" and Larger: Iron body, bronze mounted. Non-rising stem. Wedge disk. 200 psi CWP. Flanged or AWWA hub end as applicable. Nibco F-619. Underground valves shall have square operating nut.
   c. Ball Valve Full port. Lead free brass body, cap, stem, disk and ball. Screwed connection. Lever handle. PTFE seat and stem packing. Min. 400 psi CWP. CSA-US and UL listed. Nibco T-FP-600A-LF.
   d. Valve Box: Precast reinforced concrete. Cast iron lid marked for service. Christy F8 in foot traffic areas; G5 in roadways. Provide with PVC pipe extension down to top of pipe.
   e. Union: AAR malleable iron, bronze to iron ground seat. 300 psi. Unions for copper piping shall be copper or lead free cast bronze. Anvil.
   f. Valve Box: Precast reinforced concrete. Cast iron lid marked for service. Christy F8 in foot traffic areas; G5 in roadways. Provide with PVC pipe extension down to top of pipe.

2.2 PIPING INSULATION MATERIALS:

A. General: All piping insulation materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50.

B. Pre-Molded Fiberglass: Heavy density sectional pre-molded fiberglass with vapor barrier laminated all service jacket and pressure sealing vapor barrier lap. Thermal conductivity shall not exceed 0.25 Btu-in/hr-ft2-F at a mean temperature of 50F. Perm rating 0.02, ASTM E96. Puncture rating 50 Beach units,

ASTM D781. Provide 3" (min.) wide tape of same material as lap for butt joints. 1" thick. Knauf, Johns-Manville, Owens-Corning.

C. Aluminum Jacketing: Aluminum pipe and fitting jacketing. 0.016" thickness for straight pipe. 0.024" thickness for fittings. Stucco-embossed finish. Integral moisture barrier. Provide pre-fabricated aluminum strapping and seals by same manufacturer. Childers.

D. Metal Jacketing/Flashing Sealant: Childers CP-76, Foster 95-44 (gallon can quantities only; no tubes).

E. Insulating Tape: Ground virgin cork and synthetic elastomeric. Black, odorless, and non-toxic. K factor 0.43 Btu-in/hr-ft2-F or less. Non-shrinking. For outdoor use, provide protective finish by same manufacturer. Halstead.

2.3 FIXTURES:

A. General: Provide rough-in for and install all plumbing fixtures shown on drawings.

B. Schedule: Refer to Plumbing Fixture Schedule on the drawings for list of fixtures and trim. Manufacturer's model numbers are listed to complete description. Equivalent models of American Standard, Eljer, Elkay, Haws, Just, Kohler, Moen, T&S Brass, Willoughby or Zurn are acceptable.

PART 3: - EXECUTION

3.1 PIPING INSTALLATION:

A. General:
1. Piping Layout: Piping shall be concealed in walls, above the ceilings, or below grade unless otherwise noted. Exposed piping shall run parallel to room surfaces; location to be approved by Architect. No structural member shall be weakened by cutting, notching, boring or otherwise, unless specifically allowed by structural drawings and/or specifications. Where such cutting is required, reinforcement shall be provided as specified or detailed. All piping shall be installed in a manner to ensure unrestricted flow, eliminate air pockets, prevent any unusual noise, and permit complete drainage of the system. All piping shall be installed to permit expansion and contraction without strain on piping or equipment. Vertical lines shall be installed to allow for building settlement without damage to piping. Pipe sizes indicated on the drawings are nominal sizes unless otherwise noted.
2. Joints:
   a. Threaded: Pipe shall be cut square and reamed to full size. Threads shall be in accordance with ANSI B2.1. Joint compound or tape suitable for conveyed fluid shall be applied to male thread only. Joints shall be made with three threads exposed.
   b. Brazed: Filler rod shall be of suitable or the same alloy as pipe. Brazing filler metal shall have a minimum melting point of 1100F. Brazing shall be performed by a Certified Brazer as certified by an organization/institution that uses standards recognized by the American Welding Society (AWS) and meets the requirements of the ASME Boiler and Pressure Vessels Code, Section 9.
   c. Open Ends: Open ends of piping shall be capped during progress of work to preclude foreign matter.
   d. Electrical Equipment: Piping shall not be run over electrical panels, motor control centers or switchboards.
3. Fittings and Valves:
   a. Standard Fittings: All joints and changes in direction shall be made with standard fittings. Close nipples shall not be used.

b. Reducers: Pipe size reduction shall be made with bell reducer fittings. Bushings shall not be used.
c. Unions: A union shall be installed on the leaving side of each valve, at all sides of automatic valves, at equipment connections, and elsewhere as necessary for assembly or disassembly of piping.
d. Valves: All valves shall be full line size. Provide shut-off valve for each building and each equipment connection. Provide shut-off valve at each point of connection to existing piping. At equipment connections, valves shall be full size of upstream piping, except that gas valves within 18" of the point of connection to the equipment may be the same size as the equipment connection.
e. Valve Accessibility: All valves shall be located so that they are easily accessible.

4. Miscellaneous:
a. Escutcheons: Provide chrome plated metal escutcheons where piping penetrates walls, ceilings, or floors in finished areas.
b. Pipe Sleeves: All piping passing through concrete shall be provided with pipe sleeves. Allow 1" annular clearance between sleeve and pipe for piping 3" and smaller, otherwise 2" annular clearance.

B. Sanitary Sewer Piping:
1. General: Where inverts are not indicated, sanitary sewer piping shall be installed at 1/4" per foot pitch. Piping 4" and larger may be installed at 1/8" per foot pitch where structural or other limitations prevent installation at a greater pitch. Bell and spigot piping shall be installed with barrel on sand bed; excavate hole for bell.
2. Cleanouts: Install cleanouts at ends of lines, at changes of direction greater than 45 degrees, and at not greater than 100 foot intervals. Locate interior cleanouts in accessible locations and bring flush to finished surface.
3. Vents: Vents shall terminate not less than 6" above the roof nor less than 12" from any vertical surface nor within 10' of any outside air intake. Install horizontal vent lines at 1/4" per foot pitch. Offset vents 2' minimum from gutters, parapets, ridges and roof flashing.

C. Water Piping: Connections to branches and risers shall be made from top of main. Minimum pipe size shall be 1/2", unless otherwise noted. Provide shut off for each building and each connection to equipment.

D. Plastic Piping: Shall be cut square and assembled prior to solvent weld. Apply primer per manufacturer's recommendations. Coat male joint fully with solvent, make joint before solvent dries and wipe exterior clean.

3.2 PIPING INSULATION INSTALLATION:

A. Cold Water Piping-Freeze Protection: All cold water piping exposed to weather or other areas subject to freezing (i.e. ventilated attics, uninsulated exterior soffits, etc.) shall be insulated. Cover with aluminum jacketing where exposed to weather. Short lengths of pipe and valves may be wrapped with insulating tape, 50% overlap. Cover valves to stem. Apply at least two coats of protective finish where exposed to weather.

3.3 TESTS AND ADJUSTMENTS:

A. General: Unless otherwise directed, tests shall be witnessed by a representative of the Architect. Work to be concealed shall not be enclosed until prescribed tests are made. Should any work be enclosed before such tests, the Contractor shall, at his expense, uncover, test and repair all work to original conditions. Leaks and defects shown by tests shall be repaired and entire work retested. Tests may be made in sections, however, all connections between sections previously tested and new section shall be included in the new test.

B. Gravity Systems:

1. Sanitary Sewer: All ends of the sanitary sewer system shall be capped and lines filled with water to the top of the highest vent, 10' above grade minimum. This test shall be made before any fixtures are installed. Test shall be maintained until all joints have been inspected, but no less than 2 hours.

C. Pressure Systems:

1. General: There shall be no drop in pressure during test except that due to ambient temperature changes. All components of system not rated for test pressure shall be isolated from system before test is made.
2. Domestic Water Piping: Maintain 100 psig water pressure for 4 hours.
3. Backflow Preventer: All backflow preventers shall be tested according to manufacturer's recommendations and the USC Cross Connection Control and Hydraulic Research Manual (8th Edition). Testing shall be performed by an AWWA Certified Backflow Prevention Assembly Tester. Contractor shall certify in writing to the Architect the date which backflow preventers were tested and by whom test was witnessed.

3.4 DISINFECTION:

A. Disinfect all domestic water piping systems in accordance with 2016 CPC Section 609.9, and in accordance with administrative authority. Disinfection process shall be performed in cooperation with health department having jurisdiction and as required by applicable codes in presence of Inspector of Record (IOR). During procedure signs shall be posted at each water outlet stating, "Chlorination - Do Not Drink". Contractor shall notify the IOR 48 hours prior to the need for testing so the IOR can make arrangements for the testing laboratory to collect samples and test the water. Samples shall be taken at the furthest point of each building. Contractor shall obtain a copy of the test results from the Testing laboratory and shall provide copies to the Architect, IOR and Owner before project completion. If the water fails the bacteriological test, Contractor shall disinfect the piping again and pay for any retesting required, at no additional cost to owner. Contractor shall include copy of Bacteriological Test Results at closeout with operation and maintenance manuals.

END OF SECTION 22 0000

SECTION 22 0500 - GENERAL MECHANICAL PROVISIONS

PART 1: - GENERAL

1.1 GENERAL CONDITIONS:

A. The preceding General and Special Conditions and Divisions 00 and 01 requirements shall form a part of this Section with the same force and effect as though repeated here. The provisions of this Section shall apply to all of the Sections of Divisions 21 and 22 of these Specifications and shall be considered a part of these sections.

1.2 CODES AND REGULATIONS:

A. All work and materials shall be in full accordance with current rules and regulations of all applicable codes. Nothing in these Drawings or Specifications is to be construed to permit work not conforming to these codes. Should the Drawings or Specifications call for material or methods of construction of a higher quality or standard than required by these codes, the Drawings and Specifications shall govern. Applicable codes and regulations include, but are not necessarily limited to, the following:

1. California Code of Regulations (CCR):
    a. Title 8, Industrial Relations
    b. Title 24, Part 1, Administrative Regulations
    c. Title 24, Part 6, California Energy Code, 2016 Edition
    d. Title 24, Part 11, California Green Building Code, 2016 Edition
2. California Building Code - CBC - 2016
3. California Plumbing Code - CPC - 2016
4. California Fire Code - CFC - 2016
5. California Electrical Code - CEC - 2016
6. American Gas Association - AGA
7. American National Standards Institute - ANSI
8. American Society of Mechanical Engineers - ASME
9. American Society for Testing and Materials - ASTM
10. American Water Works Association - AWWA
11. Cast Iron Soil Pipe Institute - CISPI
12. National Electrical Manufacturers Association - NEMA
13. National Fire Protection Association - NFPA
14. National Sanitation Foundation - NSF
15. Occupational Safety and Health Act - OSHA
16. Plumbing and Drainage Institute - PDI
17. Underwriters' Laboratory - UL

1.3 PERMITS AND FEES:

A. The Contractor shall take out all permits and arrange for all tests in connection with his work as required by Section 01 1100. All charges shall be included in the work.

1.4 COORDINATION OF WORK:

A. Layout of materials, equipment and systems is generally diagrammatic unless specifically dimensioned. Some work may be shown offset for clarity. The actual locations of all materials, piping, ductwork, fixtures, equipment, supports, etc. shall be carefully planned prior to installation of any work in order to avoid all interference with each other, or with structural, electrical, architectural or other elements. Verify the proper voltage and phase of all equipment with the electrical plans. If discrepancies are discovered between

drawing and specification requirements, the more stringent requirement shall apply. All conflicts shall be called to the attention of the Architect and the Engineer prior to the installation of any work or the ordering of any equipment. No work shall be prefabricated or installed prior to this coordination. No costs will be allowed to the Contractor for any prefabrication or installation performed prior to this coordination.

1.5 GUARANTEE:

A. Guarantee shall be in accordance with the General Conditions. These Specifications may extend the period of the guarantee for certain items. Where such extensions are called for, or where items are normally provided with guarantee periods in excess of that called for in the General Conditions, the certificate of guarantee shall be furnished to the Owner through the Architect. Equipment that is started and operated prior to acceptance shall have the guarantee extended to cover that period. Owner guarantee shall start at acceptance.

1.6 QUIETNESS:

A. Piping, ductwork and equipment shall be arranged and supported so that vibration is a minimum and is not transmitted to the structure.

1.7 DAMAGES BY LEAKS:

A. The Contractor shall be responsible for damages caused by leaks in the temporary or permanent piping systems prior to completion of work and during the period of the guarantee, and for damages caused by disconnected pipes or fittings, and the overflow of equipment prior to completion of the work.

1.8 EXAMINATION OF SITE:

A. The Contractor shall examine the site, compare it with Plans and Specifications, and shall have satisfied himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made in his behalf for any extra expense to which he may be put due to failure or neglect on his part to make such an examination.

1.9 COMPATIBILITY WITH EXISTING SYSTEMS:

A. Any work which is done as an addition, expansion or remodel of an existing system shall be compatible with that system.

1.10 MATERIALS AND EQUIPMENT:

A. Materials and equipment shall be new unless otherwise noted. Materials and equipment of a given type shall be by the same manufacturer. Materials and equipment shall be free of dents, scratches, marks, shipping tags and all defacing features at time of project acceptance. Materials and equipment shall be covered or otherwise protected during construction as required to maintain the material and equipment in new factory condition until project acceptance.

1.11 SUBMITTALS:

A. Shop Drawings: Within 30 days of contract award, the Contractor shall submit six copies of shop drawings for all materials, equipment, etc. proposed for use on this project (this includes deferred approval items). Material or equipment shall not be ordered or installed until written review is processed by the Engineer. Any item omitted from the submittal shall be provided as specified without substitution.
All shop drawings must comply with the following:

1. Shop drawings are required for all material and equipment items and shall include manufacturer's name and catalog numbers, dimensions, capacities, performance curves, and all other characteristics and accessories as listed in the specifications or on the drawings. Descriptive literature shall be current factory brochures and submittal sheets. Capacities shall be certified by the factory. FAX submittals are not acceptable.
2. All shop drawings shall be submitted at one time in a neat and orderly fashion in a suitable binder with title sheet including Project, Engineer and Contractor, table of contents, and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on drawings.
3. All capacities, characteristics, and accessories called for in the specifications or on the drawings shall be high-lighted, circled or underlined on the shop drawings. Calculations and other detailed data indicating how the item was selected shall be included for items that are not scheduled. Data must be complete enough to permit detailed comparison of every significant characteristic which is specified, scheduled or detailed.
4. Drawings shall be submitted in both hard copy and electronic form, electronic files shall be in their native format (i.e. DWG for AutoCAD, RVT for Revit, etc).
5. Electronic Submittals: Where allowed by Division 01, electronic submittals are acceptable providing the following requirements are met. Electronic submittals which do not comply with these requirements will be rejected.
    a. Submittal shall be in PDF format, with bookmarks for table of contents and each tab, and sub-bookmarks for each item.
    b. All text shall be searchable (except text that is part of a graphic).
    c. Submittal shall include all items noted in 1 through 3 above, except a binder is not required.
    d. Electronic submittals shall be processed through normal channels. Do not submit directly to the Engineer unless the Engineer is the prime consultant for the project.
    e. Contractor shall provide Owner and Owner’s Representative with hard copies of the final submittal. Coordinate exact number required with Owner through Architect/Engineer.

B. Substitutions: Manufacturers and model numbers listed in the specifications or on the drawings represent the standard of quality and features desired (where equipment is scheduled on the drawings, any equipment submitted other than scheduled equipment is considered a substitution). Unless otherwise noted, alternate manufacturers may be submitted for review by the Engineer. Calculations and other detailed data indicating how the item was selected shall be included. The Contractor shall assume full responsibility that substituted items or procedures will meet the specifications and job requirements and shall be responsible for the cost of redesign and modifications to the work caused by these items. At the Engineer's request, furnish locations where equipment similar to the substituted equipment is installed and operating along with the user's phone numbers and contact person. Satisfactory operation and service history will be considered in the acceptance or rejection of the proposed substitution.

C. Review: Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the responsibility of the Contractor to provide all materials, equipment and installation in accordance with the drawings and specifications. The Contractor shall agree that shop drawing submittals processed by the Engineer are not Change Orders; that the purpose of shop drawing submittals by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept, that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use. The Contractor shall agree that if deviations, discrepancies or conflicts between shop drawings and design drawings and specifications are discovered either prior to or after shop drawing submittals are processed by the Engineer, the design drawings and specifications shall control and shall be followed. If a resubmittal is required, submit a complete copy of the Engineer's review letter requiring such with the resubmittal.

1.12 MANUFACTURER'S RECOMMENDATIONS:

A. All material, equipment, devices, etc., shall be installed in accordance with the recommendations of the manufacturer of the particular item. The Contractor shall be responsible for all installations contrary to the manufacturer's recommendations. The Contractor shall make all necessary changes and revisions to achieve such compliance. Manufacturer's installation instructions shall be delivered to and maintained at the job site through the construction of the project.

1.13 SCHEDULING OF WORK:

A. All work shall be scheduled subject to the review of the Architect, Engineer and the Owner. No work shall interfere with the operation of the existing facilities on or adjacent to the site. The Contractor shall have at all times, as conditions permit, a sufficient force of workmen and quantity of materials to install the work contracted for as rapidly as possible consistent with good work, and shall cause no delay to other Contractors engaged upon this project or to the Owner.

1.14 OPENINGS, CUTTING AND PATCHING:

A. The locations and dimensions for openings through walls, floors, ceilings, foundations, footings, etc. required to accomplish the work under this Specification Division shall be provided under this Division. Except as noted below, the actual openings and the required cutting and patching shall be provided by other Divisions. Coring through existing concrete or masonry walls, floors, ceilings, foundations, footings, etc., and saw cutting of concrete floors or asphaltic concrete required to accomplish the work under this Specification Division shall be provided under this Division. Patching of these surfaces shall be provided by other Divisions. Cutting or coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Architect.

1.15 EXCAVATION AND BACKFILL:

A. General: Barrel of pipe shall have uniform support on sand bed. Sand shall be free from clay or organic material, suitable for the purpose intended and shall be of such size that 90 percent to 100 percent will pass a No. 4 sieve and not more than 5 percent will pass a No. 200 sieve. Unless otherwise noted, minimum earth cover above top of pipe or tubing outside building walls shall be 24", not including base and paving in paved areas.

B. Excavation: Width of trenches at top of pipe shall be minimum of 16", plus the outside diameter of the pipe. Provide all shoring required by site conditions. Where over excavation occurs, provide compacted sand backfill to pipe bottom. Where groundwater is encountered, remove to keep excavation dry, using well points and pumps as required.

C. Backfill:
1. 6" Below, Around, and to 12" Above Pipe: Material shall be sand. Place carefully around and on top of pipe, taking care not to disturb piping, consolidate with vibrator. Native soil may be used where allowed by Geotechnical (Soils) Report. Where native soil is used, trenching for gravity drain pipe shall be done using a laser-level and trencher.
2. One Foot Above Pipe to Grade: Material shall be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to review by Engineer.

D. Compaction: Compact to density of 95% within building and under walkways, driveways, traffic areas, paved areas, etc. and to 90% elsewhere. Demonstrate proper compaction by testing at top, bottom and one-half of the trench depth. Perform these tests at three locations per 100' of trench.

1.16 PROTECTIVE COATING FOR UNDERGROUND PIPING:

A. All ferrous pipe below grade (except cast iron) shall have a factory applied protective coating of extruded high density polyethylene, 35 to 70 mils total thickness, X-Tru-Coat, Scotchkote. All fittings and areas of damaged coating shall be covered with two layer double wrap of 10 mil polyvinyl tape to total thickness of 40 mils. Johns-Manville. Protective coating shall be extended 6" above surrounding grade.

1.17 CONCRETE ANCHORS:

A. Steel bolt with expansion anchor requiring a drilled hole - powder driven anchors, adhesive anchors and concrete screws are not acceptable. Re-use of screw anchor holes shall not be permitted. Minimum concrete embedment shall be 4-1/2 diameters. Minimum spacing shall be 12 diameters center to center and 6 diameters center to edge of concrete. Post-installed anchors in concrete used for component anchorage shall be pre-qualified for seismic application in accordance with ACI 355.2 and ICC-ES AC193. Post-installed anchors in masonry used for component anchorage shall be pre-qualified for seismic applications in accordance with ICC-ES AC01. Maximum allowable loads for tension and shear shall be as determined by Calculation in compliance with ACI 318-14, Chapter 17, and the anchor’s ICC or IAPMO evaluation report. Hilti, Powers, Red Head.

1.18 SEISMIC SUPPORT AND RESTRAINTS:

A. Fire Systems: Shall be as detailed on drawings and shall comply with 2016 NFPA #13 and with CBC Section 1613A.

1.19 ASBESTOS CONTAINING MATERIALS:

A. No materials or material coatings containing asbestos shall be allowed on this project.

1.20 SYSTEM IDENTIFICATION:

A. Above Grade Piping: Provide markers on piping which is either exposed or concealed in accessible spaces. For piping systems, other than drain and vent lines, indicate the fluid conveyed or its abbreviation, either by pre-printed markers or stenciled marking, and include arrows to show direction of flow. Pre-printed markers shall be the type that wrap completely around the pipe, requiring no other means of fastening such as tape, adhesive, etc. Comply with ANSI A13.1 for colors. Locate markers at ends of lines, near major branches and other interruptions including equipment in the line, where lines pass through floors, walls or ceilings or otherwise pass into inaccessible spaces, and at 50' maximum intervals along exposed portions of lines. Marking of short branches and repetitive branches for equipment connections is not required.

B. Below Grade Piping: Bury a continuous, pre-printed, bright-colored, metallic ribbon marker capable of being located with a metal detector with each underground pipe. Locate directly over buried pipe, 6" to 8" below finished grade.

C. Valves: Provide stamped brass valve tags with brass hooks or chains on all valves of each piping system, excluding check valves, valves within equipment, faucets, stops and shut-off valves at fixtures and other repetitive terminal units. Prepare and submit a tagged-valve schedule, listing each valve by tag number, location and piping service. Deliver to Owner through Architect.

1.21 CLEANING:

A. Progressively and at completion of the job, the Contractor shall thoroughly clean all of his work, removing all debris, stain and marks resulting from his work. This includes but is not limited to building surfaces, piping, equipment and ductwork, inside and out. Surfaces shall be free of dirt, grease, labels, tags, tape, rust, and all foreign material.

B. At the end of each work day, the Contractor shall cover all open ends of piping with protective plastic.

1.22 ACCEPTANCE TESTING:

A. The Contractor shall perform, document and submit all acceptance testing as required by California Code of Regulations, Title 24, and as noted on the Certificate of Compliance form (MECH-1C), where applicable. Submit a copy of the documentation to the Engineer for review (hardcopy or electronic), prior to submitting to Administrative Authority.

1.23 OPERATION AND MAINTENANCE INSTRUCTIONS:

A. Printed: Three copies of Operation and Maintenance Instructions and Wiring Diagrams for all equipment and parts list for all faucets, trim, valves, etc. shall be submitted to the Engineer. All instructions shall be clearly identified by marking them with the same designation as the equipment item to which they apply (e.g. AC-3). All Wiring Diagrams shall agree with reviewed Shop Drawings and indicate the exact field installation. All instructions shall be submitted at the same time and shall be bound in a suitable binder with tabs dividing each type of equipment (e.g. Pumps, Fans, Motors, etc.). Each binder shall be labeled indicating "Operating and Maintenance Instructions, Project Title, Contractor, Date" and shall have a Table of Contents listing all items included.

B. Verbal: The Contractor shall verbally instruct the Owner's maintenance staff in the operation and maintenance of all equipment and systems. The controls contractor shall present that portion of the instructions that apply to the control system. The Engineer's office shall be notified 48 hours prior to this meeting.

1.24 RECORD DRAWINGS:

A. The Contractor shall obtain one set of blue line prints for the project, upon which a record of all construction changes shall be made. As the work progresses, the Contractor shall maintain a record of all deviations in the work from that indicated on the drawings. Final location of all underground work shall be recorded by depth from finished grade and by offset distance from permanent surface structures, i.e. building, curbs, walks. In addition, the water, gas, sewer, underfloor duct, etc. within the building shall be recorded by offset distances from building walls. As part of the Contractor’s overhead expense, request a full set of reproducible drawings to transfer the changes, notations, etc. from the marked-up prints to the reproducible drawings. The record drawings (marked-up prints and reproducibles) shall be submitted to the Engineer for review.

PART 2: - PRODUCTS (not used)

PART 3: - EXECUTION (not used)

END OF SECTION 22 0500

JOB:	PUSD-PVLLE-ALTERNATIVE EDUCATION COMPLEX
SPEC:	26 6000 – GENERAL CONDITIONS FOR ELECTRICAL WORK
DATE:	06-20-2019
JOB CAPT:	JEFF JACKSON
FILE NAME:	SPEC\PS\JEFF\MANGINI\PUSD\ALTERNATIVE ED COMPLEX\26 6000.doc
RSAI NO:	19021

SECTION 26 6000 - GENERAL CONDITIONS FOR ELECTRICAL WORK

PART 1 - ORDINANCES, REGULATIONS AND CODES

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary conditions, Divisions 0 and 1, specifications apply to work of this section.

1.2 All work must conform to the requirements which fall within the scope of the regulations in the Codes or under the jurisdiction of any of the governing bodies listed.

A. The California Code of Regulations, Titles 19 thru 24.

B. The California Electrical Code as applicable under current state and local regulations (latest edition and supplements).

C. State Board of Health.

D. CAL-OSHA Regulations.

E. Nothing in these Specifications or shown on the plans, shall relieve the Contractor from full compliance with applicable portions of any of the above regulations pertaining to work which he is installing under this Contract.

1.3 PERMITS AND FEES

Pay for and obtain all permits, inspection fees, etc., as required for the completion of all work included in this Contract. Any inspection Certificates required shall be obtained and delivered to the Owner.

1.4 EXAMINATION OF DRAWINGS AND SITE

Before submitting his bid, the Contractor shall carefully examine the Architectural, Structural, Mechanical and Plumbing Drawings for this work, along with the Specifications for same in addition to the drawings and specifications governing the work of this trade. He shall also visit the site of the proposed construction and familiarize himself with all the site conditions. No subsequent allowances will be made to the Contractor because of his negligence in complying with the above or his alleged inability to understand the requirements.

1.5 CONDUCT OF THE WORK

The Contractor shall maintain on the job a competent foreman or a superintendent at all times to superintend the work.

1.6 CONTRACTOR'S RESPONSIBILITY

The Contractor shall be responsible for the safety and good condition of all materials and equipment until final acceptance by the Owner. He shall erect and maintain suitable barriers, protective devices, lights and warning signs where required for the protection of the public and employees about the buildings. He shall be fully responsible for any loss or injury to persons or property resulting from his neglect or the carelessness and neglect of his employees.

1.7 SUBMITTALS

A. Shop drawings of power and signal service and distribution equipment and lighting fixture catalog cuts shall be submitted for approval in seven (7) bound copies.

B. All shop drawings shall be submitted at one time in a neat and orderly fashion in a suitable binder with title sheet including Project, Engineer and Contractor, table of contents and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identical by the mark number as indicated on drawings.

C. Equipment or material furnished or incorporated in construction without prior approval of the Architect may be rejected and if rejected shall be removed from the structure and replaced with approved equipment or material at the Contractor's expense.

1.8 RECORD DRAWINGS

See General Conditions.

1.9 CATALOG DATA AND OPERATING INSTRUCTIONS

Upon completion of the work in this Contract, the Architect shall be furnished with a complete set of catalog data which describes each piece of equipment installed under this Contract. The catalog shall be bound in a set and shall be clearly labeled as to each item of equipment used.

PART 2 - LOCATIONS

2.1 The work as laid out is to some extent diagrammatic, and the location thereon indicated may be approximate only. The Contractor, therefore, shall install all the equipment, apparatus, conduit runs and the like as follows:

A. Adhere to the location indicated as far as possible.

B. Maintain ample head room in all rooms and passageways, clearance around all apparatus and equipment and under pipe lines for unrestricted passage and for easy servicing of all apparatus, equipment, devices and the like.

C. Verify the exact locations of all fixtures and other apparatus or devices as indicted on the drawings. In the event these drawings do not sufficiently indicate the locations for all such fixtures, apparatus or devices, the Contractor shall obtain the exact locations from the Architect.

2.2 VERIFICATION OF DIMENSIONS

A. The Contractor shall, as work progresses, verify the dimensions of the spaces available for the installation of the work and he shall assume full responsibility for the proper locations and grading of each portion thereof.

B. Where the work requires connections to be made to equipment that is furnished and set in place by others, the Contractor shall obtain exact locations and rough-in dimensions from the manufacturer of such equipment and he shall install the connections in a neat and workmanlike manner.

2.3 CUTTING AND PATCHING

This Contractor shall do all cutting and patching of the work for the installation of the equipment and materials as approved by the Architect and/or Engineer. All patching shall accurately match the adjoining work.

2.4 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. Water or air pressure jetting are not permitted, unless they comply with the following requirements:

1) All surfaces of the hole can be visually inspected with 6' maximum length.

2) All objects shall be supported continuously to prevent sagging.

3) The hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing Lab technician.

2.5 FOUNDATIONS AND SUPPORTS

This Contractor shall provide all foundations, supports and hangers, etc., as required to install the equipment as specified or shown on the drawings. All equipment shall be supported, braced and cross-braced in such manner as to prevent sway and/or lateral movement.

2.6 EXCAVATION AND BACKFILLING

A. Excavating required for the installation of the work shall be done by this Contractor. Underground lines outside the buildings shall be installed with a minimum cover of 24" except depth of utility services shall comply with respective utility company requirements.

B. The conduit shall be laid on material described below to afford bearing for the full length of the conduit. Any part of the trench excavated below grade shall be corrected with thoroughly compacted material approved by the Architect.

C. When the bottom uncovered at subgrade is soft and, in the opinion of the Architect, cannot support the conduit, a further depth shall be excavated and refilled to conduit foundation grade as required by the Architect.

D. Backfill:

1) 6" Below, Around, and to 6" Above Conduit: Material shall be sand. Place carefully around and on top of conduit, taking care not to disturb conduit. Consolidate with vibrator.

2) 6" Above Conduit to Grade: Material shall be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to review by Engineer.

E. No excavation below the level of, or adjacent to, foundations of footings shall be made except in a manner approved by the Architect.

F. A red or yellow tracer tape stating "CAUTION ELECTRIC LINE BURIED BELOW" shall be installed 12" above conduit, full length of trench.

G. Electrical conduit shall not be run in excavations provided for plumbing or heating pipes, unless separated by a minimum of 12 inches.

H. Verify location of all underground lines with Owner and utility companies before starting excavation. If any utility company facilities are identified and located within the perimeter of the building, the Contractor shall stop work, promptly notify the Architect and secure his instructions.

I. Ten (10) days before doing any excavation or trenching, contact "Underground Service Alert," 1-800-642-2444, advise them of work schedule and comply with their recommendations.

2.7 CLEANING UP

A. The Contractor shall keep the premises free from accumulations of his waste material or rubbish. At the completion of the work, he shall remove all his rubbish, tools, scaffolding and surplus materials from and about the buildings, leaving the premises in a clean condition.

B. All exterior surfaces of exposed equipment and material shall be thoroughly cleaned of all dirt, cement, plaster and other debris, including the exterior surfaces of all conduit, conduit fittings, conduit hangers, insulation and the like.

C. All surfaces to be painted shall be carefully wiped or otherwise cleaned; cracks and corners scraped out clean, grease and oil spots removed so that surfaces may receive paint without further preparation.

D. All fixtures and plated materials shall be thoroughly cleaned and polished.

2.8 DAMAGE BY BREAKS

The Contractor shall be responsible for all damage to any part of the premises caused by breaks in conduit or fixtures furnished and/or installed by him under this specification for a period of one (1) year from date of acceptance of the project by the Owner.

2.9 SITE CONDITIONS

A. Where existing utilities are shown on the plans, extreme care shall be exercised in excavating near these utilities to avoid any damage thereto, and the Contractor shall be held responsible for any such damage caused by this operation.

B. The general location and arrangement of conduit, equipment apparatus, etc., as shown in the drawings or herein specified and all installations shall be made in accordance therewith. Information on the drawings relative to existing services is approximate only. Minor deviations required to conform to actual locations shall be made without additional cost to Owner.

C. Should existing utilities, not shown on the plans, be found during excavations, or identified, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage there arising from his operations after discovery of such utilities not shown on the plans. These utilities shall be removed or relocated as directed by the Architect. An equitable adjustment in the Contract will be made for the additional work involved.

D. The Contractor shall use special precautions where excavations are made in the areas near electrical ducts since they may be high voltage ducts. All such ducts shall be exposed by careful hand excavation so as not to damage the ducts or cause injury to personnel and shall be suitable marked with warning signs, barricades, etc. as required.

2.10 STANDARD PRACTICE

All work not shown in complete details shall be installed in conformance with the best standard practice for the trade.

2.11 INTENT

It is the intention to provide systems that are complete in every respect without further cost to the Owner. Anything not shown in drawings, or indicated in the specifications, but required for complete operating systems shall be included as part of this Contract. This shall include all connections to existing services.

2.12 SPECIAL NOTE

Attention of Contractor is hereby called to all work covered by notes on the drawings. Work covered by notes must be furnished and installed whether it is specifically mentioned in these specifications or not.

2.13 GUARANTEE

Except as otherwise specified, all materials, apparatus equipment furnished and installed under the Electrical Section of this specification shall be new and free from all defects. Should any trouble develop within a period of one (1) year from date of acceptance of the work, due to inferior or faulty material and/or workmanship, the trouble shall be corrected and material and equipment replaced by the Contractor without expense to the Owner.

2.14 SERVICES

The location of any existing utility services shown on the drawings is approximate and shall be checked by this Contractor for exact location. Refer to “EXCAVATION AND BACKFILLING” for additional requirements.

2.15 LIST OF MATERIALS

Within thirty (30) calendar days after the award of the Contract, the Contractor shall submit seven (7) copies of a complete list of materials to be installed under this Contract, giving, in the case of each item of material to be used, the name of the article. All substitutes must be approved by the Architect as stipulated in Section 01620.

2.16 ACCESS OPENINGS

It shall be the responsibility of the Contractor to provide sufficient and convenient access openings, panels, etc., in the building construction where required for the maintenance of, installation and/or removal of all equipment, or other items of the various systems and equipment.

2.17 PURCHASE ORDERS AND ACCEPTANCE

A. The Contractor shall file with the Architect two (2) certified copies of all purchase orders, for materials, equipment, appliances and rentals thereof within two (2) weeks from date of Notice to Proceed with the Contract if requested by the Architect.

B. The Contractor shall file with the Architect two (2) certified copies of acceptance of purchase orders for materials, equipment, and appliances by the manufacturer, distributor or wholesale house within six (6) weeks from the date of Notice to Proceed with the Contract if requested by the Architect.

C. Failure to provide same within the stipulated time shall be deemed sufficient cause for the Architect to withhold certificates of payment for work completed or materials and equipment provided by the Contractor or his subcontractors toward the completion of their Contracts.

END OF SECTION 26 6000

JOB:	PUSD-PVLLE-ALTERNATIVE EDUCATION COMPLEX
SPEC:	26 7000 - BASIC ELECTRICAL MATERIALS AND METHODS
DATE:	06-20-2019
JOB CAPT:	JEFF JACKSON
FILE NAME:	SPEC\PS\JEFF\MANGINI\PUSD\ALTERNATIVE ED COMPLEX\26 7000.doc
RSAI NO:	19021

SECTION 26 7000 – BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary conditions, Divisions 0 and 1 and Section 26 6000 specifications apply to work of this section.

1.2 SCOPE OF WORK

This portion of the work includes the furnishing of all labor and materials necessary for the complete wiring system to outlets and all equipment shown on the drawings or covered by this Section of the Specifications and other Division 26 and Division 28 sections of the Specifications. In general, the work includes the following:

A. Complete system of branch circuit wiring, conduit and distribution equipment for lights, receptacles and power.

B. Furnish and install lighting panelboards, lamps, lighting fixtures, wall switches, convenience outlets, etc. as shown on drawings.

C. All hangers, anchors, sleeves, chases and supports for fixtures, all electrical equipment and materials.

D. Furnish, install and connect wire, conduit and switches, etc. required for other equipment covered by other sections of these Specifications.

E. All excavating and backfill as required for electrical work.

F. The patching and repair of all work modified or damaged by the installation of work under this Contract.

G. Outlet boxes and conduit system for telecommunications (voice and data).

H. Demolition work.

I. Terminal cabinets and backboards.

J. The Contractor shall furnish and install all work necessary to make complete systems, whether or not such details are mentioned in these Specifications or shown on the drawings, but which are necessary in order to make complete working systems, excepting only those portions that are specifically mentioned therein or plainly marked on the accompanying drawings as being installed by other Contractors.

K. Electrical Contractor must coordinate his work with the work of other trades so as to provide raceways, conductors and outlets in the correct location for the equipment served, including all built-in appliances, mechanical, and signal equipment and connect same. Electrical Contractor must provide power of the correct voltage and phase to each item of equipment.

L. Before construction starts, the Electrical Contractor shall arrange a coordination meeting with the General Contractor and all other subcontractors supplying equipment that requires electrical connections. All electrical requirements shall be verified and any problems shall be immediately reported to the Architect. Equipment items to verify shall include, but not be limited to: Voltage, amps, phase, location, orientation, space requirements, type of connection, starter and disconnect location and provision, control system operation and requirements, etc.

M. The above list is given for the convenience of the Contractor and is not considered all-inclusive.

1.3 TEMPORARY CONSTRUCTION POWER

A. Provide a temporary construction power system that is adequate for this project. Coordinate requirements and details with the General Contractor. All 120V, 15A and 20A receptacles shall have ground fault circuit interrupter protection.

PART 2 - WORK NOT INCLUDED

2.1 The furnishing and installation of motors.

2.2 Access panels.

PART 3 - MATERIALS

3.1 All materials, appliances and equipment except that furnished by the Owner shall be new, bear U.L. Label and of the make, brand or quality specified or as accepted by the Architect as herein provided. This shall also apply to all parts of the work whether or not this particular paragraph is referred to by number.

3.2 All apparatus, conduit systems, etc., shall be installed and interconnected so as to form complete systems as herein specified and/or shown on all the accompanying drawings. This Contractor shall furnish and install all work necessary to make complete working systems, excepting only those portions that are specifically mentioned herein or plainly marked on accompanying drawings as being furnished by other contractors.

3.3 MAIN SWITCHBOARD

A. Is existing to remain.

B. New circuit breakers for main switchboard shall be molded case type, quick-make, quickbreak, with thermal magnetic trip. Size and rating shall be as shown on the drawings. All circuit breakers shall be bolt-on type. Two and three pole breakers shall have integral internal common trip. All circuit breakers, rated 100 amps and larger, shall be equipped with adjustable instantaneous trip settings. All circuit breakers, rated 100 amps and larger, shall be equipped with adjustable instantaneous trip settings.

C. All new circuit breakers in main switchboard shall have short circuit current interrupting capacity exceeding the maximum available at service transformer. Contractor shall be responsible for obtaining fault current information from serving Utility Company prior to fabrication of main switchboard.

3.4 PANELBOARDS

A. The new panelboards shall be constructed in accordance with the standard set up by the Underwriters' Laboratories, Inc., and as manufactured by Square "D", General Electric, Eaton, Siemens or approved equal, and each shall contain the number and type of circuit breakers as indicated on the drawings. All circuit breakers, rated 100 amps and larger, shall be sub-feed type and equipped with adjustable instantaneous trip settings.

B. The new panelboards shall be equipped with a hinged lockable door, piano hinged trim and typewritten circuit directory. All finish in offices, corridors or areas subject to public view shall be prime coat for finish coat by painter. In storage rooms, equipment rooms, etc., finish shall be standard factory gray Hammertone. Provide a flush lock on all panelboards.

C. Provide an engraved Bakelite nameplate, fastened with screws or rivets to the face of each panelboard, which will identify it.

D. Seven copies of detailed construction drawings for the panelboards and terminal cabinets shall be submitted to the Architect for Approval before their construction is started.

3.5 TERMINAL CABINETS

A. Terminal cabinets shall be flush or surface mounted as indicated with hinged doors and lock. The exterior finish to be same as for panelboards. Provide ¾" plywood backing inside of cabinet. Provide proper number of terminals in cabinets as required.

B. Provide a Bakelite nameplate fastened with screws or rivets to the face of each terminal cabinet, which will identify it.

C. Provide circuit directory and holder on inside of door with one line for each conductor entering and each conductor leaving cabinet.

3.6 RACEWAYS AND FITTINGS

A. Shall be as manufactured by Allied Tube and Conduit Corporation, AFC Cable Systems, Inc., Carlon, Cantex, PW Pipe or approved equal.

B. Galvanized rigid steel conduits (RSC) may be used in all above ground locations.

C. For underground runs in direct contact with earth, conduit shall be PVC.

D. Galvanized electrical metallic tubing (EMT) may be used in indoor dry locations in which it is:

1) Not subject to physical damage.
2) Not in direct contact with earth.
3) Not in concrete slabs.
4) Not in hazardous areas.
5) On roof or walk cover when specifically shown on drawings.
6) In masonry walls, not in same cells as rebars.

E. Non-metallic rigid conduit shall be PVC Schedule 40 and may be used:

1) Underground.

F. Flexible steel conduit may be used in dry locations for final connections to:

1) Motors, transformers and other mechanical equipment, not to exceed 18 inches.
2) Lighting fixtures, not to exceed 72 inches.
3) Facilitate wiring in tight locations, when approved by Engineer.

G. Flexible aluminum conduit may be used in walls or in attics to facilitate wiring in tight locations, when approved by the Engineer.

H. Liquidtight flexible steel conduit shall be used in outdoor or wet locations for final connection to motors or other mechanical equipment, not to exceed 18 inches.

I. Fittings:

1) For rigid and intermediate steel conduits, fittings shall be:

- Galvanized rigid steel threaded type.
- Provide insulated grounding bushings at switchboard enclosures and panel enclosures for feeders.

2) For electrical metallic tubing (EMT), fittings shall be:

- Zinc plated steel set screw type in dry locations.
- Zinc plated steel compression type for conduits larger than 1”, in wet locations and in masonry walls.
- All connectors shall have an insulated throat.

3) For non-metallic conduits, fittings shall be PVC Schedule 40 type. Use PVC schedule 40 adapters at all boxes and panelboards

4) Brush or dauber apply PVC cement.

5) For liquidtight flexible metallic conduits, fittings shall be zinc plated steel/malleable iron compression type.

6) Use of the following is prohibited:

- Crimp-on, tap-on or indenter type fittings.
- Spray (aerosol) PVC cement.

3.7 PULL BOXES

A. Pull Boxes shall meet all code requirements as to size for conduits terminating therein and to thickness of material used in fabrication.

B. Fabricated sheet steel pull boxes shall be installed only in dry, protected locations and shall be furnished with knockouts and removable screw cover. Box shall be finished

with one coat of zinc chromate and a coat of primer sealer and where exposed to public view shall be painted to match the surrounding surface.

C. Weatherproof sheet steel pull boxes shall be fabricated of code gauge galvanized sheet steel with two coats of rust resistant finish and shall be furnished with gasket and made completely weathertight.

D. Approved manufacturers for metal boxes are Cooper B-Line, Milbank, Hoffman or approved equal.

E. Weatherproof concrete pull boxes, junction boxes and telephone boxes shall be manufactured by Christy Concrete Products, Utility Vault or approved equal. All pull boxes shall be H/20 rated and be equipped with H/20 rated galvanized steel checker plate cover with the inscription “Electric, Lighting, Fire Alarm or Signal”.

3.8 OUTLET BOXES

A. All outlet boxes shall be standard one or two piece galvanized knockout outlet boxes. Raco, Appleton, Thomas and Betts or approved equal.

B. All outlet box covers, rings or other fittings shall be standard galvanized. Raco, Appleton, Thomas and Betts or approved equal.

C. No outlet box shall be smaller than four inches (4”) square and 1 ½” in depth, except in concrete block construction where Thomas and Betts concrete masonry boxes are approved.

D. For 120V power, provide an industrial specification grade 20A 125V duplex receptacle with internal duplex receptacle bracket #RFB6DP, quantity as shown on drawings. Flr data/telephone, provide a decorator style receptacle bracket #RFB6GFI for mounting frame to accept the modular telephone/data jacks, unless otherwise noted on drawings. Any unused device compartments shall be covered with internal blank bracket #RFB6B.

E. All special outlets shall be as hereinafter specified or as shown on drawings.

F. Thru boxes are not permitted.

G. Any unused boxes shall be equipped with a blank cover plate.

3.9 RECEPTACLES

A. Furnish and install an industrial specification grade 20A, 125 volt, 3 wire grounding type duplex receptacle with one piece brass mounting strap at all receptacle outlets as indicated on drawings. Leviton #5362-W or equal as manufactured by Hubbell, Pass and Seymour, Eaton or other approved manufacturers.

B. Device color shall be white.

3.10 WALL PLATES

A. All wall plates for electrical outlets and devices shall be smooth stainless steel, non-magnetic type 302S.

3.11 CONDUCTORS (Wire)

A. All wire installed in this contract shall be of a standard manufacturer as approved by the National Board of Fire Underwriters and be of the size as indicated on the drawings. All wire shall bear the Underwriters' label and shall be brought to the job in unbroken packages and approved by the Job Inspector before it is installed.

B. All power conductors #10 AWG and smaller shall be type THWN copper, unless otherwise noted. All conductors #8 AWG and larger shall be type THWN-2 copper, unless otherwise noted.

C. All underground conductors in a 480V or 480/277 volt power system shall be type XHHW-2 copper, unless otherwise noted.

D. Number 12 AWG wire shall be the smallest gauge wire used, except for signal circuits, which shall be as shown on plans or as specified under other sections of these specifications.

E. All wire #8 AWG gauge or larger shall be stranded.

F. The neutral conductor of all lighting feeders shall be of the same size as the phase conductors.

G. Splices on all wire less than #8 gauge shall be with insulated spring connectors Ideal "Wing Nuts", 3M "Scotchlok", or equal.

H. Splices in wires #8 gauge and larger shall be made with crimp on solderless connector, 3M Scotch, Burndy or equal. Connectors to switches or bus bar shall be made with one piece lugs for all wires, sized for conductors as shown on plans.

I. Each branch circuit shall be marked with the circuit number at the panel and at the first outlet nearest the panel. E-Z Code Markers (Thomas and Betts) or equal shall be used to label the circuits.

3.12 LIGHTING FIXTURES

A. This Contractor shall submit for approval seven (7) portfolios with full description and manufacturer data sheets of all fixtures (including ballasts and lamps), that he proposes to use.

B. This Contractor shall furnish and install all lighting fixtures and lamps as indicated on the Electrical Drawings and in accordance with these specifications.

C. This Contractor shall be held responsible for the complete equipment of all fixture outlets with fixtures of the proper design as shown.

D. All fixtures shall be securely anchored to prevent any possible chance of their falling.

3.13 PHOTO CONTROL

A. Shall be per plans.

3.14 DRY TYPE TRANSFORMERS

A. Transformer shall be Class H insulation with temperature rise not exceeding 115 degrees C., in a maximum ambient of 40 degrees C., with rated nameplate load connected to the secondary side, at rated voltage. Unless otherwise noted, the transformer shall comply with the Energy Efficiency levels mandated by the Department of Energy.

B. Transformer shall be built in accordance with the latest revised IEEE, ANSI and NEMA standards.

C. Case temperature shall not exceed 35 degrees C., above ambient.

D. Designs shall incorporate built-in vibration dampening systems.

E. Terminal compartment shall be located to insure termination of cable leads in temperature levels not to exceed 60 degrees C., and to provide for side or bottom entrance of conduit. Enclosures shall be weatherproof and rodent proof. Ventilation openings shall be louvered type. Screening will not be acceptable.

F. Transformer shall be furnished with 2 taps above and below rated voltage, each 2 ½%.

G. Acceptable manufacturers shall be Square “D”, General Electric, Eaton, Siemens or approved equal.

PART 4 - EXECUTION AND INSTALLATION

4.1 CONDUIT SYSTEMS

A. A concealed conduit system shall be installed for all interior wiring including controls. Conduit shall be run continuous between outlets, etc., and with the minimum number of bends.

B. PVC 40 shall be used for underground runs.

C. Where underground conduit cannot be run below building footings and the Contractor shall provide PVC-80 sleeves through the footings (Contractor shall obtain approval for all sleeve sizes and locations with the Structural Engineer before installation).

D. All conduit shall be delivered to the site of construction in their original bundles. Each length of conduit shall bear the label of the National Board of Fire Underwriters. All conduit subjected to rough usage while on the job before installation and not acceptable to the Architect shall be removed from the premises upon notice.

E. The joints in all conduits installed under concrete slabs on the ground, or underground, or exposed to the weather, shall be made liquid and gas-tight. All underground conduit outside of the buildings shall be buried to a depth of not be less than 24” below finish grade. Two or more conduit runs installed in a common trench shall be separated horizontally by at least four inches (4”). Electrical conduit runs installed in a common trench with other utility lines shall be separated horizontally from such lines by at least twelve inches (12”). Provide a detectable warning tape, 12” above the top of the conduit and the full length of trench.

F. Changes in direction shall be made with conduit elbows or long radius bends made on the job. Where two or more conduits are grouped in exposed locations, the sweeps shall be struck from the same center forming concentric arcs.

G. All joints in conduit shall be made with standard coupling. In making joints, conduits must be truly and accurately cut and threaded (where applicable) with straight thread, smoothly reamed and squarely butted. All conduit shall be kept corded and dry during construction, using plastic caps or conduit pennies held in place with conduit bushings. Should dirt or moisture collect in any conduit, the Contractor shall swab them out to the satisfaction of the Architect.

H. All conduits where they enter panel enclosures, pull boxes, or outlet boxes shall be secured in place by galvanized locknut inside of box.

I. Where conduits are run exposed, they shall be installed straight and true with reference to the adjacent construction.

J. Any conduit installed under building shall be under the slab. The top of any conduit below floor slab shall be a minimum of 4" below the bottom of the concrete slab.

K. All boxes for bracket outlets shall be equipped with a 3/8" "No-Bolt" fixture stud. These boxes shall be so set that when in place the fixture shall be at right angles to the ceiling or walls.

L. All empty conduit shall be equipped with a nylon pull rope continuous from outlet-to-outlet or end-to-end.

M. Flexible conduit will be permitted for connecting lighting fixtures to junction boxes.

N. Flexible connections in outdoor and damp locations shall be flexible liquid-tight metal conduit or non-corrosive seamless metallic tubing with watertight connections.

O. Install roof jacks for this construction in accordance with other sections of this Specification.

P. The maximum allowed length of flex conduit at equipment connections is 18".

Q. Expansion joints for conduit shall be provided where required to compensate for thermal expansion and contraction.

R. Any conduit entering underground pull boxes shall be sealed to prohibit water from entering the conduit. Conduits with conductors shall be sealed with a sealing compound after all conductors have been installed. Spare (empty) conduits shall be capped.

4.2 OUTLETS

A. In general, the locations of electrical outlets shall be as shown on the drawings; however, the Contractor shall make any changes necessary to suit conditions on the job or rearrangement of built-in fixtures and equipment as directed by the Architect or his representative.

B. The Contractor shall study the general building plans with relation to spaces surrounding each outlet in order that his work may fit the work of others and that when fixtures or other equipment are installed they will be symmetrically located according to room layout. Refer all conflicts and discrepancies promptly to the Architect.

4.3 OUTLET BOXES

A. Outlets for concealed wiring shall be flush with the finished wall or ceiling surfaces. Pull boxes, junction boxes and all others to which no fixture or device is to be attached, shall be fitted with blank cover plates and painted to match surroundings. In order to reduce noise transmission between rooms, outlet boxes shall not be installed back to back. Where outlets are side by side and faced into opposite rooms, the boxes shall be at least 6" apart, except in fire rated walls space boxes at least 24" apart. If the boxes are connected together, the connection shall be flexible and shall have openings packed with fiberglass.

B. The Electrical Contractor shall inform himself of wall thickness throughout the building and shall provide outlet boxes of suitable depth that can be flush mounted and yet will be deep enough to contain the particular apparatus involved. Location of exposed pull or junction boxes will be subject to the Architect's approval.

C. Outlets from which lights are suspended shall have approved 3/8" fixture studs fastened through from back of box. All outlet boxes and particularly those supporting fixtures shall be securely anchored in place in an approved manner. Support outlet boxes and fixtures in acoustic ceiling areas from building structures, not from acoustic ceilings. All lighting fixture outlets shall be coordinated with mechanical, architectural, or other equipment to eliminate conflicts and provide a workable, neat installation.

D. Where more than one switch occurs at the same location, use multiple gang outlet boxes covered by a single plate; provide box partitions as required by the C.E.C. Switches controlling lights and/or outlets on emergency power shall be kept entirely independent of all other switches not on emergency power by mounting in a separate box.

E. Outlet box extensions shall be UL listed and shall be attached to box with threaded metal screws. "Flash guards" are not permitted to be used as box extensions.

4.4 LOCATIONS OF OUTLETS

A. The Architect reserves the right to make reasonable changes in the indicated locations before work is roughed in without additional charge to the Owner.

B. Where wainscot occurs at the 4'-6" level, the switch shall be mounted lower in the wainscot as near the 4'-0" level as possible, but in no case, shall the switch be partially in the wainscot and partially in the wall. It shall be the Electrical Contractor's responsibility to verify all door swings. Switches, unless specifically noted, shall be on the strike side of the door. If switch is indicated on hinged side of door, verify location with Architect.

4.5 CONDUCTOR IDENTIFICATION AND INSTALLATION

A. The drawings indicate the arrangement of outlets on each branch circuit and the circuit tags show the number of the circuit, and the board to which it will be connected.

B. Circuits indicated with the same numbers shall be connected to the same breaker on the panelboard.

C. All feeders and branch circuits shall be tagged in all pull boxes and in the gutters of all panels to which they connect.

D. All wiring shall be done in identified neutrals.

E. No wire shall be installed until all work of other contractors that might cause injury to the said wire has been completed. Care shall be used to pull wires to insure that no damage occurs to the insulation. A wire lubricant shall be used for pulling in wires.

F. In making the connection of all branch circuits to the terminals of switches, base plugs, etc., the wires shall be looped around the binding screws or be fitted with connecting lugs. At the ceiling outlets, this Contractor shall leave not less than 6" of free ends on each wire for connections to the fixtures.

G. No splices shall be permitted except in outlet boxes, and in panelboard gutters.

H. Switches and receptacles shall be securely fastened to the outlet box. Where the outlet box covers are back of the finished walls the switch or receptacle shall be built out from the same with washers so that it is rigidly held in place to the box. The floating of any switch or receptacle will not be permitted.

I. All signal and communications conductors shall be identified in terminal cabinets as to type of system e.g.: clock, bell, fire alarm, etc. and location of other end of conductor by room number or name as directed by Owner. Identification shall be by numbers at terminal strips and a numbered directory in cardholder inside terminal cabinet.

J. Fire alarm system cabling and wiring shall be color-coded as follows:

Initiating Devices:	-	Addressable cable, red jacket.
Signaling Devices:	-	Black and Red wires for horns, strobes or horn strobes.
	-	Speaker cable, blue jacket for speakers.

K. All power wiring size #6 AWG and smaller, shall be factory color-coded. For larger than #6, mark conductors on each end and at all junction and/or pull boxes with a 1" bank of colored pressure-sensitive plastic tape. For isolated ground wires, mark with a 1" band of green tape, followed by a 1" band of yellow tape, followed by a 1" band of green tape. Colors for each phase and the neutral shall be consistent throughout the system. Color code shall be as follows:

WIRE	120/208V	480/277V
Phase A	Black	Brown
Phase B	Red	Orange

Phase C	Blue	Yellow
Neutral	White	Gray
Equip. Ground	Green	Green

The white or gray conductor shall be the neutral at each outlet. All switches shall be installed in "hot" leg. On all lighting circuits the switch leg shall be purple from switch to fixture. All travelers from switch to switch on 3 and 4-way switches shall be pink. This color code shall be followed by Contractor for all fixture whips except for factory-manufactured whips. When factory manufactured whips are used, color code shall apply to all wiring except the factory whip.

L. Conductors having white, gray or green covering shall not be used to indicate other than neutral or grounding. This limitation applies to all power, lighting, and control circuits.

M. Installation of conductors shall be made in a neat and workmanlike manner to meet Code requirements and shall be run continuous without weld, splice or joint between boxes. Do not install wires in conduit unless the entire system of conduit and outlet boxes is permanently in place. All conductors shall be pulled using a UL approved wire lubricant.

N. Make all terminations at motors using 3M Series 5300 Motor Lead/Cable Splicing Kits. Make connections per 3M written installation procedures.

O. On all bolted electrical connections, the Contractor shall use Belleville washers.

P. All wiring to be neatly bundled and tied with nylon cord or plastic straps.

Q. When approved by the Electrical Engineer, splices in underground pull boxes shall be made with crimp on compression connectors and insulated with heat shrink sleeves or with splice kits listed by the manufacturer for wet locations. Wire nuts are not permitted. Cables and/or conductors for fire alarm and signals systems shall not be spliced.

4.6 GROUNDING

A. The conduit system supports, cabinets, switchboards, etc., and neutral conductors must be permanently and effectively grounded, accordance with Title 24 of the California Code of Regulations. The neutral shall only be grounded at the main service location unless specifically noted otherwise on the drawings or required by the California Electrical Code.

B. This Contractor shall exercise every precaution to obtain good contacts at all panel boxes, pull boxes, etc.: where it is not possible to obtain good contacts, the conduits shall be bonded around the boxes with a #6 AWG gauge conductor with ground clamps.

C. All equipment cases, motor frames, etc. shall be completely grounded to satisfy applicable code requirements.

D. At each building, the interior hot and cold water piping and the interior aboveground gas piping shall be bonded to the building service equipment per C.E.C. #250.104.

E. Do not use underground gas piping as a grounding electrode.

F. Pull a green equipment ground conductor in all power conduits, both metallic and non-metallic.

G. Each disconnect switch shall have a ground connector (lay in wire type) which shall be used for grounding the disconnect enclosure. The ground wire shall continue and be connected to the enclosure of the equipment served.

H. Where there is more than one building supplied from a common service, provide a grounding electrode at each building per C.E.C. #250.32.

4.7 MOUNTING HEIGHTS OF EQUIPMENT

Unless otherwise specified elsewhere or shown on the plans, the following mounting shall apply:

A.	Panelboards:	6’-0” top of box
B.	Disconnect Switches:	4’-0” to center line
C.	Contactors:	4’-0” to center line

4.8 IDENTIFICATION OF SWITCHES AND APPARATUS

All switchboard circuits, externally operated switches and apparatus used for the operation of or control of circuits, appliances, or equipment shall be properly identified with an engraved Bakelite nameplates, 1” x 3”, black letters on white background. All such nameplates shall be of the self-adhesive type and attached onto the apparatus by screws or rivets. Card holders in any form are not acceptable.

PART 5 - MISCELLANEOUS

5.1 MISCELLANEOUS EQUIPMENT

A. Contractor shall be responsible for electrical hook up and connections to all electrical equipment whether furnished by this Contractor or others, including wiring, conduit, disconnects, circuit breakers etc., even if not shown on drawings. Verify all locations and requirements with equipment supplier before rough-in.

B. When there are fire sprinklers, the Electrical Contractor shall connect bell, flow and tamper switches and other electrical devices as required by Sprinkler Contractor and local and state fire marshal. Verify requirements with General Contractor before bid.

5.2 INTERRUPTION OF SERVICE

A. Interruption of service in existing buildings shall not be made at a time which will inconvenience the Owner. Before making any final connections to the existing buildings or doing any other work that will interrupt the service, the Contractor shall consult with the Owner and schedule the work at Owner’s convenience even if it is necessary to make such connections after regular working hours.

B. This Contractor shall do all rerouting and reconnecting of existing electrical facilities made necessary by this construction. Care shall be taken not to disrupt existing facilities. If any facilities are disrupted, this Contractor shall replace or repair them at his expense and to the satisfaction of the Architect.

5.3 CHANGES

A. Electrical Contractor shall consider the number of outlets for electric equipment shown on plans as final, but the Architect reserves the right to shift same, within reason, to a location and position which will meet more completely final requirements.

5.4 GUARANTEE AND TESTS

A. All electrical equipment testing and related costs shall be included in the Contractor's bid.

B. Contractor shall obtain approval from the Architect of proposed independent testing agencies before any testing is started.

C. Equipment of all kinds installed by this Contractor shall be tested to determine whether it fulfills the requirements of these specifications. The Contractor shall furnish all labor necessary to adjust the operation of the apparatus and make the connections for the tests. After the tests have been completed, the Contractor shall restore all connections, apparatus, etc., to their original condition.

D. Should any piece of apparatus or any material or work fail in any of these tests, it shall be immediately removed and be replaced with new material by this Contractor at his expense and the portion of the work replaced be again tested by the Contractor.

E. All circuit breakers, 100 amps or more, shall be tested by an independent testing agency in accordance with NETA specifications and a report submitted to the Architect. Any circuit breaker that does not pass the test shall be replaced.

F. The entire installation shall be free from short circuits and improper grounds. Panels and circuits shall be tested for grounds and shorts. Each individual circuit shall be tested at the panel with the equipment connected for proper operation. Ground tests shall meet the requirements of the California Electrical Code. Upon completion of the work, a final inspection by the Architect and other interested authorities shall be conducted. This Contractor shall guarantee to repair or replace at his expense any material or equipment that develops defects or is determined not to be in conformance with the plans and specifications, during a period of one year after work is accepted by the Owner.

G. The grounding electrode system at the main electrical service equipment shall be tested by an independent testing agency in accordance with the three point fall of potential method as specified in IEEE Standard 81-1983. Maximum ground resistance shall be 25 OHMS. A copy of the test report shall be submitted to the Architect and Engineer of record.

H. All feeder cables #2 and larger shall be tested for insulation resistance. Test report must include number of cable per phase & type of cable insulation.

I. Three copies of test report shall be submitted to Electrical Engineer prior to the final job walk.

J. The independent testing agency performing the above mentioned tests shall be NETA or NICET certified or approved by the electrical engineer.

5.5 DEMOLITION

A. Remove and/or relocate electrical facilities as required to clear areas for new construction.

END OF SECTION 26 7000

27 0200 General Requirements (Structured Cabling Systems and Pathways and Spaces systems for all Voice and Data systems)

27 02 01 Summary

A. The Scope of Work covered by this document is to furnish and install the Structured Cabling Systems and Pathways and Spaces systems. This work will provide for the structured cabling system (SCS) for all Voice and Data systems.

B. Telecommunications system shall include the following systems:

1. Structured Cabling System (SCS) For Telecommunications Systems
2. Pathways for Telecommunications Systems
3. Grounding and Bonding System (GBS) For Telecommunications Systems
4. Fire stopping for Telecommunications Systems

27 02 05 Additional Requirements

A. **Coordination of work:** Contractor shall be responsible for coordination of work among project specification divisions and contractor/subcontractors involved in this project. This coordination of Work Includes following instructions provided the Construction Manager or General Contractor if project is managed by such.

B. **General compliance requirements:** Provide a complete and operable system in compliance with project drawings, specifications, referenced standards, applicable building codes, and Authority Having Jurisdiction (AHJ) requirements. Scope of this contract includes materials, equipment, labor, configuration, programming, testing, startup and commissioning services, and documentation costs for complete and operable system that meets all requirements indicated on drawings or contained in specifications. Comply with all contract documents, specifications, drawings, manufacturer's instructions, and Owner and AHJ requirements. In case of conflict among applicable documents or standards, contractor shall notify owner's representative in writing of apparent conflict, and then comply with most stringent requirements unless otherwise directed in writing from owner's representative. Work includes all items required for complete system whether or not identified in specification or drawings.

C. Information about general construction and architectural features and finishes shall be derived from structural and architectural drawings and specifications only.

D. Work related to telecommunications system shall be installed by an SCS manufacturers authorized or certified trained installer. Owner reserves the right to review and approves any personnel assigned to this project in a supervisory or managerial role.

E. SCS contractor shall have had at least 3 years of comparable experience with telecommunications projects. Comparable projects shall equal or exceed size and complexity of work on drawings.

F. **Complete and usable work:** Refer to and comply with requirements in section 27 02 67 outlined below.

27 02 10 Related Documents and Drawings

A. **General:** The project drawings and general conditions of Contract shall apply to this section.

B. **Coordination:** Coordinate with work specified in other sections and divisions of specifications.

C. **Reference:** Codes and standards as referenced in Section 27 02 20 may define additional specifications or requirements not specifically called out within this division. However, contractor shall adhere to most stringent requirements as defined herein, or as defined by reference within section 27 02 20.

D. Architectural and Engineering specifications may have additional conditions or requirements that affect the work defined by this division of specifications. Contractor shall be responsible for the coordination of all conditions and other trade requirements that may impact schedule, scope of work, work progress, or other factors that may affect the overall ability for contractor to execute the requirements of this division of specifications.

27 02 20 Codes and Standards

A. General: All work, including but not limited to: cabling, pathways, support structures, wiring, equipment, installation and workmanship shall comply with the latest editions of the requirements of the Authority Having Jurisdiction (AHJ), National Electrical Code, National Electrical Safety Code, all applicable local rules and regulations, equipment manufacturer's instructions, and the National Electrical Contractor's Association (NECA) Standard of Installation. In case of discrepancy or disagreement between the documents noted above, the Contractor shall satisfy the most stringent requirements.

B. Other sections of this document contain References to Codes and Standards that are applicable to the section.

27 02 20.20 Codes

A. California Electric Code (CEC)

B. National Fire Protection Association (NFPA)

NFPA 70, National Electrical Code (NEC)

NFPA 72, National Fire Alarm Code

NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment

NFPA 76, Recommended Practice for the Fire Protection of Telecommunications Facilities

NFPA 101, Life Safety Code

27 02 20.40 Reference Standards

A. Telecommunications Industry Association (TIA)

TIA-526-7, Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant – OFSTP-7

T-526-14-A, Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant – SFSTP-14

TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises

TIA-568-C.1, Commercial Building Telecommunications Cabling Standard Part 1: General Requirements

TIA-568-C.2, Commercial Building Telecommunications Cabling Standard—Part 2: Balanced Twisted Pair Cabling Components

TIA-568-C.3, Optical Fiber Cabling Components Standard

TIA-569-B, Commercial Building Standards for Telecommunications Pathways and Spaces

TIA-606, Administration Standard for Commercial Telecommunications Infrastructures

ANSI J-STD-607-A, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications

B. Other Reference Materials

BICSI Telecommunications Distribution Methods Manual (TDMM)

BICSI Wireless Design Reference Manual (WDRM)

Institute of Electrical and Electronic Engineers (IEEE)

National Electrical Manufacturers Association (NEMA)

Underwriters Laboratories (UL) Cable Certification and Follow Up Program

27 02 25.40 Definitions

Access Floor - A floor system that has removable floor panels.

Building Backbone Cabling – Cabling used to connect Floor Distributors (FD) or other local collection points to the Building Distributor (BD). Building backbone cabling typically carries aggregate traffic and, as such, impacts multiple network devices and users. Building backbone cabling may include either fiber optic or copper cabling or both.

Building Distributor (BD) – Termination point from which all building backbone cabling emanates and interconnection point for the network backbone. Commonly referred to as BDF and Intermediate Cross-connect (IC). There is one BD for each building and it feeds all FD's in the same building. The BD should be located so that all FD's served are within 300 cable meters (984 cable feet). All BD's are linked to the

Campus Backbone Cabling – Cabling used to connect Building Distributors (BD) or other key network segments to the Campus Distributor (CD). With rare exceptions, campus backbone cabling carries aggregate traffic and typically impacts entire buildings worth of network devices and users and, as such, link redundancy with diverse routing is highly recommended. Campus backbone cabling almost exclusively consists of fiber optic cabling. Copper cabling may be used in short-distance (< 90m) applications. In such cases, lightning protection will usually be required by code.

Campus Distributor (CD) – Termination point from which all campus backbone cabling emanates and highest-level interconnection point for the network backbone. Commonly

referred to as NOC and Main Cross-connect (MC). On smaller campuses, there is one CD for the campus. On larger campuses there might be several CD's with each CD serving several buildings. Besides linking to each of the BD's it serves, the CD is also the network interconnection point for data center links and links to service providers.

Category 3 (Cat 3) – A category of transmission performance, defined in EIA standards, that specifies electrical properties up to 10 MHz. Cat 3 is the minimum performance grade permissible and is used typically for analog voice distribution.

Category 5e (Cat 5e) / Class D – A category/class of transmission performance that specifies electrical properties up to 155.5 MHz. Capable of supporting copper-based, four-pair Gigabit Ethernet (IEEE 802.3ab 1000BASE-T) applications. Category 5e is defined in TIA/EIA 568B.2 standard. Class D is defined in the ISO 11801 standard.

Category 6 (Cat 6) / Class E – A category/class of transmission performance that specifies electrical properties up to 250 MHz. Refer to the TIA/EIA 568B family of standards for more information on Category 6 and ISO/IEC 11801 for more information on Class E requirements. Also refer to CENELEC EN50173.

Category 6A (Cat 6) / Class E_A– A category/class of transmission performance that specifies electrical properties up to 500 MHz and capable of supporting data applications operating at 10Gbps. Refer to the TIA/EIA 568B family of standards for more information on Category 6 and ISO/IEC 11801 for more information on Class EA requirements.

Certification – The testing and documentation of the transmission performance (e.g., Category 5e / Class D) of a permanent link or channel, based on sweep frequency (where applicable) testing of numerous parameters with results compared to a range of acceptable values. This project requires 100% certification (with documentation) of all permanent link cabling at the time of installation. Channel certification is optional and is the responsibility of the group using the channel.

Channel – The entire physical pathway between active equipment ports, inclusive of all patch cords, patch panels, jacks and cabling segments.

Conduit - A raceway of circular cross-section.

Entrance Facility (EF) – Termination point of service provider cables that have entered the building and location of service demarcation point (MPOE) and interconnection point to the network. Commonly referred to as Telco Room and Entrance Facility (EF). The EF is linked to the CD, where present, or to the BD.

Floor Distributor (FD) – Termination point for horizontal cabling and interconnection point for network access. Commonly referred to as IDF and Horizontal Cross-connect (HC) - FD quantities and locations are determined by building size and geometry so that all points served are within 90 cable meters (295 cable feet) of an FD. The FD feeds all Telecommunications Outlets (TO's) in its service zone. All FD's in a building are linked to the building's Building Distributor (BD) via backbone cabling.

Horizontal Cabling – Cabling used to connect individual work area outlets to local Floor Distributors (FD) or other collection points. Unlike backbone cabling, horizontal cabling does not typically carry aggregate traffic and, as such, impacts only single network devices or users. In buildings, horizontal cabling almost exclusively consists of copper

cabling. Fiber optic cabling may be used where situations dictate but, unlike horizontal copper cabling, horizontal fiber optic cabling is not installed in advance as default building facilities. At this writing, horizontal copper cabling in many networks is capable of supporting Gigabit (1Gb/s) Ethernet applications as well as other applications of similar bandwidth.

Permanent Link – A stationary cabling segment, consisting of the permanently installed cable and the permanently affixed jack at both ends (typically at the outlet faceplate and closet patch panel, or on a patch panel on both ends). The concept is based on the assumption that, while patch cords might be disconnected or moved over time, the permanent cable and jacks will not be disturbed and the electrical characteristics of the permanent link will remain unaltered.

Plenum -A space within the building designed for the movement of environmental air; i.e., a space above a suspended ceiling or below an access floor.

Raceway - Any channel designed for holding wires or cables; i.e. conduit, electrical metal tubing, busways, wireways, ventilated flexible cableway.

27 02 30 Project Drawings

A. **Building composite floor plans:** Provide building floor plans showing outlet locations and jack configuration, types of jacks, run distance for each jack cable, and cable routing/locations. Identify TO's that, according to location and available pathway systems, require cable length greater than allowed by standards. Recommend alternatives for Owners Representative's consideration.

B. **Telecommunications space plans/elevations:** Include enlarged floor plans of TRs indicating layout of equipment and devices, including receptacles and grounding provisions. Submit detailed plan views and elevations of telecommunications spaces showing racks, termination blocks, and cable paths.

C. **Logical Drawings:** Provide logical riser or schematic drawings for all systems. Include schematic symbol key.

27 02 50 Substitutions

A. **Substitution requests:** Substitution requests will be considered only if submitted to Owner's Representative not less than 7 working days prior to project bid date. Acceptance or rejection of proposed substitution is at Owner's Representatives sole discretion. No exceptions. Requests for substitutions shall be considered *not approved* unless approval is issued in writing by Owner's Representative.

B. **Rejection:** For equipment, cabling, wiring, materials, and all other products indicated or specified as *no substitutions* or *no alternates*, Owner does not expect nor desire requests for substitutions and alternate products other than those specified. Owner reserves right for Owner's Representative to reject proposed substitution requests and submissions of alternates without review or justification.

27 02 65 Warranty

27 02 65.10 Contractors Warranty

A. **General requirements:** Comply with additional requirements in contract general requirements and extended warranties required in other specification sections.

Refer to all other 27xxx sections for specific additional warranty requirements that exceed or are in addition to those of this section.

B. **Contractor warranty:** Provide all services, materials and equipment necessary for successful operation of entire telecommunications system and SCS system for a period of one year after system acceptance. Scope of warranty includes all equipment, devices, wiring, accessories, software, hardware, installation, programming, and configuration required to maintain a complete and operable system. Provide manufacturer's published recommended preventative maintenance procedures during warranty period. This shall apply to all items except those specifically excluded, or items wherein a longer period of service and warranty is specified or indicated. All warranties shall be effective for one year, minimum, from date Certificate of Final Acceptance is issued. Use of systems provided under this section for temporary services and facilities shall not constitute final acceptance of work nor beneficial use by Owner and shall not institute warranty period. The warranty shall cover repair or replacement of defective materials, equipment, workmanship, and installation that may be incurred during this period. Warranty work is to be done promptly and to Owner's satisfaction. In addition, warranty shall cover correction of damage caused in making necessary repairs and replacements under warranty. Additional warranty responsibilities are:

   1. Obtain written equipment and material warranties offered in manufacturer's published data without exclusion or limitation, in Owner's designated name. Replace material and equipment that require excessive service during guarantee period as determined by Owner.

   2. Provide 2-business day service beginning on date of Substantial Completion and lasting until termination of warranty period. Service shall be at no cost to Owner. Service can be provided by installing contractor or by a separate service organization. Choice of service organization shall be subject to Owner's approval. Submit name and a phone number that will be answered on a 24-hour basis each day of week, for duration of service.

   3. Submit copies of equipment and material warranties to Owner before final acceptance.

   4. At end of warranty period, transfer manufacturers' equipment and material warranties still in force to Owner.

   5. If warranty work problems cannot be corrected immediately to Owner's satisfaction, advise Owner in writing, describing efforts to correct situation, and provide analysis of cause for problem. If necessary to resolve problem, provide at no cost services of manufacturer's engineering and technical staff at site in a timely manner to analyze warranty issues, and develop recommendations for correction, for review and approval by Owner.

C. **Pathways Material and Installation warranty:** Provide all services, materials and equipment necessary to warrant the installation and performance of all pathway materials for a period of one year after beneficial use. Scope of warranty includes all equipment, devices, installation and other work required to maintain a complete and operable system. Provide manufacturers published recommended preventative maintenance procedures during warranty period.

D. **Grounding and Bonding Material and Installation warranty:** Provide all services, materials and equipment necessary for successful operation of GBS for a period of one year after beneficial use. Scope of warranty includes all equipment, devices, installation and other work required to maintain a complete and operable system.

Provide manufacturers published recommended preventative maintenance procedures during warranty period.

E. **Firestopping Material and Installation warranty:** Provide all services, materials and equipment necessary to warrant the performance of all Firestopping material for a period of one year after beneficial use, or longer if required by the local AHJ. Scope of warranty includes all equipment, devices, installation and other work required to maintain a complete and operable system. Provide manufacturers published recommended preventative maintenance procedures during warranty period.

27 02 65.20 SCS Manufacturers Extended Warranty

A. SCS Systems will be covered by a two-part certification program provided by a single manufacturer and that manufacturer's certified vendor. Manufacturer shall administer a follow on program through the Vendor to provide support and service to the purchaser. The first part is an assurance program, which provides that the certified system will support the applications for which it is designed, during the 20-year warranty of the certified system.

B. The second portion of the certification is a 20-year warranty provided by the manufacturer and the vendor on all products within the system (cords, telecommunications outlet/connectors, cables, cross-connects, patch panels, etc.).

C. In the event that the certified system ceases to support the certified application(s), whether at the time of cutover, during normal use or when upgrading, the manufacturer and vendor shall commit to promptly implement corrective action.

D. The cabling system must conform to the current issue of industry standard ANSI/TIA/EIA-568. All performance requirements of this document must be followed. As well, workmanship and installation methods used shall be equal to or better than that found in the BICSI (Building Industry Consulting Service International) ITSIM manual.

27 02 67 Completeness of Work

A. **Complete and usable work:** The contractor is responsible for providing complete and usable work according to contract documents. All materials and equipment shall be provided with all accessories and additional work required for field conditions, as well as additional work and accessories required for complete, usable, and fully functional construction and systems, even if not explicitly specified or indicated. Telecommunications system in this Contract shall be provided as complete and operable systems in full compliance with requirements on drawings and specification requirements. Drawings are diagrammatic and specifications are performance-based, and Contractor shall provide all work required to comply with drawings and specifications, even if not explicitly indicated or specified. Contractor shall be responsible for coordinating installation of electrical systems with all field conditions and work of other trades. Minimum clearances and work required for compliance with NFPA 70, *National Electrical Code®* (*NEC®*), and manufacturer's instructions shall be provided. Comply with additional requirements indicated for access and clearances. Contractor shall verify all field conditions and dimensions that affect selection and provision of materials and equipment, and shall provide any disassembly, reassembly, relocation, demolition, cutting and patching required to provide work specified or indicated, including relocation and reinstallation of existing wiring and equipment. Contractor shall protect from damage resulting from Contractor's operations existing facility, equipment, and wiring. Extra charges for

completion and contract time extension will not be allowed because of field conditions or additional work required for complete and usable construction and systems. Comply with additional requirements indicated for access and clearances.

B. **Drawings and specifications form complementary requirements;** provide work specified and not shown, and work shown and not specified as though explicitly required by both. Except where explicitly modified by a specific notation to contrary, it shall be understood that indication or description of any item, in drawings or specifications or both, carries with it instruction to furnish and install item, provided complete.

C. **Terms:** As used in this specification, *provide* means *furnish* and *install*. *Furnish* means "to purchase and deliver to project site complete with every necessary appurtenance and support," and *install* means "to unload at delivery point at site and perform every operation necessary to establish secure mounting and correct operation at proper location in project."

D. **Supplementary items:** Provide supplementary or miscellaneous items, appurtenances, devices and materials necessary for a sound, secure and complete installation. Examine project drawings and other Sections of specifications for requirements that affect work of this section. Completely coordinate work of this section with work of other Sections and provide a complete and fully functional installation. Refer to all other drawings and other specifications sections that indicate types of construction in which work shall be installed and work of other sections with which work of this section must be coordinated

27 02 70 Project Conditions

A. **Field verification:** Carefully verify location, use and status of all material, equipment, and utilities that are specified, indicated, or deemed necessary for removal. Verify that all materials, equipment, and utilities to be removed are completely inactive and will not be required or in use after completion of project. Replace with equivalent any material, equipment and utilities that were removed by Contractor that are required to be left in place.

B. **Existing utilities:** As applicable, do not interrupt utilities serving facilities occupied by Owner or others unless permitted under following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify owner in writing at least 14 days in advance of proposed utility interruptions. Do not proceed with utility interruptions without Owner's written permission.
2. Equipment installation:
   a. Determine suitable path for moving unit substation into place; consider Project conditions.
   b. Verify clearance requirements and locate equipment to meet installation tolerances.
   c. Revise locations and elevations from those indicated to those required to suit Project.

27 02 73 Delivery Storage and Handling

A. **General:** Contractor shall be responsible for the deliveries, storing and handling of all materials relative to the SCS systems, including materials supplied by others that are part of the SCS installation contract. Material shall be stored and protected

according to manufacturer's instructions. Contractor shall be responsible for the security of all material during installation. For all material provided by contractor, or delivered to contractor on site, contractor assumes full responsibility and liability for any material shortages, damage or loss due to storage and handling methods.

27 02 77 Examination

A. **General:** Prior to submitting a proposal, Contractor shall examine site, review Project drawings and specifications, and determine exact extent of work required. Contractor shall include in their proposals all materials, labor, and equipment required to complete required work indicated. Work that is necessary to obtain complete and usable Project as specified herein shall be included in Contractor's proposal, even if not indicated or specified.

B. **Bidders' questions:** Should bidders have questions as to intent of drawings and specifications, quality of materials to be used, and work to be performed, questions shall be submitted in writing to Owner's Representative in manner dictated by Owner's Representative. All answers and clarifications to drawings and specifications will be issued in writing.

C. Extra payment will not be allowed for claims for due to unfamiliarity with work to be performed by other trades, existing conditions at job site, local or state laws and codes, and alterations due to field conditions.

27 02 79 Additional Costs

A. **General:** Project acceptance inspections, final completion inspections, substantial completion inspections, and acceptance testing/demonstrations shall be conducted after verification of system operation and completeness by Contractor.

B. **Inspections and testing:** For Project acceptance inspections, final completion inspections, substantial completion inspections, and/or testing/demonstrations that require more than one site visit by Owner's Representative or Architect/Engineer to verify Project compliance for same material or equipment, Owner reserves right to obtain compensation from Contractor to defray cost of additional site visits that result from Project construction or testing deficiencies/incompleteness, incorrect information, or non-compliance with Project provisions. Owner's Representative will notify Contractor of hourly rates and travel expenses for additional site visits, and will issue an invoice to Contractor for additional site visits. Payment of additional site visit costs by Contractor is required within 30 days of invoicing. Owner reserves right to deduct additional costs defined herein that are indicated on past due invoices from Project amount due Contractor.

C. **Exclusions:** Contractor shall not be eligible for extensions of Project schedule or additional charges resulting from additional site visits that result from Project construction or testing deficiencies/incompleteness, incorrect information, or non-compliance with Project provisions.

END of SECTION

27 0400 Execution

27 04 01 General Requirements

A. General: Sequence, coordinate, and integrate various elements of telecommunications system, materials, and equipment. Comply with following requirements as a minimum.

A. Coordinate systems, equipment, and materials installation with other building components.

B. Verify all dimensions by field measurements.

C. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for wiring, cabling, and equipment installations.

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

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

F. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide maximum headroom and access for service and maintenance as possible.

G. Coordinate connection of materials, equipment, and 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.

H. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by Contract Documents, recognizing that portions of Work are shown only in diagrammatic form. In case of conflict among individual system requirements, request direction in writing from Owner’s Representative.

I. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed in both exposed and un-exposed spaces.

J. Install cabling, wiring, and 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.

K. Provide access panel or doors where units are concealed behind finished surfaces.

L. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

M. Comply with all requirements and work indicated on drawings.

N. Avoid interference with structure and with work or other trades, preserving adequate headroom and clearing doors and passageways to satisfaction of Owner and according to code requirements.

O. Install equipment and cabling/wiring so as to properly distribute equipment loads on building structural members provided for equipment support under other Sections. Roof-mounted equipment shall be installed and supported on structural steel or roof curbs as appropriate.

P. Provide suspended platforms, strap hangers, brackets, shelves, stands or legs as necessary for floor, wall and ceiling mounting of equipment as required.

Q. Provide steel supports and hardware for proper installation of hangers, anchors, guides, and other support hardware.

R. Obtain and analyze catalog data, weights, and other pertinent data required for proper coordination of equipment support provisions and installation.

S. Structural steel and hardware shall conform to ASTM standard specifications. Use of steel and hardware shall conform to requirements of AISC Code of Practice: Section Five.

T. Verify site conditions and dimensions of equipment to ensure access for proper installation of equipment without disassembly that would void warranty.

27 04 10 Equipment Installation

A. General: Install equipment according to manufacturer's written instructions. Install equipment level and plumb. Install wiring and cabling between equipment and all related devices.

B. Mounting: If neither the Owner's Instructions nor the individual section call out the required hardware mounting, use the following.

1. For equipment at walls, bolt units to wall or mount on structural steel channel strut bolted to wall.
2. For equipment not at walls, provide freestanding racks fabricated of structural steel members and slotted structural steel channel strut.
3. Use feet consisting of 0.25 inch thick steel plates, 6 square inch, bolted to floor.
4. Use feet for welded attachment of vertical posts not over 3 feet on center.
5. Connect posts with horizontal U channel steel strut and bolt control equipment to channels.

C. Cleaning: Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish. Clean devices internally using methods and materials as recommended by manufacturer.

D. Connections: Tighten wiring connectors, terminals, bus joints, and mountings, to include lugs, screws and bolts according to equipment manufacturer's published torque tightening values for equipment connectors. In absence of published connection or terminal torque values, comply with torque values specified in UL 486A and UL 486B.

27 04 30 Demolition, removal and Protection of work

A. Demolition and removal: Cut, remove, and legally dispose of selected equipment, components, and materials as indicated, including but not limited to removal of material, equipment, devices, and other items indicated to be removed and items made obsolete by new Work. Provide and maintain temporary partitions or dust barriers adequate to prevent spread of dust and dirt to adjacent areas.

B. Protection of work: Protect structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed. During cutting and patching operations, protect adjacent installations. Patch finished surfaces and building components using new materials specified for original installation and experienced Installers.

27 04 33 Penetrations and Sleeves

A. General: Coordinate work with other sections. SCS Installation Contractor shall be responsible for the provision of cabling sleeves and conduits unless specifically provided by the Electrical Contractor. SCS Installation Contractor shall coordinate with Electrical Contractor to determine exact requirements.

B. When required, set sleeves in forms before concrete is poured. Provide core drilling as necessary if walls are poured or otherwise constructed without sleeves and wall penetration is required. Do not penetrate structural members. Provide sleeves and packing materials at all penetrations of foundations, walls, slabs (except on-grade), partitions, and floors. Sleeves shall meet requirements of pertinent specifications. Lay out penetration and sleeve openings in advance, to permit provision in work. Set sleeves and conduit in forms before concrete is poured. Provide remedial work where sleeves and conduits are omitted or improperly placed.

C. Sleeve fill: Sleeves that penetrate outside walls, basement slabs, footings, and beams shall be waterproof.

1. Fill slots, sleeves and other openings in floors or walls if not used.
2. Fill spaces in openings after installation of conduit or cable.
3. Fill for floor penetrations shall prevent passage of water, smoke, fire, and fumes.
4. Fill shall be fire resistant in fire floors and walls, and shall prevent passage of air, smoke and fumes. See section 27 05 32 - Firestopping for Telecommunications Systems.
5. Sleeves through floors shall be watertight and shall extend 2 inches above floor surface.
6. Where raceways passing through openings are exposed in finished rooms, finishes of filling materials shall match and be flush with adjoining floor, ceiling, and wall finishes.

D. Conduit sleeves:

1. Annular space between conduit and sleeve shall be at least 1/4 inch.
2. Sleeves shall not be provided for slabs-on-grade unless specified or indicated otherwise.

3. For sleeves through rated fire walls and smoke partitions, comply with requirements for firestopping. See section 27 05 32 - Firestopping for Telecommunications Systems.

E. Supports: Do not support piping risers or conduit on sleeves.

F. Future use: Identify unused sleeves and slots for future installation.

27 04 39 Cleaning

A. Contractor is responsible for clean up of debris on a daily basis. Cost of clean up is the responsibility of the Contractor.

A. During progress of work, remove equipment and unused material. Put building and premises in neat and clean condition. Perform cleaning and washing required to provide acceptable appearance and operation of equipment to satisfaction of Owner's Representative.

B. After completion of Project, clean exterior surface of all equipment, including concrete residue, dirt, and paint residue. Final cleaning shall be performed prior to Project acceptance by Owner's Representative.

27 04 70 Special Responsibilities and Information

A. Coordination of information: Cooperate and coordinate with work of other sections in executing work of this section. Perform work such that progress of entire project, including work of other sections, shall not be interfered with or delayed. Provide information as requested on items furnished under this section, which shall be installed under other sections. Obtain detailed installation information from manufacturers of equipment provided under this section.

B. Information gathering: Obtain final rough-in dimensions or other information as needed for complete installation of items furnished under other sections or by Owner. Keep fully informed as to shape, size and position of openings required for material or equipment to be provided under this and other sections. Give full information so that openings required by work of this section may be coordinated with other work and other openings and may be provided for in advance. In case of failure to provide sufficient information in proper time, provide cutting and patching or have same done, at no expense to Owner.

C. Housekeeping pads: Provide information as requested as to sizes, number and locations of concrete housekeeping pads necessary for floor mounted equipment

D. Maintenance of equipment and systems: Maintain equipment and systems until Final Acceptance. Ensure adequate protection of equipment and material during delivery, storage, installation and shutdown and during delays pending final test of systems and equipment because of seasonal conditions.

E. Use of premises: Use of premises shall be restricted as directed by Owner's Representative and as required below:

1. **Cleaning and rubbish removal:** Remove and dispose of dirt and debris, and keep premises clean. During progress of work, remove equipment and unused material. Put building and premises in neat and clean condition, and do cleaning and washing required to provide acceptable appearance and operation of equipment, to satisfaction of Owner's Representative.

2. **Rubbish Removal:** Provide for the removal from the site of all spoils, debris, boxes, packaging, crates, and trash generated from the work.

3. **Storage:** Store materials maintaining an orderly, clean appearance. If stored on site in open or unprotected areas, all equipment and material shall be kept off ground by means of pallets or racks, and covered with tarpaulins.

F. Protection of fireproofing:

1. Clips, hangers, clamps, supports and other attachments to surfaces to be fireproofed shall be installed, if possible, prior to start of spray fire proofing work.

2. Conduits and other items that would interfere with proper application of fireproofing shall be installed after completion of spray fire proofing work.

3. Patching and repairing of fireproofing due to cutting or damaging to fireproofing during course of work specified under this section shall be performed by installer of fireproofing and paid for by section responsible for damage and shall not constitute grounds for an extra to Owner.

G. Temporary utilities: Refer to contract general requirements regarding requirements.

H. Movement of materials: Unload materials and equipment delivered to site. Pay costs for rigging, hoisting, lowering and moving equipment on and around site, in building or on roof.

27 04 80 Division of Work

A. General: Division of work responsibility matrix at the end of this section is for Contractor's reference to clarify roles of various manufacturers, installers, subcontractors, and trades involved in telecommunications system Project.

B. Contractor holding contract with Owner is responsible for coordinating work of all subcontractors to provide a complete and usable Project complying with contract provisions of Project documents.

C. Failure to coordinate work by subcontractors and suppliers will not be considered justification for additional compensation or extension of schedule.

END of SECTION

27 0500 Common Work Results for Communications

27 05 26 Grounding and Bonding for Communications Systems

1. GENERAL

1.1. Work Includes

Provide all labor, materials, and equipment for the complete installation of work called for in the Contract Documents.

1.2. Scope of Work

A. This section includes the minimum requirements for the equipment and cable installations in communications equipment rooms (Telecommunications Closets).

B. Included in this section are the minimum composition requirements and installation methods for the following:

1. Grounding Electrode System
2. Busbars
3. Bonding accessories

1.3. Quality Assurance

A. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

1.4. Submittals

A. Provide product data for the following:

1. Manufacturers cut sheets, specifications and installation instructions for all products.

2. PRODUCTS

2.1. Grounding Electrode System

A. Grounding Electrode System

1. When required the Grounding Electrode System shall meet the following
   a. Active grounding system constantly replenishing moisture into the soil
   b. Provide low resistance to ground
   c. Provide season to season stability
   d. Be maintenance-free for 30 years
   e. Contain no hazardous materials or chemicals
2. Approved Manufacturers:
   a. Cooper BLine, Burndy, or approved equal

2.2. Wall-mount Busbars

A. Telecommunications Main Grounding Busbar (TMGB)

1. Telecommunications Main Grounding Busbar (TMGB) shall be constructed of .25" (6.4 mm) thick solid copper bar.
2. The busbar shall be 4" (100 mm) high and 20" (510 mm) long and shall have 30 attachment points (two rows of 15 each) for two-hole grounding lugs.
3. The hole pattern for attaching grounding lugs shall meet the requirements of ANSI-J-STD – 607-A and shall accept 27 lugs with 5/8" (15.8 mm) hole centers and 3 lugs with 1" (25.4) mm) hole centers.
4. The busbar shall include wall-mount stand-off brackets, assembly screws and insulators creating a 4" (100 mm) standoff from the wall.
5. The busbar shall be UL Listed as grounding and bonding equipment.
6. Approved manufactures:
   a. Chatsworth (CPI), Erico Caddy, Cooper BLine, or approved equal

B. Telecommunications Grounding Busbar (TGB)

1. Telecommunications Grounding Busbar (TGB) shall be constructed of .25" (6.4 mm) thick solid copper bar.
2. The busbar shall be 2" (50 mm) high and 12" (300 mm) long and shall have 9 attachment points (one row) for two-hole grounding lugs.
3. The hole pattern for attaching grounding lugs shall meet the requirements of ANSI-J-STD – 607-A and shall accept 6 lugs with 5/8" (15.8 mm) hole centers and 3 lugs with 1" (25.4 mm) hole centers.
4. The busbar shall include wall-mount stand-off brackets, assembly screws and insulators creating a 4" (100 mm) standoff from the wall.
5. The busbar shall be UL Listed as grounding and bonding equipment.
6. Approved manufactures:
   a. Chatsworth (CPI), Erico Caddy, Cooper BLine, or approved equal

2.3. Bonding Accessories

A. Two Mounting Hole Ground Terminal Block

1. Ground terminal block shall be made of electroplated tin aluminum extrusion.
2. Ground terminal block shall accept conductors ranging from #14 AWG through 2/0.
3. The conductors shall be held in place by two stainless steel set screws.
4. Ground terminal block shall have two 1/4" (6.4 mm) holes spaced on 5/8" (15.8 mm) centers to allow secure two-bolt attachment to the rack or cabinet.
5. Ground terminal block shall be UL Listed as a wire connector.

B. Compression Lugs

1. Compression lugs shall be manufactured from electroplated tinned copper.
2. Compression lugs shall have two holes spaced on 5/8" (15.8 mm) or 1" (25.4 mm) centers, as stated below, to allow secure two bolt connections to busbars.
3. Compression lugs shall be sized to fit a specific size conductor, sizes #6 to 4/0, as stated below.
4. Compression lugs shall be UL Listed as wire connectors.

C. Antioxidant Joint Compound

1. Oxide inhibiting joint compound for copper-to-copper, aluminum-to-aluminum or aluminum-to-copper connections.

D. C-Type, Compression Taps

1. Compression taps shall be manufactured from copper alloy.
2. Compression taps shall be C-shaped connectors that wrap around two conductors forming an irreversible splice around the conductors; installation requires a hydraulic crimping tool
3. Compression taps shall be sized to fit specific size conductors, sizes #2 AWG to 4/0, as stated below.
4. Compression taps shall be UL Listed.

E. Pedestal Clamp With Grounding Connector

1. Pedestal clamp shall be made from electroplated tinned copper or bronze. Installation hardware will be stainless steel.
2. Pedestal clamps shall be sized to fit a specific size conductor, size #6 and/or 2/0, as stated below.
3. Pedestal clamp installation hardware shall be sized to attach to round and/or square raised access floor pedestals that are 1-1/8” to 1-3/4” in diameter, as stated below.
4. Pedestal clamp shall provide straight (in-line) or cross (intersection) support for up to two conductors.
5. Pedestal clamp shall be UL Listed as grounding and bonding equipment.

F. Pipe Clamp With Grounding Connector

1. Pipe clamp shall be made from electroplated tinned bronze. Installation hardware will be stainless steel.
2. Pipe clamp shall be sized to fit up to two conductors ranging in size from #6 to 250 MCM; conductors must be the same size.
3. Pipe clamp installation hardware shall be sized to attach to pipes, sizes 1” to 6” (.75” to 6.63” in diameter), as stated below.
4. Pipe clamp shall be UL Listed as grounding and bonding equipment.

G. Equipment Ground Jumper Kit

1. Kit includes one 24”L insulated ground jumper with a straight two hole compression lug on one end and an L-shaped two hole compression lug on the other end, two plated installation screws, an abrasive pad and a .5 once tube of antioxidant joint compound.
2. Ground conductor is an insulated green/yellow stripe #6 AWG wire
3. Lugs are made from electroplated tinned copper and have two mounting holes spaces .5” to .625” apart that accept 1/4” screws.
4. Jumper will be made with UL Listed components

H. Approved Manufacturers:

1. Cooper BLine, Burndy, or approved equal

3. EXECUTION

3.1. Installation

A. Outdoor grounding and bonding connections.

1. All outdoor grounding and bonding (earthing) connections shall be accomplished using exothermic welding.

B. Wall-Mount Busbars

1. Attach busbars to the wall with appropriate hardware according to the manufacturer's installation instructions.
2. Conductor connections to the TMGB or TGB shall be made with two-hole bolt-on compression lugs sized to fit the busbar and the conductors.
3. Each lug shall be attached with stainless steel hardware after preparing the bond according to manufacturer recommendations and treating the bonding surface on the busbar with antioxidant to help prevent corrosion at the bond.
4. The wall-mount busbar shall be bonded to ground as part of the overall Telecommunications Bonding and Grounding System.

C. Rack-Mount Busbars and Ground Bars

1. When a rack or cabinet supports active equipment or any type of shielded cable or cable termination device requiring a ground connection, add a rack-mount horizontal or vertical busbar or ground bar to the rack or cabinet. The rack-mount busbar or ground bar provides multiple bonding points on the rack for rack and rack-mount equipment.
2. Attach rack-mount busbars and ground bars to racks or cabinets according to the manufacturer's installation instructions.
3. Bond the rack-mount busbar or ground bar to the room's TMGB or TGB with appropriately sized hardware and conductor.

D. Ground Terminal Block

1. Every rack and cabinet shall be bonded to the TMGB or TGB.
2. Minimum bonding connection to racks and cabinets shall be made with a rack-mount two-hole ground terminal block sized to fit the conductor and rack and installed according to manufacturer recommendations.
3. Remove paint between rack/cabinet and terminal block, clean surface and use antioxidant between the rack and the terminal block to help prevent corrosion at the bond.

E. Pedestal Clamp

1. At minimum, bond every sixth raised access floor pedestal with a minimum #6 AWG conductor to the TMGB or TGB using a pedestal clamp sized to fit the pedestal and the conductor and installed according to the manufacturer's recommendations.
2. If pedestal clamps are used to construct a signal reference grid, bond the signal reference grid to the TMGB or TGB and bond each rack and/or cabinet to the signal reference grid using a compression tap or similar non-reversible bonding component sized to fit both conductors.
3. Remove paint between the pedestal and pedestal clamp, clean surface and use antioxidant between the pedestal and the clamp to help prevent corrosion at the bond.
4. Remove insulation from conductors where wires attach to the pedestal clamp.

F. Pipe Clamp

1. Bond metal pipes located inside the data center computer room with a minimum #6 AWG conductor to the TMGB or TGB using a pipe clamp sized to

fit the pipe and the conductor and installed according to the manufacturer's recommendations.
2. Remove paint between the pipe and pipe clamp, clean surface and use antioxidant between the pipe and the clamp to help prevent corrosion at the bond.
3. Remove insulation from conductors where wires attach to the pipe clamp.

G. Equipment Ground Jumper Kit

1. Bond equipment to a vertical rack-mount busbar or groundbar using ground jumper according to the manufacturer's recommendations.
2. Clean the surface and use antioxidant between the compression lugs on the jumper and the rack-mount busbar or groundbar to help prevent corrosion at the bond.

27 05 28 Pathways for Communications Systems

1. GENERAL

1.1. Scope of Work

A. Install empty raceway system, including underfloor and overhead distribution system, fish wire, terminal cabinets, outlet boxes, floor boxes, pull boxes, cover plates, conduit, sleeves and caps, cable troughs, service poles, miscellaneous and positioning material to constitute complete system, as indicated for distribution of Telecommunications wiring which includes cables for Data, Voice, Video, Audio, Security and future signal requirements.

B. The location at which all new telecommunications wiring will terminate is called a Telecom Outlet (TO). There are several styles of outlets:

1. New construction
2. Existing construction typical
3. Existing construction variations
4. Telephone (Voice) only
5. Data only

C. Furnish and install split channel raceway and outlet boxes as specified in the Drawings and as specified herein.

D. Furnish and install conduit stubs in walls and floors for cable routes.

1.2. Quality Assurance:

A. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

B. Assure that the "as installed" system is correctly and completely documented including engineering drawings, manuals, and operational procedures in such a manner as to support maintenance and future expansion of the system.

1.3. Submittals

A. Product Data: For features, ratings, and performance of each component specified.

B. Submit manufacturer's instructions for storage, handling, protection, examination, preparation, operation, and installation of products. Include application conditions or limitations of use stipulated by any product testing agency. Submit for the following:

1. Wall Boxes
2. Raceway
3. Conduit
4. Conduit Bushings

C. Shop Drawings:

1. Component List: List manufacturer, part number, and quantity of each component.
2. Include dimensioned plan and elevation views of equipment rooms, labeling each individual component. Show raceway assemblies, method of field assembly, workspace requirements, and access for cable connections.

2. PRODUCTS

2.1. Telecom Outlets (TO)

A. Cat5e and Cat6 TO consists of one (1) 4-11/16" square by 2-1/8" deep flush mounted box. Each outlet box shall have a EMT conduit stubbed above the drop ceiling or extended into the hallway cabletray. Conduits size is as follows UON:

1. For Outlets with 3 or less cables, use a 1" EMT conduit
2. For Outlets with 3-6 cables, use a 1.25" EMT conduit
3. For all other sizes, calculate fill ratio at 40% for proper sized conduit

B. Cat6A TO consists of one (1) 5" square by 2-7/8" deep flush mounted box. Each outlet box shall have a EMT conduit stubbed above the drop ceiling or extended into the hallway cabletray. Conduits size is as follows UON:

4. For Outlets with 3 or less cables, use a 1.25" EMT conduit
5. For Outlets with 3-6 cables, use a two 1.25" EMT conduit
6. For all other sizes, calculate fill ratio at 40% for proper sized conduit

C. Existing surface-mounted construction TO typically consists of surface-mounted raceway including base, cover, end fitting, entrance end fitting, and (2) 1" EMT conduits stubbed out top of entrance end fitting to above ceiling or out to nearest hallway distribution system. Size of the raceway is site dependent based on number of conductors to be installed.

D. The intent of the installation of the TOs which consist of the raceway is as follows:

1. Where ceilings are accessible, the raceway and entrance end fitting shall extend above the ceiling and the conduits installed above the ceiling in the room to the nearest hallway distribution system.
2. Where ceilings are partially accessible, or if the Drawings and/or Specifications indicate installation of access panels, the raceway shall extend above the ceiling and the conduits installed above the ceiling in the room to the nearest hallway distribution system.

3. Where ceilings are inaccessible or no ceilings exist, the raceway shall extend up as close to the ceiling as practical to allow installation of conduits as high as possible to the nearest hallway distribution system.

2.2. Horizontal Distribution Systems

A. Conduit System (Renovations only, where conduit exists)

1. Provide conduits secured to wall above corridor ceilings as shown on the Drawings or as specified herein for installation of telecommunications cables. Any exposed conduit
2. Corridor conduits shall be 4" EMT, furnished in 10 foot lengths wherever possible, with no sharp edges, reamed as necessary, evenly supported at two locations per 10 foot section spacing. Conduits shall be sized and quantified to account for handling cables in all TO conduits at 40% fill back to the TR and/or ER rooms. Verify size prior to installation. Bushings and/or connectors on ends of EMT are required.
3. All conduits shall be installed stacked and attached to walls unless conditions exist which prohibit this type of installation. When this condition exists, mount conduits side-by-side supported with 3/8” rod attached to building structure utilizing unistrut channel to form a trapeze. Double nut the top and bottom at the unistrut. Utilize conduit clamp to secure conduits to unistrut.
4. Provide measured pull line in each conduit rated at 1200 lbs. minimum. Increments must be in 12” steps.
5. Grounding of conduits is not required per NEC #250-33, Exception No. 2. shall be painted except conduit above suspended ceilings or in mechanical, electrical or telecommunication rooms. Color to match that of surface installed upon or as directed by Owner’s Representative. Coordinate with other trades prior to painting.
6. Provide restorable fire stops inside and around conduits as recommended by UL1479 or ASTM E814 for all conduits penetrating fire-rated construction. Fire rated construction to be verified with AHJ. See Section 27 05 32 for more firestopping information.

B. Corridor Cable Tray System

1. Complete wall mounted or suspended aluminum cable tray system and necessary accessories shall be provided as shown on plans. Install entire cable tray system in accordance with manufacturer’s minimum installation practices and all local governing codes.
2. Coordinate installation of cable tray with other trades to allow a minimum of 12” above, 12” in front, and 12” below of clearance from piping, conduits, ductwork, etc. Allowance must be provided for access to the tray with reasonable room to work. Obstructions to the tray must be minimized and cannot block more than 6 feet of the tray at any point in the run.
3. Submittal drawings, in the form of 8 ½”x 11” catalog cut sheets, shall be provided for the following items: cable tray, fittings, accessories and load data.
4. Cable tray shall not be loaded beyond 60% of manufacturer’s recommended load capacity.
5. Install wall mounted cable tray on both sides of hallway as shown on drawings and where applicable.
6. Where a new cable tray distribution system encounters a wall, install sufficient 4” EMT sleeves through the wall so cabling does not exceed 20% fill.

7. Where cable tray is exposed below ceiling, install the appropriate solid bottom inserts to conceal cables.
8. Install cable tray dropouts where large quantities of cables exit the distribution system.
9. Cable tray must be sized to facilitate sufficient growth capacity for migration cable plant to coexist in same tray as existing cable plant, wherever possible.
10. Manufacturer of cable tray in corridors and telecom rooms shall be:

C. Telecommunication Room Cable Tray System

1. TR cable tray shall completely wrap all walls within the room. Cable tray shall extend over all equipment frames.
2. Cable tray shall be a minimum width of 2” high x 12” wide. Cable tray may be sized upwards if fill ratio requirements need to be met based on cable quantities.
3. Manufacturer of tubular ladder type cable tray in telecommunication rooms shall be Cooper BLine, Chatsworth (CPI), CommScope or approved equal.
4. Cable tray shall be 12 inch cable runway.
5. Rectangular steel tubing cross members welded at 12-inch intervals. Finish in black enamel. CommScope, Part Number CR-SLR-10L-12W or equivalent.
   a. 12-inch Wall Angle Assembly Kit – CommScope Part Number CR6-12WRSK or equivalent.
   b. 3-inch Channel Rack–To-Runway Mounting Plate - CommScope Part Number CRR2RRMK or equivalent.
   c. End Closing Tube - CommScope Part Number CRPECK or equivalent.
   d. Corner Clamp - CommScope Part Number CRTJSK or equivalent (2 required per End Closing Tube to complete assembly).

D. All open pathway/trays shall be installed a minimum of six (6) inches away from any light fixture or other source of EMI (Electromagnetic Interference).

E. All pathways shall be grounded per NEC Article 250.

F. Provide external grounding strap at expansion joints, sleeves and crossover and at other locations where pathway/tray continuity is interrupted.

G. Support all pathways from building construction. Do not support pathways from ductwork, piping, or equipment hangers.

H. Install cable tray level and straight unless noted on the construction drawings

2.3. Station Conduits

Station conduit is defined as conduit that originates at the TO and rises within the walls or is exposed from a raceway and extends up into the drop ceiling or over to the hallway distribution system.

A. Provide station conduits from TOs to above the drop ceiling or extend over to the hallway distribution systems consisting of 1” EMT minimum or appropriate size as shown on the Drawings or as specified herein for installation of telecommunications cables.

B. Provide an insulating press fit bushing on all telecommunications conduits including interconnecting nipples and stub to distribution system. To prevent conflicts with other cables or conduits to cable tray, the conduit shall be stubbed not less than 6" above or below conduit/cable tray center line. Where space permits, every effort

shall be made to bend station conduits down such that the flow of installed cables promotes the minimum length back to the TR and the least amount of bends in the cables. Bushings must be rated to be used in an environmental air handling space (Plenum).

C. Manufacturer of insulating bushing on all telecommunication conduits shall be:

1. Arlington, Erico Caddy or equivalent

D. Provide pull line in each empty conduit to hallway distribution system.

E. Indelibly mark station conduit at hallway distribution end with Room # that conduit serves.

F. The use of 90 degree electrical pulling elbows is prohibited.

G. Do not include more than two 90 degree bends between pulling points when installing station conduit runs. If the path of the station conduits requires more than 180 degrees of total bends, installation of an appropriate sized junction box is required. See section 2.4 for junction box requirements.

H. Place an appropriate sized junction box in each individual station conduit run that exceeds 100 feet in length.

I. The use of a third bend in a conduit is only acceptable if:

1. The total conduit run is reduced by 15%.
2. The conduit size is increased to the next trade size.
3. One of the bends is located within 12” of the cable feed end.

2.4. Junction Box Requirements for Station Conduits

A. If the station conduit route exceeds the 180 degree of total bends limitation, an appropriate sized junction box is required within a straight section of the conduit run.

B. Each station conduit run requires a separate junction box. The sharing of a junction box by multiple conduits is prohibited.

C. A junction box shall not be used in place of a bend. All junction boxes in station conduit paths shall be installed within a straight section of the conduit run.

2.5. Service Entrance Conduits

A. Entrance conduits shall be continuous into the building and to the ER. Securely fasten all entrance conduits to the building to withstand any cable placing operation. Do not include more than two 90 degree bends between pulling points when installing entrance conduits.

B. On exterior wall penetrations, seal both sides of the wall around outside of conduit with hydraulic cement to prevent water from entering the building. Seal the inside of the conduit on both sides with conduit plugs, water plugs, or duct sealer to prevent water, vapors, or gases from entering the building.

2.6. Pathway Requirements for Entrance Conduits

A. If the entrance conduits exceeds the 180 degree of total bends limitation, an appropriate sized junction box, manhole, or handhole is required.

B. As-built drawings of entrance conduit path required to be submitted to Owner's Representative before covered with soil.

2.7. Riser Conduits

Riser conduits shall only be used when noted on the Construction Documents for special applications only. Riser conduits are not required as a general rule for the riser system. However, when required:

A. Minimum of (2) 4" conduits shall be installed between the ER room and each TR room as shown on the Drawings.

B. Conduits entering ER and TR rooms shall be reamed or bushed and terminated not more than 4" from entrance wall and within 12" of room corners.

C. Conduits entering ER and TR rooms from below floor shall be terminated not more than 4" above finished floor.

D. Conduits for riser cables shall be continuous and separate from all other conduit or enclosed raceway systems. Do not include more than two 90 degree bends between pulling points when installing riser conduits. Where junction boxes are required, locate in accessible areas, such as above suspended ceilings in hallways.

E. Conduits shall not be less than 4" trade size and be equipped with a measured pull line at 12" increments rated at a minimum 1200 pound test.

F. Provide restorable fire stops inside and around conduits as recommended by UL1479 or ASTM E814 for all conduits penetrating fire-rated construction. Fire-rated construction to be verified with AHJ. See Section 27 05 32 for more firestopping information.

G. Provide an insulating press fit bushing on all telecommunications riser conduits. Bushings must be rated to be used in an environmental air handling space (Plenum).

1. Manufacturer of insulating bushing on all telecommunication conduits shall be Arlington or equal.

H. Riser conduits shall not be used for the distribution of horizontal cables.

2.8. Firestopping

A. In all buildings, floor/ceiling assemblies, stairs, and elevator penetrations must be sealed with a 2-hour fire stop assembly at a minimum, unless otherwise noted.

B. Contact Owner's Representative to identify walls which are fire-rated construction. Walls must be sealed with a 2-hour fire stop assembly at a minimum.

C. Communication pathways requiring fire stopping shall utilize removable/re-usable fire stopping putties for ease of Moves, Adds, and Changes.

D. All fire stopping penetrations shall conform to the recommended practices listed in UL1479 or ASTM.

E. See Section 27 05 32 - Firestopping for Telecommunications Systems

3. EXECUTION

3.1. General Requirements

A. The intention of the telecommunications conduits is to provide a route between ER and TR rooms, routes from the TRs throughout building floors to hallways, and routes from hallway distribution systems into rooms to individual TOs for telecommunications cabling.

B. Installation of new pathways shall not interfere with existing pathways in such a way that installation of new cables within the existing pathway is made more difficult.

3.2. Examination

A. Examine areas to receive cable management system. Notify the Owner's Representative of conditions that would adversely affect the installation or subsequent utilization of the system.

B. Do not proceed with installation until unsatisfactory conditions are corrected.

3.3. Installation

A. Install in accordance with recognized industry practices, to ensure that the equipment complies with requirements of the NEC, and applicable portions of NFPA 70B and NECA "Standards of Installation" pertaining to general electrical installation practice.

B. Coordinate installation with other trades.

C. Field verification is required before installation.

D. Install cable management system at locations indicated on the drawings and in accordance with manufacturer's instructions.

27 05 29 Hangers and Supports for Communications Systems

1. GENERAL

1.1. Work Includes

The work covered under this section consists of the furnishing of all necessary labor, supervision, materials, equipment, and services to completely execute the system of non-continuous cable supports as described in this specification.

1.2. Scope of Work

This Section includes the minimum requirements for the support structures for the Communications Systems for the project as outlined in the Bid Document.

A. Non-continuous cable supports (2.3A)
B. Adjustable non-continuous cable support sling (2.3B)
C. Multi-tiered non-continuous cable support assemblies (2.3C)
D. Non-continuous cable support assemblies from tee bar (2.3D)
E. Non-continuous cable support assemblies from drop wire/ceiling (2.3E)
F. Non-continuous cable support assemblies from beam, flange (2.3F)
G. Non-continuous cable support assemblies from C & Z Purlin (2.3G)

H. Non-continuous cable support assemblies from wall, concrete, or joist (2.3H)
I. Non-continuous cable support assemblies from threaded rod (2.3I)
J. Raised floor non-continuous cable support assemblies (2.3J)
K. Cantilever-Mounted Option for non-continuous cable supports (2.3K)
L. Installation accessories for non-continuous cable supports (2.3L)

1.3. Submittals

A. Submit product data on non-continuous cable support devices, including attachment methods. Product data to include, but not limited to materials, finishes, approvals, load ratings, and dimensional information.

1.4. Quality Assurance

A. Non-continuous cable supports and cable support assemblies shall be listed by Underwriters Laboratories for both Canadian and US standards (cULus).
B. Non-continuous cable supports shall have the manufacturers name and part number stamped on the part for identification.

1.5. Coordination

A. Coordinate installation of hangers, supports and cables with other trades.

2. PRODUCTS

2.1. Acceptable Manufacturers

A. Subject to compliance with these specifications, non-continuous cable supports shall be as manufactured by:

2.2. Non-continuous Cable Support Systems

A. Non-continuous cable supports
   1. Non-continuous cable supports shall provide a bearing surface of sufficient width to comply with required bend radii of high-performance cables; cULus Listed.
   2. Non-continuous cable supports shall have flared edges to prevent damage while installing cables.
   3. Non-continuous cable supports sized 1 5/16” and larger shall have a cable retainer strap to provide containment of cables within the hanger. The cable retainer strap shall be removable and reusable and be suitable for use in air handling spaces.
   4. Non-continuous cable supports shall have an electro-galvanized or G60 finish and shall be rated for indoor use in non-corrosive environments.
   5. Stainless Steel non-continuous cable supports are intended for indoor and outdoor use in non-corrosive environments or where only mildly corrosive conditions apply.
   6. Non-continuous cable supports shall be as manufactured by:

B. Adjustable non-continuous cable support sling
   1. Constructed from steel and woven laminate; sling length can be adjusted to hold up to 425 4-pair UTP; rated for indoor use in non-corrosive environments. Rated to support Category 5e and higher cable, or optical fiber cable; cULus Listed.

2. Adjustable non-continuous cable support sling shall have a static load limit of 100 lbs.
3. Adjustable non-continuous cable support sling shall be suitable for use in air handling spaces.
4. If required, assemble to manufacturer recommended specialty fasteners including beam clips, flange clips, C and Z purlin clips.
5. Acceptable products:

C. Multi-tiered non-continuous cable support assemblies
1. Multi-tiered non-continuous cable support assemblies shall be used where separate cabling compartments are required. Assemblies may be factory assembled or assembled from pre-packaged kits. Assemblies shall consist of a steel angled hanger bracket holding up to six non-continuous cable supports, rated for indoor use in non-corrosive environments; cULus Listed.
2. If required, the multi-tier support bracket may be assembled to manufacturer recommended specialty fasteners including beam clamps, flange clips, C and Z purlin clips.
3. The multi-tiered support bracket shall consist of:

D. Non-continuous cable support assemblies from tee bar
1. Tee bar support bracket with one non-continuous cable support, factory or jobsite assembled; rated for indoor use in non-corrosive environments; cULus Listed.
2. Acceptable products:

E. Non-continuous cable support assemblies from drop wire/ceiling
1. Fastener to wire/rod with one non-continuous cable support, factory or jobsite assembled; rated for indoor use in non-corrosive environments; cULus Listed.
2. Acceptable products:

F. Non-continuous cable support assemblies from beam, flange
1. Fastener to beam or flange with one non-continuous cable support, factory or jobsite assembled; rated for indoor use in non-corrosive environments; cULus Listed.
2. Acceptable products:

G. Non-continuous cable support assemblies from C & Z Purlin
1. Fastener to C or Z purlin with one non-continuous cable support, factory or jobsite assembled; rated for indoor use in non-corrosive environments, cULus Listed.
2. Acceptable products:

H. Non-continuous cable support assemblies from wall, concrete, or joist
1. Fastener to wall, concrete, or joist with one non-continuous cable support, factory or jobsite assembled; rated for indoor use in non-corrosive environments, cULus Listed.
2. Acceptable products:

I. Non-continuous cable support assemblies from threaded rod
1. Fastener to threaded rod with one non-continuous cable support, factory or jobsite assembled, rated for indoor use in non-corrosive environments, cULus Listed.
2. The multi-tiered support bracket shall have a static load limit of 300 lbs.
3. U-hooks and Double J-hook shall attach directly to threaded rod using standard nuts.
4. Acceptable products:

J. Raised floor non-continuous cable support assemblies
1. Fastener to raised (access) floor pedestal with one non-continuous cable support, factory or jobsite assembled, rated for indoor use in non-corrosive environments; cULus Listed.

2. Acceptable products:

K. Cantilever-Mounted cable supports
   1. U-hook shall be able to be assembled to a wide variety of wall mount brackets.
   2. Spacing of individual U-hooks as needed, max of 4’ to 5’ apart.
   3. U-hooks may have the optional attachment of a cable roller for ease in pulling cables.
   4. Acceptable products:

L. Installation accessories for non-continuous cable supports
   1. Cable Pulley
      a. Non-continuous cable supports may be used as an installation tool when a removable pulley assembly is included. The pulley shall be made of plastic and be without sharp edges. The pin and bail assembly must be able to be secured to the J-Hook during cable installation. The pulley must remain secured while cables are being pulled.
      b. The pin and roller assembly must be removed after cables are installed.
      c. Acceptable products:
   2. Cable Protector
      a. The protective steel tube shall fit over threaded rod and be at least 4” in length.
      b. The tube shall prevent damage to cables placed in or pulled through CAT-CMTM U-hooks. The tube shall not inhibit the pulling of cables.
      c. Acceptable products:

2.3. Finishes

A. ASTM B633 Standard Specification for Electro-deposited Coatings of Zinc on Iron and Steel
   ASTM B 695 Standard Specification for coatings of Zinc Mechanically Deposited on Iron and Steel
   ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   ASTM A924/A924M Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

B. Non-continuous cable supports used where only mildly corrosive conditions apply shall be stainless steel, AISI type 304.

3. EXECUTION

3.1. Installation

A. Installation and configuration shall conform to the requirements of the current revision levels of ANSI/ EIA/TIA Standards 568 & 569, NFPA 70 (National Electrical Code), applicable local codes, and to the manufacturer’s installation instructions.
B. Do not exceed load ratings specified by manufacturer.
C. Adjustable non-continuous support sling shall have a static load limit of 100 lbs.
D. Follow manufacturer’s recommendations for allowable fill capacity for each size non-continuous cable support.
E. Locate pathways per Telecommunications Drawings.

27 05 32 Firestopping for Telecommunications Systems

1. GENERAL

1.1. Scope

A. This SECTION describes the requirements for furnishing and installing firestopping for fire-rated construction. This includes all openings in fire-rated floors, walls and other rated elements of construction, both blank (empty) and those accommodating items such as cables, conduits, pipes, ducts, etc.

B. Fireblocking for Concrete Floor or Wall Sleeved Cables.

C. Fireblocking for Gypsum Wall Sleeved Cables.

D. Fireblocking for Concrete Block Wall Sleeved Cables.

1.2. Related Documents:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 7 Specification Sections, apply to this Section.

1.3. Submittals

A. Submit manufacturer's product literature and installation procedures for each type of Firestop material to be installed. Literature shall indicate product characteristics, typical uses, performance and limitation criteria and test data. Submit cured samples of firestop materials.

B. Product Data: Shall be clearly marked to indicate all technical information which specifies full compliance with requirements of this section and Contract Documents, including the following:

1. Copy of UL illustration of each proposed system indicating manufacturer's approved modifications.
2. Each condition requiring penetration seals in proposed UL systems materials, anchorage, methods of installation and actual adjacent construction.

1.4. Quality Assurance

A. Firestopping systems (materials and design) shall conform to both Flame (F) ratings and Time (T) ratings as required by local building code and as tested by nationally accepted test agencies per ASTM E814 or UL 1479 fire tests in a configuration that is representative of field conditions.

1.5. Coordination

A. Coordinate layout and installation of Firestopping System with other trades.

B. Revise locations and elevations from those indicated as required to suit field conditions and as approved by the Architect.

2. PRODUCTS

2.1. Acceptable Manufacturers:

A. Materials and products required for work of this section shall not contain asbestos or polychlorinated biphenyls (PCB).

B. Manufacturers: 3M, STI, & Hilti

C. Firestopping System must be approved by the local AHJ before purchase or installation.

2.2. General

Provide and install firestopping materials to meet applicable codes and installation requirements for each firestopping application. Products using caulking, putties, wrap strips, mortars, composite boards and/or mechanical devices shall be used as appropriate for the specific condition.

2.3. Caulking

When caulking is used, provide and install flexible caulking materials. Cured firestop materials 1/8 thick shall be able around a 1” mandrell without breaking.

2.4. Firestop

Do not use any firestop products which re-emulsify, leach active intumescent ingredients or dissolve when placed in water after curing. Product must withstand the passage of cold smoke, either as inherent property of the system or by the use of a separate product included as part of the UL system or device, and designed to perform this function.

2.5. Penetration Seals

A. General:

1. Penetration seals (firestopping material) shall be asbestos-free and capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ASTM E814 and UL 1479.
2. Materials shall meet and be acceptable for use by all three model building codes, Basic/National Building Code, Building Code and Standard Building Code, per National Evaluation Service, Inc. report # NER-243.
3. Materials shall meet requirements of NFPA 101 and NFPA 70.
4. Materials shall be suitable for the firestopping of penetrations made by steel, glass, plastic and insulated pipe, conduit, bus duct, noninsulated pipe and ductwork.
5. On insulated pipe, fire-rating classification must not require removal of insulation.
6. The rating of penetration seals shall not be less than the rating of the time-rated floor or wall assembly.
7. Systems shown below are examples and other equal systems may be approved or required by the AHJ.

B. 2-hour Rated Concrete Floor:

1. Penetrants: Multiple pipes.
2. UL System: No. 93.

C. 2-hour Rated Concrete Floor:

1. Penetrants: Maximum 30” dia. Metal pipe/conduit.
2. UL System: No.319

D. 1-2 –Hour Rated Gypsum Board Wall:

1. Penetrant: Metal pipe/conduit.
2. UL System: No. 147

E. 2-Hour Rated Gypsum Board Wall:

1. Penetrant: Metal pipe/conduit.
2. UL System: No. 147.

F. 3-Hour Rated Concrete Wall:

1. Penetrant: Metal duct, maximum 2’ square and maximum dimension of 30”.
2. UL System: No. 105.

G. Walls Below Grade:

1. Penetrants: Pipe sleeves.
2. Seal: Thunderline “Link Seal” casing seal.

3. EXECUTION

3.1. Inspection

Examine the areas and condition where Firestops are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected by the contractor in a manner acceptable to the Architect.

3.2. Conditions Requiring Firestopping

A. General – Provide firestopping for conditions specified whether or not firestopping is indicated, and if indicated, whether such material is designed as insulation, safing, or otherwise.

B. At any point where a fire rated wall is penetrated with cable or conduit.

C. Penetrations

1. Penetrations include conduit, cable wire, pipe, duct or other elements which pass through one or both outer surfaces of a fire rated floor, wall or partition.
2. These requirements for penetrations shall apply whether or not sleeves have been provided, and whether of not penetrations are to be equipped with escutcheons or other trim. If penetrations are sleeved firestop any annular space between the sleeve and wall opening.

D. Provide firestopping to fill miscellaneous voids and openings in fire-rated construction as specified herein.

3.3. 3.3 Installation

A. General

1. Installation of Firestops shall be performed by a applicator/installer qualified and trained by the manufacturer. Installation shall be performed in strict accordance with manufacturer’s detailed installation procedures.

2. Apply Firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations.
3. Coordinate with plumbing, mechanical, electrical and other trades to assure that all pipe, conduit, cable, and other items which penetrate fire-rated construction have been permanently installed prior to installation of Firestop.

B. Field Quality Control

1. Prepare and install firestopping systems in accordance with manufacturer's printed instructions and recommendations.
2. Follow safety procedures recommended in the Material Safety Data Sheets.
3. Finish surfaces of firestopping which is to remain exposed in the completed work to a uniform and level condition.
4. All areas of work must be accessible until inspection by the applicable Code Authorities.
5. Correct unacceptable firestops and provide additional inspection to verify compliance with this specification at no additional cost.

C. Calculate the maximum cable fill ratio for each FireStopping System and cable type. Do not exceed the maximum fill ratio.

D. Prepare and install firestopping systems in accordance with manufacturer's printed instructions and recommendations.

3.4. Warranty

A. A. Comply with General Conditions, and include but not be limited to:

1. Repairs and replacement of penetration seals which fail in joint adhesion, cohesion, abrasion, resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability, or appear to deteriorate in any other manner not clearly specified in submitted manufacturer's data as an inherent quality of the material for exposure indicated.

3.5. Cleaning

A. Remove spilled and excess materials adjacent to firestopping without damaging adjacent surfaces.

B. Leave finished work in neat, clean condition with no evidence of spillovers or damage to adjacent surfaces.

27 05 33 Conduits and Backboxes for Communications Systems

1. GENERAL

1.1. Outlets Cat5e and Cat6

A. Each data outlet in a wall or floor shall be served by two (2) 1 in. conduits and a double-gang deep device box with a single-gang mud ring.

B. Wall mounted telephones shall be served by one 0.75 in. conduit and a single-gang deep device box with a single-gang mud ring. The outlet box shall be mounted at a center height of 48 in. above the finished floor, unless otherwise specified on the drawing, and shall have a clearance of 12 in. of wall surface on all sides.

C. All outlet conduits shall be stubbed into accessible ceiling space.

D. All outlet conduits shall have burrs and any other abrasive elements removed and an insulating bushing shall be installed on both ends.

E. No section of conduit shall be longer than 30 m (100 ft.) between pull points.

F. No more than 180 degrees of conduit bends shall be permitted between pull points.

G. The minimum inside radius for any bend of an outlet conduit shall be six times the inside diameter of that conduit.

1.2. Outlets Cat6A

A. Each data outlet in a wall or floor shall be served by two (2) 1.25 in. conduits and a 5-Square double-gang deep device box with a single-gang mud ring.

1. Approved manufactures: Steel City, Rand-L, or approved equal

B. All outlet conduits shall be stubbed into accessible ceiling space.

C. All outlet conduits shall have burrs and any other abrasive elements removed and an insulating bushing shall be installed on both ends.

D. No section of conduit shall be longer than 30 m (100 ft.) between pull points.

E. No more than 180 degrees of conduit bends shall be permitted between pull points.

F. The minimum inside radius for any bend of an outlet conduit shall be six times the inside diameter of that conduit.

1.3. Conduits

A. Electric metallic tubing: Comply with UL 797. Tubing shall have hot dipped galvanized exterior, enamel-coated interior.

G. Flexible conduit shall not be used in lieu of conduit bends and offsets.

H. PVC conduit: Comply with UL 651, listed for use with 90 degrees C conductors operating at 90 degrees C.

1.4. Standards Compliance

A. General standards: Comply with current revision of TIA 569 as amended

1.5. Submittals

A. Provide product data for the following:

1. Manufacturers cut sheets, specifications and installation instructions for all products (submit with bid).

1.6. Coordination

A. Coordinate installation of labels with other trades.

I. Storage and Handling: Avoid breakage, denting and scoring finishes. Damaged products will not be installed. Store materials in original cartons and in a clean dry space; protect from weather and construction traffic. Wet materials will be unpacked and dried before storage.

2. PRODUCTS

2.1. Approved Products

A. Dry location device boxes: Manufacturer shall be:

1. Steel City, Rand-L, Hubbell, or Raco
   Equivalent products by other manufacturers may be used where approved in writing by Owner's Representative.

J. Wet location boxes: Manufacturer shall be:

1. Steel City, Rand-L, Hubbell, or Raco
   Equivalent products by other manufacturers may be used where approved in writing by Owner's Representative.

3. EXECUTION

3.1. Installation

A. Installation and configuration shall conform to the requirements of the current revision levels of ANSI/ EIA/TIA Standards 568 & 569, NFPA 70 (National Electrical Code), applicable local codes, and to the manufacturer’s installation instructions.

K. Install conduits using techniques, practices, and methods that are consistent with Category 6 or higher requirements and that supports Category 6 or higher performance of completed and linked signal paths, end to end.

L. Follow manufacturer’s recommendations for allowable fill capacity for each size non-continuous cable support.

27 05 36 Cable Trays for Communications Systems

1. GENERAL

1.1. Scope

A. Continuous, rigid, welded steel or stainless steel wire mesh cable management system.

B. Cable tray systems are defined to include, but are not limited to, straight sections, supports and accessories.

1.2. Related Documents:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.3. Quality Assurance

A. Source Limitations: Obtain cable tray components through one source from a single manufacturer.

B. Comply with NFPA 70, National Electrical Code, Article 392: Cable Trays; provide UL Classification and labels.

1.4. Coordination

A. Coordinate layout and installation of cable tray with other trades.

B. Revise locations and elevations from those indicated as required to suit field conditions and as approved by the Architect.

2. PRODUCTS

2.1. Manufacturers

A. Subject to compliance with requirements, provide products by the following:

2.2. Materials and Finishes:

A. Cable Tray Materials:

Carbon steel wire, ASTM A 510, Grade 1008. Wire welded, bent, and surface treated after manufacture.

B. Cable Tray Finishes:

Finish for Carbon Steel Wire after welding and bending of mesh;

1. Electrodeposited Zinc Plating: ASTM B 633, Type III, SC-1.
2. Powder-Coated Trays – UL classified Black powder-coated surface treatment over Electrodeposited Zinc Plating (or plain steel) using ASA 61 black polyester coating.

C. Cable tray will consist of continuous, rigid, welded steel wire mesh cable management system, to allow continuous ventilation of cables and maximum dissipation of heat, with UL Classified splices where tray(including UL Classified painted tray) acts as Equipment Grounding Conductor (EGC). Wire mesh cable tray will have continuous Safe-T-Edge T-welded top side wire to protect cable insulation and installers.

D. Provide splices, supports, and other fittings necessary for a complete, continuously grounded system.

Mesh: 2 x 4 inches (50 x 100 mm).
Straight Section Lengths: 118 inches (3,000 mm).
Wire Diameter: Patented design includes varying wire sizes to meet application load requirements; to optimize tray Strength; and to allow tray to remain lightweight.
Safe-T-Edge: Patented Safe-T-Edge technology on side wire to protect cable insulation and installers' hands.
Fittings: Wire mesh cable tray fittings are field-fabricated from straight tray sections, in accordance with manufacturer's instructions and Item 2.3.

E. CF Series Cable Tray Size:

1. Depth: Cable tray depth will be 4 inches
2. Width: Cable tray width will be 6 ,12, 18, or 24 inches as shown on Telecommunications Drawings:
3. Length: Cable tray section length will be 118 inches (3000mm) unless otherwise shown on drawings.

4. Fill Ratio: Cable tray may be filled to total fill capacity per NEC. Minimum 20% spare capacity recommended to accommodate future cabling changes or additions.
5. Load Span Criteria:
6. Cable tray will be capable of carrying a uniformly distributed load of 50 pounds per foot on an 8 ft support span, according to load tests of standard shown in Item A above.

2.3. Cable Tray Supports & Accessories

A. Fittings/Supports: Wire mesh cable tray fittings are field-fabricated from straight tray sections, in accordance with manufacturer's instructions. Supports will include the FAS (Fast Assembly System) where possible so that screws, bolts, and additional tools are not required for cable tray mounting; installation time is reduced; and tray path can adapt to installation obstacles without the need for additional parts. Place supports so that support span does not exceed that shown on the drawings.

1. FAS System support methods to mount from ceiling and wall structures with 1/4", 3/8" or 1/2" threaded rod, if applicable
2. Splices, including those approved for electrical continuity (bonding), as recommended by cable tray manufacturer. Select one of the following splicing methods, if applicable:
   a. UL Classified EDRN Fast Splice: No hardware required
   b. UL Classified SWK Splice Washer Kit: Swaged set for splicing, turns, bends, tees
   c. UL Classified ED Universal Splice Bar: Cut & bend to fit any configuration
   d. Preclick Splice: Bolted connection optional
   e. UL Classified EDT Splice Plate: Bolted connection
   f. UL Classified CE 25 & CE 30 Square Splice Washers: Use with EZ BN ¼" Nut & Bolt
   g. UL Classified CE 40 Square Splice Washer: Use with EZ BN ¼" to splice trays on bends, adjustable tees
   h. FASLock Splice: For sweeps and bends with tray 12" (300mm) and wider.
   i. UL Classified EZ T 90 kit: For Tees and 90s
   j. UL Classified RADT90 kit: For 5-1/2" radius Tees and 90s

A. Accessories: As required to protect, support, and install a cable tray system. Select from the following accessories, if applicable:

2.4. Equipment Grounding Conductor Function & Grounding

A. UL Classified cable trays (including painted tray) may act as Equipment Grounding Conductors.

B. Use UL Classified splicing methods to ensure cable tray is electrically continuous and bonded as recommended.

Ground cable trays at end of continuous run.

C. Test cable tray system per NFPA70B, Chapter 18 to verify grounding less than 1 ohm.

D. Ground cable trays against fault current, noise, lightning, and electromagnetic interference by mounting grounding wire to each 10' cable tray section with grounding clamp.

3. EXECUTION

3.1. Examination:

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of cable trays. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2. Installation

A. Install cable tray level and plumb according to manufacturer's written instructions, Coordination Drawings, original design, and referenced standards.

B. Cutting: Field-fabricate changes in direction & elevation by cutting & bending cable tray.

1. Cut cable tray wires in accordance with manufacturer’s instructions.
2. Cable tray wires must be cut with side-action bolt cutters with offset head to ensure integrity of protective galvanic layer.
3. Remove burrs and sharp edges from cable trays.

27 05 43 Underground Ducts and Raceways for Communications Systems

A. Outdoor telecommunications pathways connect building, pedestals, maintenance holes, handholds, and towers. These pathways consist of underground, direct-buried or aerial. Underground or direct-buried are generally preferred over aerial because of aesthetics and security. Generally, underground duct banks are preferred over direct-buried because of security, ease of future cable installation and maintenance.

C. Conduit Types

Examples of conduit types include:
— EB-20 – For encasement in concrete;
— EB-35 – For encasement in concrete;
— DB-60 – For direct burial or encasement in concrete;
— DB-100 – For direct burial or encasement in concrete;
— DB-120 – For direct burial or encasement in concrete;
— Rigid Nonmetallic Conduit Schedule 40 – For direct burial or encasement in concrete;
— Rigid Nonmetallic Conduit Schedule 80 – For direct burial or encasement in concrete;
— Multiple Plastic Duct (MPD) – For direct burial or installation in conduit;
— Rigid Metallic Conduit – For direct burial or encasement in concrete;
— Intermediate Metallic Conduit – For direct burial or encasement in concrete;
— Fiberglass Duct – For direct burial or encasement in concrete;
— Innerduct Polyethylene (PE) – For direct burial or installation in conduit;
— Innerduct Polyvinyl Chloride (PVC) – For direct burial or installation in conduit

D. Installation

1. The length of conduit between pulling points shall not exceed 600 ft (183m).

2. Manufactured bends should be used whenever possible. No section of conduit shall contain more that two 90-degree bends, or equivalent between pull points.
3. Conduits should be installed such that a slope exists to allow drainage and prevent the accumulation of water.
4. When conduits connect maintenance holes, a slope of .125 in per foot (10 mm per meter) should exits from the middle of the span to each maintenance hole.
5. Conduits must be buried at a minimum depth of 18 in. (45.7 cm).

27 05 53 Identification for Communications Systems

1. GENERAL

1.1. Work Includes

A. Work covered by this Section shall consist of furnishing labor, equipment and materials necessary for the labeling of the telecommunications infrastructure as described on the Drawings and/or required by these specifications.

1.2. Scope of Work

A. This Section includes the minimum requirements for the Identification and labeling of the Communications Systems for the project as outlined in the Bid Document.

1.3. Summary

A. Administration of the telecommunications infrastructure includes documentation of cables, termination hardware, patching and cross-connection facilities, conduits, other cable pathways, Telecommunications Rooms, and other telecommunications spaces. All facilities shall apply and maintain a system for documenting and administering the telecommunications infrastructure.

B. Industry Labeling Standards and Conventions shall be used unless otherwise stated in the bid documents or by the Owner's Representative.

C. Telecommunications Infrastructure Records must be maintained in a computer spreadsheet, or in a computer database. Paper records are encouraged, but are optional. A cable record is prepared for each backbone cable. The record will show the cable name, and must describe the origin point and destination point of the cable. The cable record will record what services and/or connections are assigned to each cable pair or strand. An equipment record is prepared for services distributed from a certain piece of equipment, such as a router, or a system such as the telephone system PBX.

D. Installer shall maintain accurate, up-to-date Installation or Construction Drawings. At a minimum, the Installation Drawings shall show pathway locations and routing, configuration of telecommunications spaces including backboard and equipment rack configurations, and wiring details including identifier assignments.

E. Installer shall provide a complete and accurate set of as-built drawings. The as-built drawings shall record the identifiers for major infrastructure components including; the pathways, spaces, and wiring portions of the infrastructure which may each may have separate drawings if warranted by the complexity of the installation, or the scale of the drawings.

1.4. Quality Assurance

A. All labels shall be installed in a neat and workmanlike manner. All methods of labeling that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative.

B. Labels shall be of the quality and manufacture indicated. The labels and labeling equipment specified are based upon the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

C. Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data labeling.

2. PRODUCTS

2.1. Labels

A. Shall be preprinted or computer printed type. Hand written labels are not acceptable.

B. Where insert type labels are used provide clear plastic cover over label.

C. Outside plant labels shall be totally waterproof even when submerged.

3. EXECUTION

3.1. Identification & Labeling

A. The size, color, and contrast of all labels should be selected to ensure that the identifiers are easily read. Labels should be visible during the installation of and normal maintenance of the infrastructure.

B. Labels should be resistant to the environmental conditions at the point of installation (such as moisture, heat, or ultraviolet light), and should have a design life equal to or greater than that of the labeled component.

C. All labels shall be printed or generated by a mechanical device.

3.2. Telecommunication Identifiers

A. Outside Plant cabling shall be clearly marked using permanent means. Outside plant shall use the following system of numbering and labeling:

1. Fiber Optic:
   a. Identify: far-end building name, building number, fiber-type and strand-count
   b. Label at entrance and exit points of tunnel system and at conduit entry points between 12 inches and 36 inches from the conduit or at closet point that is clearly visible and long cable length in tunnel at 200 foot intervals.
   c. Label at termination panels at both ends.
2. Copper:
   a. Identify: far-end building name, building number and strand-count

b. Label at entrance and exit points of tunnel system and at conduit entry points between 12 inches and 36 inches from the conduit or at closet point that is clearly visible and long cable length in tunnel at 200 foot intervals.

B. Riser cabling shall be clearly marked using permanent means. Riser cabling shall use the following system of numbering and labeling:

1. Fiber Optic:
   a. Identify: far-end EF / ER / TR, fiber-type and strand-count.
   b. When small facilities are fed from a primary location and treated as an ER, riser shall be labeled similar to Outside Plant Fiber Optic.
2. Copper:
   a. Identify: far-end EF / ER / TR and pair-count
   b. Termination points shall be labeled as to actual pair at every fifth (5th) pair-point.

3.3. Labeling Procedures

A. To be consistent with ANSI/TIA/EIA standards and industry practices, it is important that both labeling and color coding be applied to all telecommunications infrastructure components. Labeling with the unique identifier will identify a particular component. Proper color coding will quickly identify how that component is used in the overall telecommunications infrastructure of the facility.

B. Visibility and durability:

1. The size, color, and contrast of all labels should be selected to ensure that the identifiers are easily read. Labels should be visible during the installation of and normal maintenance of the infrastructure.
2. Labels should be resistant to the environmental conditions at the point of installation (such as moisture, heat, or ultraviolet light), and should have a design life equal to or greater than that of the labeled component.
3. Labels are generally of either the adhesive or insert type. All labels must be legible, resistant to defacement, and maintain adhesion to the application surface.
4. Outside plant labels shall be totally waterproof, even when submerged.
5. Labels applied directly to a cable shall have a clear vinyl wrapping applied over the label and around the cable to permanently affix the label.
6. Other types of labels, such as tie-on labels, may be used. However, the label must be appropriate for the environment in which it is used, and must be used in the manner intended by the manufacturer.

C. Mechanical generation

1. All labels shall be printed or generated by a mechanical device.
2. Hand written labels are NOT acceptable.

END of SECTION

27 1000 Structured Cabling System

1. GENERAL

1.1. Related Documents

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. Division-26 & 27, Basic Materials and Methods sections apply to work specified in this section.

1.2. References

A. ANSI/TIA-492.AAAC-B – Detail Specification for 850-nm Laser-Optimized, 50-um Core Diameter/125-um Cladding Diameter Class 1a Graded-Index Multimode Optical Fibers

B. ANSI/TIA-492.AAAD – Detail Specification for 850-nm Laser- Optimized, 50-µm Core Diameter/125-µm Cladding Diameter Class la Graded-Index Multimode Optical Fibers Suitable for Manufacturing OM4 Cabled Optical Fiber

C. ANSI/TIA-492.CAAB – Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers with Low Water Peak. Current Edition

D. ANSI/TIA-568.0-D – Generic Communications Cabling for Customer Premises

E. ANSI/TIA-568.1-D – Commercial Building Communications Cabling Standard

F. ANSI/TIA-568-C.2-1 – Balanced Twisted-Pair Telecommunications Cabling and Components Standards

G. ANSI/TIA-568.3-D – Optical Fiber Cabling and Components Standard

H. ANSI/TIA-569-D – Telecommunications Pathways and Spaces

I. ANSI/TIA-606-B.1 – Administration Standard for the Commercial Telecommunications Infrastructure.

J. ANSI/TIA-607-C – Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises

K. ANSI/TIA-862-B – Structured Cabling Infrastructure Standard for Intelligent Building Systems

L. ANSI/TIA-942-A – Telecommunications Infrastructure Standard for Data Centers

M. NFPA 70 – National Electrical Code (NEC). Current edition at time of bid.

N. BICSI – TDMM, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM)

1.3. Scope of Work

A. The intent of this specification section is to cover the materials and installation of a technology wiring system and termination equipment as outlined herein and as detailed on the drawings and room charts. Work shall consist of a copper voice and data station cabling system, a copper voice backbone cabling system, a fiber data

backbone system, a coaxial video backbone and station cabling system, Video, voice and data outlets/jacks and a local audio/video cabling system as follows:

B. Voice and Data station cabling (copper and fiber) system shall consist of:

1. Workstation outlet jacks.
2. Voice and data station cabling as specified herein from each workstation outlet to the termination equipment located in the Horizontal Cross-connect - Intermediate Distribution Frame Closet (HC-IDF) or the Main Cross-connect - Main Distribution Frame Closet (MC-MDF).
3. Station Cable Termination Equipment in each HC-IDF/MC-MDF.
4. Final connections of the station cabling at the workstation outlet jack and the termination equipment in each HC-IDF/MC-MDF.
5. Voice and Data Backbone cabling system (copper and fiber) shall consist of:
    a. Voice and Data backbone cabling as specified herein from each IDF to the MDF and Voice Backbone cabling from the main telephone service entrance to the MDF. Refer to the drawings for specific cabling requirements.
    b. Backbone Cable Termination equipment in each HC-IDF/MC-MDF and at the telephone service entrance.
    c. Final connections of the backbone cabling on the termination equipment in each HC-IDF/MC-MDF and at the telephone service entrance.
6. Video station cabling system shall consist of:
    a. Video jacks and termination equipment incorporated with the voice/data workstation jacks within the same coverplate as indicated on the drawings.
    b. Video jacks and termination equipment for the Video distribution system within the building.
    c. Local video and audio station cabling within the classroom
7. Video Backbone cabling system shall consist of:
    a. Video backbone cabling as specified herein from each IDF to the MDF and Video Backbone cabling from the main cable TV service entrance to the MDF. Refer to the drawings for specific cabling requirements.
    b. Backbone Cable Termination equipment in each HC-IDF/MC-MDF.
    c. Final connections of the backbone cabling on the termination equipment in each HC-IDF/MC-MDF.
8. Telecommunications Grounding System per EIA/TIA 607.
    a. Provide a Telecommunications Main Ground Bar (TMGB) in the MDF. This ground bar shall be electrically bonded to the Building Main Electrical Service Ground with an Insulated, #6, copper grounding conductor.
    b. Provide a Telecommunications Ground Bar (TGB) in each IDF.
    c. Provide a Telecommunications Bonding Backbone (TBB) from the TMGB to each TGB. This backbone shall consist of a minimum #6, insulated, copper grounding conductor. The TBB shall be bonded to the ground bars at each

end and shall be run with the backbone cabling from the MDF to each IDF. The TBB shall run continuous and be unspliced.

d. Provide an additional grounding connection (minimum #6) from each ground bar to the nearest accessible Building Electrode Grounding System.

e. All work shall be in compliance with CEC, NEC, Article 250 & 800.

1.4. Standards

A. All work shall be installed in compliance with the latest edition of the Commercial Building Telecommunications Wiring Standard EIA/TIA. BICSI Standards and applicable National Electric Code Sections. All equipment shall be UL listed.

B. The Contractor or Sub-Contractor shall be a member of Building Industry Consulting Service International (BICSI) and have a Registered Communication Distribution Designer (RCDD) status.

C. The Contractor or Sub-Contractor shall provide the services and equipment of a company listed by Underwriters Laboratories, Inc. in its directory as being capable of furnishing the system specified herein. Said company shall be authorized to, and shall, issue a certificate stating that the equipment and connected wiring and devices which form the specified system, together with installation and maintenance service, are in compliance with the requirements established by Underwriters Laboratories and EIA/TIA Standards.

D. Work shall be performed by a BICSI certified Telecommunications Contractor or Sub-Contractor. Telecommunications Contractors that wish to be considered for this project shall have an on-staff RCDD. Proof of this shall be presented in writing by the winning contractor to the Owner/Architect/engineer prior to contract signing. It shall not be acceptable for any portion of the work specified herein to be performed by a sub-contractor unless such sub-contractor has been pre-approved by the Owner/Architect in writing.

E. BICSI Certification shall include the following:

1. Copy of the BICSI RCDD certificate for the Contractor's or Sub-Contractor on-staff, full time project manager.

2. Copy of the BICSI Apprentice, Installer or Technician certificate(s) for the Contractor's or Sub- Contractor on-staff, full time installation personnel. Prior to commencement of work, the Contractor shall submit the resume of personnel assigned to the project. Any approval given during bidding shall be based upon the information submitted. Change in approved personnel prior to completion of the project shall be brought to the attention of the Engineer for review.

3. Copy of the Voice/Data system Manufacturers Approval Certificate indicating that the contractor is a certified installer of the proposed voice and data cabling equipment/Cabling System Solution.

1.5. Wiring Methods

A. The entire voice/video and data horizontal station cabling solution shall be a listed EIA/TIA, Link configuration for voice and Link/Channel configuration for data, cabling system solution from a single Manufacturer/Source as required by the Manufacturer/Source. Standard: The Cabling System Solution shall be

CommScope/Systemax, Panduit, Belden/CDT, Hubbell/General Cable or Leviton/Berktek.

B. All cables shall be run in conduit from outlet to above accessible ceiling.

C. Horizontal (station) cable shall be plenum rated. Backbone cabling shall be plenum rated.

D. J-hooks/cable management system where specifically allowed shall be installed on 48” centers and supported from structure as required by the manufacturer.

E. Refer to drawings for quantity and arrangement of voice/data/technology outlets including jacks and cabling.

F. General - All Multi-Mode fiber and Single-Mode fiber shall be terminated utilizing a factory-made LC Pigtail and fusion spliced, or factory pre-terminated polished end. All fiber optic cable to be installed in innerduct.

1.6. Quality Assurance

A. Contractor shall assign competent person as project manager who has demonstrated the ability to supervise a project of similar size and scope. Submit a resume of the proposed Project Manager for the District’s review and acceptance. The Project Manager must attend meetings as required.

B. Use adequate numbers of skilled workers thoroughly trained and experienced on the necessary crafts and completely familiar with the specified requirements and methods needed for the proper performance of the work of this Section.

C. The system Contractor shall warrant any equipment installed under this specification to be free from defect for a period of one (1) year from the date of final acceptance.

D. The contractor shall certify completion in writing and schedule the commissioning walk-through. The contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

E. The contractor shall coordinate with the commissioning staff and schedule appropriate walk through and testing. Testing is outlined in section 3.2 Tests and Instruction.

F. Comply with applicable portions of CEC/NEC as to type products used and installation of components. Provide products and materials, which have been UL-listed and labeled. Comply with NEMA, ANSI and TIA standards manufacturer's recommendations for horizontal cabling.

1.7. Warranty

A. The system Contractor shall warrant any equipment installed under this specification to be free from defect for a period of one (1) year from the date of final acceptance.

B. A Manufactures Limited Lifetime Product & Performance Warranty covering all components, equipment and workmanship shall be provided to the Owner, submitted in writing with system documentation. The warranty period shall begin on the system's first use by the owner.

1. Horizontal channels shall be completed with factory-terminated copper and/or fiber optic patch cords in order to be eligible for the applicable Warranty with channel performance guarantees.
2. Approved product shall be listed on the most recent version of the applicable manufactures data sheets for each listed solution.
3. Should the cabling system fail to perform its expected operation within this warranty period due to inferior or faulty material and/or workmanship, the contractor shall promptly make all required corrections without cost to the owner.

C. Certified Installer shall provide labor, materials, and documentation in accordance with manufactures requirements necessary to ensure that the Owner will be furnished with the maximum available Manufacturer's Warranty in force at the time of this project.

D. The installed structured cabling system shall provide a warranty guaranteeing the specified performance in the installed channel performance above the ANSI/TIA-568 requirements for Augmented Category 6 (CAT 6A) cabling systems or ISO 11801 requirements for Class EA.

1. Standards-compliant channel or permanent link performance tests shall be performed in the field with a certification tester in the appropriate channel or permanent link test configuration.

E. Necessary documentation for warranty registration shall be provided to the manufacturer by the installer (within 30 days) following 100 percent testing of cables.

1. Installation Contractor shall submit test results to manufacture in the certification tester's original software files.
2. Installation Contractor shall ensure that the warranty registration is properly submitted, with all required documentation within 30 days of project completion.
3. Certified Contractor/Integrator must adhere to the terms and conditions of the respective manufacturer's warranty programs.

F. Manufacturer shall ensure that the Owner receives the project warranty certificate within 60 calendar days of warranty registration.

1.8. Submittals and Substitutions

A. REFER TO SUBMITTAL SECTION 013300 FOR REQUIREMENTS.

B. Provide product data for the following:

1. Manufacturers cut sheets, specifications and installation instructions for all products.

C. The Owner has standardized on a unified, end-to-end copper and optical fiber cabling system design based on jacks, patch panels, patch cords, fiber cords, fiber connectors, trunk cables, fiber enclosures and modules, as well as field-terminable copper and fiber cables.

D. Subject to compliance with requirements, provide products of the following:

1. CommScope/Systemax/AMP
2. Panduit
3. Belden/CDT
4. Leviton Manufacturing Co, Inc. / Berk-Tek, a Nexans Company
5. Hubbell Premise

E. Any substitutions must be approved by Designer, Owner and/or Owner's Representative in writing prior to acceptance of bid.

F. Products which are proposed in the bid response which are of an alternative solution are to be prequalified as "equal or better" by the Designer and Owner, in writing, prior to bid acceptance. If substitutions are allowed, they are at the discretion of the Owner and based on performance, suitability, quality, administrational requirements, warranty and other factors deemed important to the Owner. Written acceptance of substitutions from Owner must be included in bid package to avoid disqualification of bid.

G. Submit manufacturer's data and installation details for all devices, plates, cable, terminal blocks, patch cords, racks, wire management, labels and similar equipment which are not in accordance with Owner standards.

2. PRODUCTS

2.1. General

A. The UTP cabling system will have TIA/EIA T568B pin/pair termination assignment. All conductors provided will be properly and consistently terminated at both ends throughout the entire systems. Maintain proper untwist of pairs and removal of jacket per TIA, BICSI, and Manufacturer's recommendations.

2.2. Copper Cabling

A. Copper - Unshielded, twisted pair. (Standard See Section 1.4 Standards)

1. Category 6 riser/plenum rated (based on building construction), 4 twisted pair, non-shielded (UTP) station cable (capable of transmissions speeds up to 1 Gb and supporting IEEE 802.3ab Gigabit Ethernet) shall be used for serving data outlets. Cable shall be rated for minimum 350 MHZ. Cable shall be insulated with FEP material and sequentially marked at 2 foot intervals.
    a. Gauge 24 AWG
    b. Nominal O.D. .2 in.
    c. Min. Bend Radius .5 in.
    d. Standards/Certification UL Type CMP TIA/EIA, CAT. 6
    e. Attenuation (100 MHz) 21.3 dB
    f. NEXT (100 MHz) 39.9 dB
    g. PSNEXT (100 MHz) 37.1 dB
    h. ACR (dB/100M) (100 MHz) 18.6 dB
    i. ELFEXT (dB/100M) (100 MHz) 23.2 dB

j. PSELFEXT (dB/100M) (100 MHz) 20.2 dB

k. Return Loss (100 MHz) 12.0 dB

2. Each cable shall be a dedicated home run from the workstation outlet jack to the data termination equipment in the local IDF/MDF. Terminate cable at the workstation and at the IDF/MDF termination equipment as specified herein and as indicated on the drawings.

3. Cable shall be labeled at both ends to indicate patch panel and port served. Coordinate labeling scheme with A/E PRIOR TO INSTALLATION

B. Video Station Cable (MATV)

1. Basic Construction: RG6 Plenum rated (used for interior applications) shall consist of:

a. Center conductor - 18 AWG Copper Covered Steel; 0.040" O.D. (nominal); foamed polyethylene dielectric

b. Inner shield - aluminum-polypropylene-aluminum laminated tape with overlap bonded to dielectric

c. Second shield - 60% 34 AWG bare aluminum braid wire

d. Third shield - non-bonded aluminum foil tape

e. Outer shield -42% 34 AWG bare aluminum braid wire 6. Outer Jacket - Flame retardant PVC

f. Impedance 75-Ohms

g. Velocity of propagation 85%

C. Video and Audio Station Cables (Local AV Systems)

1. Video Cable

a. VGA Video Cable – VGA cable utilizing 5 miniature high resolution coax cables in a plenum rated jacket, terminated on 15 pin din connector (computer video) in classroom technology outlet and local classroom video outlets.

b. 75 OHM Video Cable RG6 Plenum rated Audio Cable

i. Center conductor - 18 AWG Copper Covered Steel; 0.040" O.D. (nominal); foamed polyethylene dielectric

ii. Inner shield - aluminum-polypropylene-aluminum laminated tape with overlap bonded to dielectric

iii. Second shield - 60% 34 AWG bare aluminum braid wire

iv. Third shield - non-bonded aluminum foil tape

v. Outer shield -42% 34 AWG bare aluminum braid wire

vi. Outer Jacket - Flame retardant PVC

vii. Impedance 75-Ohms

viii. Velocity of propagation 85%

2. Audio Cable

a. Stereo Video / Audio Cables - 22 gauge, tinned copper, 4 conductor cable with 100% overall shield, black FEP jacket. Plenum rated.

2.3. Copper Connectivity

A. Data Jacks – Copper

1. Shall be Cat. 6 rated, 8 position, 8 wire flush mounted modular jack (RJ-45), T568A/B coded. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty.

2. Data Jack Color shall be Orange.

B. Voice Jacks

1. Shall be Category 6 rated, 8 position, 8 wire flush mounted modular jack (RJ-45), T568A/B coded. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty.

2. Voice Jack Color shall be Ivory

C. Twisted pair patch panels, rack mounted, Cat.6 rated, 110 termination, RJ-45, T568B coded, multi-port (24 or 48). Equipment to be of same manufacturer and series as required by Specified Link/Channel Solution Warranty. Provide quantity of patch panels as required by quantity of data station cable. Mount panels in data racks in each IDF/MDF. Each panel shall be fully loaded. Provide labeling for each connected port as coordinated with owner. Provide a 10ft., Cat. 6 patch cable for each connected port in each patch panel. Coordinate patch cable color with owner.

D. Local Classroom Audio/Video Jacks

1. Local Classroom Audio/Video jacks shall be by same manufacturer as workstation voice & data jacks.

2. Component Video - Type RCA. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty. Color as selected by Owner/Architect.

3. VGA Video – 15 Pin Computer Video. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty. Color as selected by Owner/Architect.

4. Stereo Audio - Type RCA or 1/8th” mini. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty. Color as selected by Owner/Architect.

5. Local Video – Type “F”. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty. Color as selected by Owner/Architect.

E. Outlet Components

1. Faceplates shall be modular and shall accept the approved voice/ data and video jacks including voice/data (RJ-11, RJ-45), Video (type F, type RCA, type BNC, VGA), Audio (type RCA, 1/8th “mini) and fiber (type LC). Faceplates shall cover single or dual ganged boxes. Faceplates and jacks shall be by a single manufacturer. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty. Color as selected by Owner/Architect.

2. Outlets designated to serve wall phones shall be of a type that is designed to support a wall mounted telephone. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty. Color as selected by Owner/Architect.

3. Each and every jack shall be labeled to corresponding patch panel and port. Coordinate labeling scheme with A/E. Labels shall be computer generated on an adhesive media and attached to the workstation outlet. Labels applied with pens or markers will not be acceptable.

4. Provide blank inserts for all unused ports.

5. Faceplates for specialized drops shall be as shown on the drawings.

6. Refer to drawings for arrangement of various workstation outlets including jack types and quantities within each outlet type. All voice/data/video/audio and fiber jacks indicated in the faceplate shall be deemed included in this specification unless specifically noted otherwise.

F. Surface mounted raceway products

1. All faceplates and jacks utilized in the installed surface mounted raceway must be compatible with the raceway.

2.4. Backbone Cabling

A. General

1. Copper cables allowed for use in the backbone include: 4-pair 100-ohm unshielded twisted-pair 100% annealed-copper solid-conductor cables, 100-ohm UTP multi pair copper cables. Fiber optic backbone cables shall be 50/125um Laser-Optimized Multimode Fiber and 8.3um low-water peak singlemode optical fiber cables compliant with ITU-T G.652D (or OS2). The cable shall support voice, data, and multimedia applications. The bending radius and pulling strength requirements of all backbone cables shall be observed during handling and installation.

2. All cables to be secured to walls with cable rings

a. Storage rings shall provide mechanical support and protection for optical fiber and copper cabling service loop storage. Ring shall have VELCRO Brand loops to contain and secure cable. Storage rings shall be available in 12-inch and 24-inch diameters.

b. Approved Products

i. Leviton 48900-IFR comes with six removable 3-inch VELCRO® Brand loops

ii. Leviton 48900-OFR comes with six fixed 9-inch VELCRO® Brand rings

iii. For double the capacity, install two storage rings side by side and route the cable in a figure eight pattern

B. Copper Backbone (Voice Riser)

1. Indoor type (used for interior applications) shall consist of a core of 24-gauge, Category 3, plenum rated unshielded twisted (UTP) solid copper conductors insulated with expanded polyethylene covered by a PVC skin. The core shall be covered by a layer of plastic tape and overlaid with a corrugated aluminum

shield (to provide EMI protection), adhesively bonded to an outer jacket of plenum rated PVC plastic. Pair sizes shall be available in 25, 50, 100, 150, 200, 300, 400, 600 and 900 pair. Pair quantities as specified herein and shown on the drawings.

i. Insulation thickness .006 in.

ii. Jacket thickness .045 in. (100 pair)

iii. Max. Avg. DC Resistance 26.5 Ohms/1000 ft.

iv. Max. Avg. DC Resistance Unbalance 1.5%

v. Typical Mutual Capacitance at 1 KHz 15.7pF/1000 ft.

vi. Max. Avg. Capacitance Unbalance

I (pair to ground) 175pF/1000 ft.

vii. Max. Attenuation (dB/1000 ft.):

I At .772 MHz 6.7 dB b. At 1.0 MHz 7.6 dB c. At 16.0 MHz 32.0 dB

viii. Characteristic Impedance (Ohms):

I At .772 MHz 102 ± 15% b. At 1.0 - 16 MHz 100 ± 15%

ix. Worst Pair Loss Next (dB/1000 ft.)

I At .772 MHz 41 dB

II At 1.6 MHz 37 dB

III At 10.0 MHz 25 dB

b. UL Listed

i. CSA Approved PCC FT4

c. Refer to the drawings and/or room charts for cable pair size from each IDF to the MDF. Cable shall be terminated on both ends as specified herein and as shown on the drawings.

d. Refer to the drawings and/or room charts for cable pair size from the phone service entrance backboard to the MDF. Cable shall be terminated on both ends as specified herein and as shown on the drawings.

e. Provide one (1) 1000 ft. spool of 1 pair cross-connect wire (white/blue) at each backbone cable termination point in each IDF and in the MDF.

f. Cable shall be labeled at both ends and at each point where the cable is accessible and can be administered. Coordinate labeling scheme with A/E. All cable must be lightning protected.

C. Copper Backbone (Voice OSP)

1. Outdoor Type (used to interconnect buildings and run in underground duct) shall consist of a core of 24- gauge, Category 3, unshielded twisted (UTP) solid copper conductors dual insulated with foam skin and plastic encapsulated with a water blocking compound, surrounded by a corrugated aluminum shield, a corrugated steel shield and a polyethylene outer jacket. Pair sizes shall be available in 25, 50, 100, 150, 200, 300, 400, 600 and 900 pair. Pair quantities as specified herein and shown on the drawings.

a. Gauge 24 AWG

b. DC Resistance 26.5 (ohms/1000 ft.)

c. Mutual Capacitance (1 kHz) 15 pf/ft.

d. Impedance (1 kHz) 100 OHM (25 pair)

e. Max Attenuation (1 kHz) 6.707.8 dB (25 pair)

f. Cable shall terminate in a protector panel upon entrance to building. Cable and protector panel grounds shall be bonded to the electrical service ground as required by the N.E.C. Protector panel shall be Circa Technologies #188ENA1 series with #3B1E-W gas tube protector modules or equals by 3M. Provide protector panel fully loaded. Protector panel shall be sized to accommodate backbone cable pair count as specified herein.

g. All cable must be lightning protected at both ends.

h. Cable shall be labeled at both ends and at all accessible points. Coordinate labeling scheme with Owner and submit to Owner/Architect for review. PRIOR TO INSTALLATION

D. Video Backbone (MATV OSP)

1. Basic Construction: RG11 Plenum rated (used for interior applications) shall consist of:

a. Center conductor - 18 AWG Copper Covered Steel; 0.040" O.D. (nominal); foamed polyethylene dielectric

b. Inner shield - aluminum-polypropylene-aluminum laminated tape with overlap bonded to dielectric

c. Second shield - 60% 34 AWG bare aluminum braid wire

d. Third shield - non-bonded aluminum foil tape

e. Outer shield -42% 34 AWG bare aluminum braid wire

f. Outer Jacket - Flame retardant PVC

g. Impedance 75-Ohms

h. Velocity of propagation 85%

E. Fiber Optic

1. SINGLEMODE Optical Fiber

a. Optical fiber cables run shall be low-water-peak Singlemode (OS2), and meet all of the requirements delineated within the specifications of ANSI/TIA-568 and ANSI/TIA-492.AAAC-B.

b. Armored fiber optic cables will utilize an interlocking armor outer cover around an integrated tight-buffer (indoor only) or Loose-Tube (indoor/outdoor) cable construction. Plenum armored fiber may be run in open ceilings without conduit or innerduct.

c. Indoor fiber optic cable shall be minimum 12 strands, tight buffered, and individual fiber strands shall be 900 micron jacketed.

d. Outdoor or indoor/outdoor fiber optic cable used for building-to-building interconnections shall be minimum 12 strands, loose tube construction with 250 micron unjacketed fiber strands in a 12-strand buffer tube.

e. Cables are typically OFNR rated for in-conduit applications, but must always be constructed of materials and rated appropriate for the environment in which it is installed (Indoor, Indoor/Outdoor, Outside Plant (OSP), OFNP or OFNR, OFCP or OFCR). In-slab conduits are considered a "wet environment" and require OSP or Indoor/Outdoor rating. Cables running at least a portion of the length through an open-air plenum or air handling space must be OFNP or OFCP (plenum) rated. Contractor is solely responsible for installation of the correctly-rated cable in the appropriate environment, as required by the AHJ or local ordinance

f. Loose tube fibers shall utilize a fan-out kit to fit 250 micron fibers into a 900 micron protective sheath when terminating. Loose Tube cables are generally expected for outdoor environments.

g. Approved Products:

i. Premises Indoor Tight Buffer Plenum cable, 12-strand

ii. Indoor/Outdoor Dry Loose-Tube Plenum cable, 12-strand

iii. 12-fiber, 24" fan-out Kit

2. MULTIMODE FIBER OPTIC CABLE – FIELD TERMINATED

a. Multimode fiber optical fiber cables shall meet all of the requirements delineated within the specifications of ANSI/TIA-568 and ANSI/TIA-492.CAAB (OM4). Must be a minimum of 12 strands, typically 24 strands, of Laser-Optimized 50 micron optical fiber. Cable jacketing must be appropriate for the environment in which it is installed (Indoor, Indoor/Outdoor, Outside Plant, OFNP or OFNR).

b. Fiber optic cables will utilize an interlocking armor outer cover around an integrated Tight-Buffered (indoor only) cable construction and fiber strands with a 900 micron protective sheath.

c. See plans and scope of work for total strand count between locations.

d. Approved Manufacturers

i. Indoor Plenum tight buffered cable, 12-strand OM3

ii. Indoor/Outdoor Plenum cable, 12 strand

iii. OSP cable, Loose Tube 12-strand

iv. 12-fiber, 24" fan-out Kit

v. * Or other strand counts as specified

3. MULTIMODE FIBER OPTIC CABLES – FACTORY PRETERMINATED

a. Optical fiber cables shall meet all of the requirements delineated within the specifications of ANSI/TIA-568. Cables must be a minimum of 24 strands of 50/125µm (micron) OM4 Laser-Optimized Multi-Mode Fiber (LOMMF) for backbone cabling. Cables must be appropriate for the environment in which it is installed (Indoor, Indoor/Outdoor, OFNP or OFNR) but are not suitable for Outside Plant (aerial or underground).

Backbone cables may be used rack-to-rack, MDF-to-IDF, or similar intrabuilding applications.

b. Pre-terminated backbone cables will utilize the MTP® connector, employing a multi-strand ferrule capable of supporting 1G, 10G, 40G or 100G Ethernet and beyond. The MTP® connector is not a field-installable connector, and must be factory polished and tested to ensure precise fiber alignment and finish.

c. All optical fiber backbone cables (trunks) shall be factory terminated, dry loose tube, armored jacket, Laser Optimized 50 micron OM4 for plenum-rated applications. All trunks shall be labeled on both ends with machine labeling and bar coded with unique numbers. Labels shall be highly visible with white background and black lettering, and shall list origination and destination on both ends before break of individual legs. All Fiber Trunk assemblies shall possess the following characteristics at a minimum:

   i. Meet or exceed TIA 568 for OM4 performance at 550 meters for 10 Gigabit and 150 meters for 40 Gigabit or 100 Gigabit transmissions.

   ii. Optical fiber jackets shall be durable jacketed construction utilizing loose tube design, aramid yarn, and fiberglass strength members for protection.

   iii. Optical fiber cable trunks shall have a minimum breakout of 3 feet. All fiber trunks shall utilize a heat shrink at the ends of all breakouts to create a smooth breakout of the fiber subunit legs.

   iv. Optical fiber subunits shall utilize a round construction. Ribbon construction is not acceptable.

   v. All fiber connectors must meet TIA 604.X for compatibility.

   vi. All Multimode optical fiber subunits of 24 strands shall utilize the 24-strand MTP connector. Optical Fiber subunits of 12 strands shall utilize a 12-strand MTP connector. No optical fiber subunits shall be smaller than 12 strands except for fiber optic jumpers used within the same racks.

   vii. Multimode fiber optic trunks shall utilize female MTP connectors. 24-strand MTP connectors shall have a Red boot, and 12-strand MTP shall use a Black or Aqua boot.

   viii. Singlemode MTP connectors shall be 12-strand, Angle-Polish, and shall have a Green boot.

   ix. Manufacturer shall provide MTP brand connectors for specific superior performance characteristics. Generic MPO-style connectors are not acceptable quality. Use of only ferrules or other essential components will not be acceptable, but only the complete MTP system of components used at each connector assembly.

   x. All MTP connectors shall be laser cleaved to increase hardness of tip and precision of end product.

   xi. All Multimode Fiber Optic Trunks shall utilize Method B Polarity. Singlemode fiber optic trunks shall utilize Method C.

xii. All optical fiber cabling trunks shall have a unique identifying label with a bar code for quick identification. The label shall state Manufacturer, trunk length and serial number. Custom labeling shall be available from the manufacturer as an option to aid in deployment during construction.

xiii. A pulling eye shall be installed on one end of all trunks to help facilitate installation.

xiv. All optical fiber trunks shall be shipped to project site with a number on the box that will correspond to the layout of the facility for easy identification by the Vendor. All fiber trunks shall include a printed summary test file of all fiber strands inside the box for the Vendor. Additionally, the Manufacturer shall hold all full test data until the project is complete and provide them to Owner along with the applications assurance warranty after the project is completed

xv. Installation contractor will re-test all fiber trunks upon completed installation and provide test results to Manufacturer for completion of full product warranty requirements.

xvi. The contractor shall be responsible for the correct fiber trunk lengths, configuration, and ordering. Fiber Trunk part numbers shall be generated from Manufacturer prior to ordering.

2.5. Fiber Optic connectivity

A. Rack Mounted Installation - Provide fiber optic, rack mounted patch panels with type LC coupler panels as coordinated with the owner. Provide quantity of 12, 24 or 48 port panels as required by quantity of fiber backbone cables to be terminated. Equipment to be of manufacturer and series as required by Specified Link/Channel Solution Warranty. Color as selected by Owner / Architect. Provide each patch panel fully loaded. Each connected port to be labeled as coordinated with owner. Refer to drawings for locations of rack mounted patch panels.

2.6. Frames, Racks and Cabinets

A. Equipment Cabinets and Racks

1. Equipment cabinets shall have vented side panels and lockable front and back doors. Cabinets shall be 22-1/2 inches wide 30 inches deep and 84 Inches high. Units shall have front glass hinged doors. Each rack shall be securely mounted and provided with a #6 ground wire from rack to the local telecommunications ground bar. Multiple racks shall be bonded together with a #6 ground wire. Open equipment racks shall be 4 post, standard 19” wide 84” high.

2. Provide a front/rear, two-space cable management panel with each rack mounted fiber/copper patch panel.

3. Provide a full height front/rear vertical wire management panel with integral cable spools with each floor mounted rack. Coordinate location at each rack with A/E. Where multiple racks are ganged together, there shall be one vertical wire management section between each two racks and one additional section at each end of the line up. Ladder tray shall be utilized to route cable to the racks.

4. Attached to each rack shall be a worksheet identifying each patch panel port, its associated wall jack identifier and the date of installation.
5. Patch panels shall be mounted no higher then 60” A.F.F
6. Provide a six outlet power strip with integral surge suppression and a 10’ cord with plug in each rack. Provide a dedicated 120V, 20A circuit to a rack mounted isolated ground receptacle for each rack.
7. Refer to drawings for type, quantities and locations of racks.

B. Horizontal Wire Managers

1. Provide 2RU duct-style horizontal wire managers above and below or between every 2RU of patch panel, as space allows.
2. Cable managers shall be flat, covered duct style with front and rear channels.
3. Use recessed flat wire manager as needed within enclosed cabinets to route patch cords to opposite sides, where the rings of the flat wire managers would interfere with cabinet door closure.

2.7. Cable Support Systems

A. J-Hooks

1. All cable shall be supported above ceiling on dedicated cable support hardware.
2. Cable saddles and J-hooks shall be used where cable tray or wire basket is not available. These must be supported on their own ceiling wires, threaded rod, or affixed to building structure by use of beam clamps (on metal beams) or wood screws (on wood beams). Affixing communication cable supports to existing ceiling support wires is not allowed.
3. Approved Products:
   a. B-Line Cable Hook, BCHxx
   b. B-Line Cable Hook, Cable to Beam Fastener, BCHxx-C2
   c. B-Line Cable Hook, Cable to Fastener, 2”, BCHxx-C442
   d. B-Line Cable Hook, Cable to Rod Fastener, 2”, BCHxx-W2
   e. Where: xx = 21 (1.25”), 32 (2”), or 64 (4”)

B. Cable Tray

1. In Telecom Rooms, cable tray (ladder runway) shall be installed to support all cable running to racks and cabinets.
2. Cable tray to be added to all Telecom Rooms in places where cable is run horizontally.
3. Cable tray shall be aluminum, with 9” rung spacing. Rungs can be removed or repositioned to accommodate specific project or building requirements.
4. Cable shall be combed and bundled in all exposed runs outside walls, in TR/TE, and inside cabinets and wire managers.

5. All appropriate cable tray support hardware including angle brackets, rack-to-runway brackets, wall-to-runway brackets, elevation kits, junction splices, butt splices, and grounding jumpers shall be used for a complete and professional installation.
6. Approved Products:
    a. B-Line Redi-Rail Runway, 12”, Black, SB13AL12FB
    b. B-Line Wall-Mount Brackets, Black, SB211312FB
    c. B-Line top mounting rack-to-rail plate, Black, SB213312FB
    d. All other associated mounting hardware and metals from B-Line

2.8. Fire Stop Systems

A. A. Fire rated pathway devices shall be the preferred product and shall be installed in all locations where frequent cable moves, add-ons and changes will occur. Such devices shall:

1. Meet the hourly rating of the floor or wall penetrated.
2. Permit the allowable cable load to range from 0% to 100% visual fill thereby eliminating the need to calculate allowable fill ratios.
3. Permit multiple devices to be ganged together to increase overall cable capacity.
4. Allow for retrofit to install around existing cables.
5. Include an optional means to lengthen the device to facilitate installation in thicker barriers without degrading fire or smoke sealing properties or inhibiting ability of device to permit cable moves, add-ons, or changes
6. Not require any additional action on the part of the installer to open or close the pathway device or activate the internal smoke and fire seal, such as, but not limited to:
    a. Opening or closing of doors.
    b. Twisting an inner liner.
    c. Removal or replacement of any material such as sealant, caulk, putty, pillows, bags, foam plugs, foam blocks, or any other material.
7. Where single cables (up to 0.27 in. (7 mm) diameter) penetrate gypsum board/stud wall assemblies, a fire-rated cable grommet may be substituted. Acceptable products shall be molded from plenum-grade polymer and conform to the outer diameter of the cable forming a tight seal for fire and smoke. Additionally, acceptable products shall lock into the barrier to secure cable penetration.
8. Approved Products
    a. Specified Technologies, Inc. EZ-PATH series 22, 33 and 44+ fire-rated pathway devices
    b. Specified Technologies, Inc. EZ-PATH GROMMET

B. Where non-mechanical products are utilized, provide products that upon curing do no re-emulsify, dissolve, leach, breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during or after construction.

1. Where it is not practical to use a mechanical device, openings within floors and walls designed to accommodate telecommunications and data cabling shall be provided with re-enterable products that do not cure or dry.
2. Utilize an EMT sleeve as a stub through a rated wall
3. Surround annular space between EMT sleeve and wall material with a hardening intumescent caulk.
4. Utilize re-enterable, non-hardening putty around cables inside a metal sleeve. Do not exceed 40% fill capacity of sleeve and follow all rated assembly requirements per Manufacturer, local codes, and AHJ.

C. Cable trays shall terminate at each barrier and resume on the opposite side such that cables pass independently through fire-rated pathway devices. Cable tray shall be rigidly supported independent from fire-rated pathway devices on each side of barrier.

1. Approved Products
   a. Specified Technologies, Inc. SSS Intumescent Caulk
   b. Specified Technologies, Inc. SSP Intumescent Putty

3. EXECUTION

3.1. Additional Information

A. Refer to Section 27 00 00 for the following Part 3 - Execution information

1. General
2. Cable Pathways
3. Work Area Outlets
4. Installation Practices
5. Labeling
6. Firestopping
7. Sealing of Penetrations and Openings
8. Cable Supports
9. Cable Protection
10. Grounding
11. Documentation
12. Training
13. Cleaning
14. Project Closeout

3.2. Cable Handling / Cable Management

A. Proper cable handling is critical to maintaining the design integrity of high-performance cabling. Cable handling recommendations include:

1. Cable must be conditioned above 32 degrees F for 48 hours prior to installation.
2. Do not use excessive force when pulling cable. The maximum pull-force guideline for a 4-pair horizontal UTP should not exceed 110N (25lbf). Meeting this guideline avoids stretching conductors during installation and the associated transmission degradation.
3. The minimum bend radius for UTP should not exceed 4 times the cable outside diameter (O.D.) The O.D. of Cat 6A 100 ohm, balanced UTP cable is .30 in. (4 x .3 = 1.2 in. bend radius).
4. The minimum bend radius for fiber should not exceed 10x the cable outside diameter.
5. Traditional bundling of Category 6 and 6A cabling for a combed appearance is required in all exposed locations.
6. In TR, use appropriate horizontal cable management for patch cords on front of patch panels. Also, use appropriate cable management bar(s) for support of terminated horizontal cable.
7. Do not use vinyl or plastic cable ties due to the potential for over-cinching of cable bundles which can alter the cable geometry and degrade the system cabling performance. Use only hook and loop (“Velcro”) fasteners for bundling of horizontal cables.
8. Store cable slack in an extended loop configuration to alleviate cable stress. Excessive cable slack in bundled loops or traditional ‘service loops’ to provide additional cable length in TR has been shown to degrade cabling performance and are not recommended.

3.3. Separation of Data and Power cabling

A. Design cable pathways to avoid potential sources of EMI. Avoid installing cable near sources of EMI (X-ray equipment, large motors/generators, electrical power cabling and transformers, Radio frequency (RF) sources and transmitters, lighting, copiers, etc.).

B. Physically separate power & data cabling according to relevant code and standard requirements when run in a common pathway.

1. Never run data and Class 1 power cabling in parallel closer than 2”.
2. Avoid crossing cables if possible. If necessary, always cross cables at 90 degrees.
3. Maintain a minimum of 5 in. separation between data cable and all ballast controlled lighting.

C. Minimum separation distances of telecommunications cabling from potential sources of EMI exceeding 5kVA:

1. 24” away from Unshielded power lines or electrical equipment in proximity to open or nonmetal pathways
2. 12” away from Unshielded power lines or electrical equipment in proximity to a grounded metal conduit pathway
3. 6” away from Power lines enclosed in a grounded metal conduit (or equivalent shielding) in proximity to a grounded metal conduit pathway
4. 47” away from Electrical motors and transformers

3.4. Installation of Structured Cabling System

A. PRE-Installation Conference

1. Schedule a conference a minimum of five calendar days prior to beginning work of this section.
2. Agenda: Clarify questions related to work to be performed, scheduling, coordination, etc.
3. Attendance: Communications system installer, General Contractor, Owners Representatives and any additional parties affected by work of this section. Owner’s Information Technology must be represented at a pre-conference meeting prior to scheduling of any work.
4. Copy of manufactures warranty application will be provided by Contractor.
5. Pre-Installation conference may be waived only by Owner.

B. Warranty

1. A lifetime performance warranty covering all components, equipment and workmanship shall be submitted in writing with system documentation. The warranty period shall begin on the system’s first use by the Owner.
2. Should the cabling system fail to perform within its expected operation within this warranty period due to inferior or faulty material and/or workmanship, the Contractor shall promptly make all required corrections without cost to Owner.

C. Drawings and Specifications

1. The Contract drawings and specifications form an integral part of the contract documents. Neither the drawings nor the specifications shall be used alone. Drawings are generally diagrammatic and are intended to indicate the scope and general arrangement of work. Work omitted from the drawings but mentioned or reasonably implied in the specifications, or vice versa, shall be considered as properly and sufficiently specified and shall be provided. Misinterpretation of any requirements on drawings, or specifications shall not relieve the Contractor of his or her responsibility of properly completing the Contract.
2. The Owner’s Project Manager has the option of changing the location of Electrical and Communication outlets to within 3 meters of designed location prior to rough-in stage at no extra cost to Owner. Owner and Owner’s Representative requests a chalk/rough-in walk prior to installation to verify locations.

3. The Contractor is responsible to take field measurements where equipment and material dimensions are dependent upon building dimensions and to coordinate and provide a chalk/rough-in walk prior to installation to verify locations.

4. The Contractor shall coordinate with General, Mechanical and Electrical trades as well as Furniture Layout Designer for final workstation outlet locations.

5. Where conflict exists between drawings and specifications the Contractor shall, make allowance for provision of the component, system, or installation process in a manner which will provide the highest monetary cost components, systems, or installation process. Contractor shall inform the Owner's Project Managers of the conflict and obtain approvals prior taking corrective measures.

D. Pathways and Topology

1. Utilize "thin film" lubricants only! It has been shown that cable-pilling lubricants will affect your testing as the cable needs several weeks to dry before attenuation levels recover. Use of incorrect cable lubricants will erode cable jacket and void cable warranty.

2. All cable and wire shall be concealed in conduits, floor ducts, paneling, ceiling or similar areas except at mutually agreed upon areas.

3. Fill capacity in conduit, modular furniture and other horizontal pathways should not exceed 40%. A maximum of 60 % pathway fill is allowed to accommodate unplanned additions after initial installation. The Cat 6A cable is a larger O.D. (0.275" – 0.30" vs. .23" for typical for Cat6 cable). The increased diameter of Cat 6A cable will require appropriate design considerations when sizing conduit and other pathways. In most installations, conduit sizes will have to be increased in order to accommodate all of the cables being installed. This will impact the design and material selection of the project. To calculate the fill ratio, divide the sum of the cross-sectional area of all cables, by the most restricted cross-sectional area of the pathway.

4. Fill ratios for Augmented CAT6 cable (CAT6A) requires 1" EMT for 4 cables and sized larger for additional cables as required to maintain a 60% fill ratio.

5. Flat-rung and/or solid bottom cable tray shall be utilized for large, high-density installations. J-hooks and other specific cable support hardware shall be used at all locations outside of cable tray.

6. Pathway design should not exceed (2) 90 degree bends between pull points or pull boxes (PB). If more than (2) 90 degree bends are required, install a pull box between bends.

7. Provide NEC-sized pullboxes for any run greater than 100 feet, or with more than two ninety-degree bends.

8. J-hooks should be randomly spaced 60" or less. Do not exceed J-hook capacity for size and weight limitations.

9. Land wireless access cabling above ceiling, secured onto in-ceiling bracket. A slack loop in the horizontal cabling is not required. Utilize varying-length patch cords when installing wireless access point devices for flexibility in length.

10. Crimp-on plugs at wireless access points are not allowed. Terminate all WAP cabling onto jacks and ceiling-mount brackets and test all cables as appropriate.

11. Mixing of various Category cables in the same pathway is allowed as long as the applications are appropriate for each category of cable used.

12. Prior to placing any cable pathways or cable, the contractor shall survey the site to determine job conditions will not impose any obstructions that would interfere with the safe and satisfactory placement of the cables. The arrangements to remove any obstructions with the Project Manager need to be determined at that time.

13. Maintain a distance of at least 12 inches from all power conduits and cables, and 6 inches from all fluorescent lighting fixtures. Do not install power feeders 100 amps or greater above or within 5 feet of telecommunications backboard. Do not install telecommunications conduits above power panels or switchboards.

14. Cable shall be installed above fire-sprinkler systems and shall not be attached to the system or any ancillary equipment or hardware. The cable system and support hardware shall be installed so that it does not obscure any valves, fire alarm conduit, boxes, or other control devices.

15. The backbone subsystem shall include cable installed in a vertical manner between floor telecommunications room/closets (TCs or IDFs) and the main or intermediate cross-connect in a multi-story building and cable installed horizontally between telecommunications room/closets and the main or intermediate cross-connect in a long single story building.

16. Unless otherwise recommended by the Owner, all fiber cables will be encased in interlocking armor. All fibers will be terminated in the Telecom Rooms or Cabinets in rack-mounted enclosures equipped with sufficient ports to allow for growth, slack storage space and splice trays if required to terminate and secure all fibers.

17. Adequate riser sleeve/slot space shall be available with the ability to ingress the area at a later date in all Telecommunications rooms/closets, such that no drilling of additional sleeves/slots is necessary. Sleeves may need to be provided and installed under the scope of this Project.

18. The backbone cables shall be installed in a star topology, emanating from the main cross-connect to each telecommunications room/closet. An intermediate cross-connect may be present between the main cross-connect and the horizontal cross-connect.

19. For voice or data applications, 4 pair UTP or fiber optic cables shall be run using a star topology from the telecommunications room/closet serving that floor to every individual information outlet.

20. Backbone and Horizontal pathways shall be installed or selected such that the minimum bend radius is maintained both during and after installation.

21. All horizontal pathways shall be designed, installed and grounded to meet applicable local and national building and electrical codes.

22. Install ¾" x 4' x 8' fire-rated plywood across all walls in telecom rooms, from 6" AFF to 8'-6" AFF. Coat with 2 coats of white paint. Do not paint over fire rating stamp.

23. Contractor shall firestop all used pathways which enter or leave the telecom rooms via conduit, cable tray or slot. Contractor is responsible for installing

sleeves at each wall or partition penetration, and firestopping all fire-rated penetrations. Intumescent caulk shall be applied around the outside of each sleeve, and intumescent putty inside the sleeve or conduits around the cables. Appropriate fill ratios must be followed when penetrating fire-rated walls.

24. Do not run fiber cables in conduits which are less than 2" in diameter.

25. Abandoned cable shall be removed from pathways (i.e., from tunnels, manholes, plenum spaces, and conduit) under scope of this project. Previously unknown or unidentified cable which is apparently abandoned prior to work shall be brought to the attention of the Owner for authorization prior to removal.

E. Grounding

1. Refer to section 27 05 26 for specifications on Grounding and Bonding.

2. All grounding (earthing) and bonding shall be done to applicable codes, standards and regulations.

3. Shielded cabling channels shall include appropriate method of bonding shield to approved ground for proper EMI/RFI mitigation.

4. Shield Continuity Testing shall be Enabled when shielded cabling channels are installed.

5. All shielded and armored cables shall be bonded to a telecom grounding system via shielded patch panels at the rack locations. Shielded Category-rated connectors must be properly installed to maintain electrical ground conductivity along entire length of cable and at both ends of the cable. UTP connectors shall not be used on shielded cables at either end.

6. Shielded Patch cords shall be provided for use and employed at each workstation location utilizing shielded cable. Shielded patch cords can be identified by their gray color and metallic RJ45 plug. Shielded patch cords are not required at the patch panels.

7. Telecom Contractor shall bond and ground all telecom room metals. Telecom Contractor shall provide and install TIA-rated Telecommunications Grounding Busbar (TGB) at all MDF and IDF locations, and an in-cabinet grounding busbar at each remote wall-mounted cabinet or telecom enclosure. All ground lugs shall be 2-hole make-up.

8. Electrician will provide connection between TGB and building ground; Telecom contractor (if separate, otherwise electrician) will provide a busbar and ground all equipment and telecom metals to the busbar.

9. Telecom installer will ground and bond all armored and/or shielded cables, racks, cabinets, cable tray, ladder racking, and shielded panels to telecom grounding busbar.

F. Cables and Terminations

1. Check plans and symbology for final determination of faceplate constitution or consult with Owner prior to bid.

2. Install additional cables at drop locations and in quantities indicated on the drawings. Do not exceed manufacturers' recommendations for maximum

allowable pulling tension, side wall pressure or minimum bending radius. Use pulling compound as recommended by cabling manufacturer.

3. All horizontal cables, regardless of media type, shall not exceed 90 m (295 ft) from the telecommunications outlets in the work area to the horizontal cross connect.
4. The combined length of jumpers, or patch cords and equipment cables in the telecommunications room/closet and the work area shall not exceed 10m (33 ft).
5. The Contractor shall observe the bending radius and pulling strength requirements of the 4 pair UTP and fiber optic cable during handling and installation.
6. No run of UTP cable between horizontal portions of the cross-connect in the telecommunication closet and the information outlet shall contain splices.
7. In a false ceiling environment, a minimum of 3 inches (75 mm) shall be observed between the cable supports and the false ceiling. Minimum 6" is preferred.
8. J-hooks shall be provided for all suspended cable, at a semi-irregular spacing not to exceed 5 feet between supports. Cables shall be supported by dedicated low-voltage cable support hardware. Support of cables or hanging hardware by means of supports or surfaces related to other trades or applications is not allowed.
9. Provide a full-size service loop (at least once around the inside edge of the box) in each J-box in the communications system.
10. Install all cable in plenum spaces with J-hooks of at least 1" in width to disperse the weight on the bottom cables. Homerun all cable to nearest TR Cabinet.
11. Comply with ANSI/TIA-569 for conduit and splice box sizing.
12. Install modular jacks at all outlets shown; one data jack for each data cable at each faceplate or termination point. Install additional cables and modular jacks as indicated on the drawings. Do not "split pairs" between different jacks.
13. Terminate cables at each jack location and at termination board or patch panel. Follow industry guidelines and manufacturers' recommendations and procedures as required. All termination hardware shall be rated to exceed their associated Category rating as specified above.
14. For enclosed ceiling WAP locations, install and terminate CAT6A cables to approximate location as shown on plans. For open-ceiling environments, secure cables and surface-mount boxes to nearest appropriate support structure.
15. For in-ceiling WAP locations, secure jacks inside a surface-mount block mounted to in-ceiling metal assembly, and provide a 5' patch cord or longer, as needed, to connect device to its final determined location in ceiling.
16. For wall-mounted device locations, utilize an in-wall bracket in lieu of faceplate as described above. Secure mounting bracket and device hardware directly over backbox. Connect device with 1' CAT6A cord (Security, AV, or WAP), or 1' high-flex CAT6 patch cord for other CAT6-based devices. Coil patch cord inside backbox.

17. Label and identify each outlet and cable for data circuits. Label at outlet end and at termination board or patch panel with matching designations.
18. Provide data outlets in surface raceway at 26" on center unless otherwise indicated.
19. Extreme care must be taken not to nick any of the copper conductors when removing jacket. Use rip cord to expose pairs for termination onto Insulation Displacement Contacts. You can also use a precision stripper that allows the technician to set the depth of the blade.
20. Maintain twists as close as possible to the point of termination. Untwisting of copper pairs should not exceed ¼" to the termination point.
21. Manage the cable bundles in a symmetrical orientation. For example, in a 48-port patch panel, distribute 24 cables through the vertical cable management on the left rear side of the rack and 24 cables through the vertical cable management on the right rear side of the rack.
22. Do not dress cables in bundles larger than 24 cables. Multiple 24-cable bundles may be run in parallel with evenly-spaced Velcro cable ties in an orderly sequence.
23. For cable management on rear of patch panel, cable shall sweep into termination points and be supported by appropriate rear cable management.
24. Horizontal patch cord management is required on all installations which do not use angled patch panels.
25. Maintain cable bend radius 4X outer diameter (UTP only) when mounting faceplate onto EMT backbox, box-eliminators or furniture knock-outs.
26. Faceplates and SMBs shall be fully installed and labeled prior to testing.

G. Above-Ceiling and wall mounted wireless access points and devices

1. All WAP locations shall receive (2) Category 6A cables from the nearest TE or TR (IDF). Multimedia, security and other video devices shall receive CAT6A cables as shown on drawings, documents and details.
2. Clock/Speakers and other low-bandwidth mounted devices shall receive (1) CAT6A cable.
3. WAP, IP Camera and other communications cables shall terminate on patch panels in the TE/TR (IDF).
4. WAP cables shall terminate on Category 6A information outlets and shall be supported by an in-ceiling termination bracket. Affixing of a 2-port SMB to the bracket is recommended.
5. SMB, jacks, and patch cords used in plenum spaces shall be plenum-rated.
6. SMB shall be mounted in the ceiling on a specially-designed clip attached to a cable support ceiling wire or threaded rod support per cable management section in Part 2. SMB shall not be tie wrapped to supports, or left on ceiling tiles or other equipment located above the ceiling.
7. Wall-mounted devices not requiring faceplates will be mounted directly to the backbox. Jacks will be secured inside backbox on a specially-designed in-wall bracket clip per cable management section in Part 2.

8. Contractor shall mount Access Point (AP) electronics to the drop-ceiling suspended T-grid system. (AP and mounting hardware provided by Owner). Contractor to provide and install (2) white Cat 6A patch cords from the overhead WAP outlets to the AP. Contractor shall neatly cut holes into the ceiling tile and finish the holes with grommets or other industry-standard finishing piece for a professional look.

H. Furniture Cabling

1. The contractor will pull all voice and data cables in advance of the installation of the modular furniture workstations, and coil at basefeed or above ceiling for power pole feeds. Upon furniture arrival, the contractor will feed the cables through power poles or base feed/wall connected data/telecom conduit, and terminate as specified on the floor plans.

2. Contractor to coordinate with Owner's furniture vendor for timing of the installation of systems furniture, and installation of electrical and voice/data cabling. Overtime may be required for this and other phases of the project work, and bids, plans and schedules must reflect actual work demands. Contractor shall consider all costs in their bids for installation.

I. Terminal Blocks and Patch Panels

1. Arrange all terminal blocks in a manner that allows natural wiring progression and minimizes crossing of wires.

2. Dress and comb all incoming cable bundles in groups of 24 cables each. Eliminate crossed cables and "divers".

3. Ground all shielded patch panels to telecom ground source via paint-piercing washers to a grounded rack, or via direct ground wire to telecom bus bar.

J. DATA/TELCOM Rooms (MC/MDF, HC/IDF)

1. The Data and Telco Rooms are a transition point between the backbone and horizontal distribution pathways. The rooms shall be able to contain data or telecommunications' equipment, cable terminations and associated cross-connection wiring. Closet spaces are not to be shared with electrical installations, other than those directly for telecommunications, video, security and information systems equipment. The rooms are not to be shared with other unrelated building service, for example plumbing. Any conflicts with these specifications require the approval of the Owner's project manager.

2. Contractor shall submit a drawing of the IDF room showing layout of all components including necessary and required electrical outlets, conduits, environmental requirements and wire termination fields prior to start of the job. Any jack densities noted in these specifications are estimates only. The drawing will designate the most effective, scalable, jack termination cabling design to facilitate data/telecom outlets shown on the lease exhibits. Owner's Project Managers must approve drawings prior to installation.

3. All racks, panels, and equipment finished shall be anchored to meet local seismic zone requirements and industry standards. The equipment racks are to be anchored to the concrete floors via "Unistrut or equal metal framing strut systems", threaded rod, concrete anchors, bolts and washers.

4. The overhead cable ladder system will provide a route for the Category 6 and 6A, and other communication cables while providing stability to the equipment racks.

5. The vendor is responsible to provide and install the specified count of 19" EIA rack-mount 7' (45U) 2- post racks, Black, as required in the new IDF. The vendor is responsible for submitting IDF layout drawings to Owner for approval prior to installation.

6. The contractor shall provide high capacity horizontal and vertical cable manager channels are required in all data and equipment racks, and the racks will contain sufficient vertical and horizontal cable managers to facilitate the patch panel density and placement installed by the contractor.

7. Contractor will install raceways, boxes, managers, and enclosures as indicated according to manufacturer's written instructions. Securely fasten each component to the surface to which it is mounted and remove burs and sharp edges from all cable tray.

8. A 12" ladder rack system is required and will be provided by the contractor and installed in the IDF to provide cable support to the rack system. This includes all of the required ladder rack support items such as rack to runway kits, wall angle brackets, ceiling supports, splices (junction and butt), radius drops and j-bolts. The final ladder rack layout will be included in the IDF layout drawing described above.

9. Provide and install as needed in the room 4' x 8" x 3/4" fire-rated plywood board and labeled with fire rating stamp facing into the room to accommodate rack ladder support, cabling support, grounding platform, data and voice equipment. Paint backboard white (leave stamp visible) to match existing backboard in room, if appropriate. Location of installation is to be determined with approval by Owner.

K. Patch Cords

1. Contractor to provide and install fiber and copper patch cords in quantities as described below. Neatly install patch cords in lengths as appropriate to reduce unnecessary length in wire managers.

2. Install patch cords at the equipment cabinet between patch panel and owner-provided switches for each patch panel and workstation location. Patch cords shall direct-connect between patch panel and networking switch or other electronics equipment. Dress and bundle patch cords as appropriate for final installation. Provide any unused equipment patch cables to Owner in original packaging upon completion of project.

3. Install Wireless Access Point patch cords as described above, and connect Cameras and other field-installed networkable device via a vendor-supplied patch cord at the remote locations. Return unused patch cords to Owner in original packaging.

4. Provide workstation patch cords to Owner in original packaging.

5. Use the following guidelines for project bid. Verify all lengths with Owner prior to purchase:

   a. Provide and install one (1) 7-foot patch cord, of the same category rating, for each cable terminated at the patch panel

b. Provide one (1) 10-foot patch cord, of the same category rating, for each cable terminated at the terminal outlet location

c. Provide one (1) 2-meter patch cord, of the same grade of fiber, for each LC connector pair installed at the IDF, MDF, and all other terminal enclosure locations.

6. All fiber patch cords and required workstation/equipment patch cords not installed shall be provided in hand to Owners Representative prior to project closeout.

L. Labeling

1. Provide machine-generated labels appropriate for all components supplied and installed. Under no circumstances shall hand written labels be used.

2. Each faceplate, cable, or data outlet (drop) will be numbered with a unique identifier clearly indicating the voice and data jacks by floor number, station, and outlet identification. This labeling scheme will be independent of any assigned telephone numbers.

3. The labeling scheme shall not include duplicates of any new or existing cable identification across the entire cable plant.

4. Labeling procedure will meet TIA-568, TIA-606 (Class 2 Administration) and BICSI Standards.

5. The labeling scheme will be provided at all locations within the cable infrastructure:

3.5. Testing of Structured Cabling System

A. Copper Testing

1. Test all equipment and each outlet, horizontal cable, termination block, patch cords, etc. to verify compliance with requirements. Testing shall consist of attenuation and NEXT across all splices and devices installed in the field and shall meet latest requirements of EIA/TIA. Re-terminate any cable or connection found to be defective.

2. Tester is to be a Level IV device or better, and configured with the specific cable installed, and the Permanent Link test will be performed according to the Category's standard methodology. All parameters must exhibit a PASS test result prior to project completion. PASS*, FAIL* or FAIL test results will not be accepted.

3. Only a permanent link test for Category 6A will be required. If situations demand a "hybrid", "Mixed" or a standard "Channel" design, approval must be obtained for those specific circumstances prior to testing.

B. Fiber Optic Testing

1. Each pre-terminated fiber strand shall be tested for continuity and attenuation with an Optical Power Meter and light source for actual length and splice/connector loss. Each field-terminated fiber strand (if any) shall be tested for attenuation with an Optical Power Meter and light source and with an Optical Time Domain Reflectometer (OTDR) for actual length and splice/connector loss.

2. Cable length shall be verified using sheath markings. The guidelines and procedures established for Tier 1 testing in TIA/TSB-140 shall apply.

3. All fiber optic cables shall be tested from the site's MDF to each fiber terminals located in the IDF.

4. The Contractor shall conduct a bi-directional power meter (loss) test of each fiber optic station and riser cable at both wavelengths, 850/1300nm for MM and 1310/1550nm for SM.

5. No individual station or riser fiber link segment (including connectors) shall measure more than 2.0 dB loss for LC, and 1.5dB loss for MTP. LC links shall be tested with LC jumpers from the LC cassette to the tester. MTP links shall be tested either with an MTP tester and array cord, or with an MTP-LC breakout harness and LC duplex fiber tester.

6. Tests shall be conducted using ANSI/TIA-526-14A, Method B. Test results evaluation for the panel to panel (backbone) shall be based on the values set forth in ANSI/TIA-568.

7. The Contractor shall provide an electronic printout for each strand tested with the Power Meter and the OTDR.

8. Where concatenated links are installed to complete a circuit between devices, the Contractor shall test each link from end to end to ensure the performance of the system. After the link performance test has been successfully completed, each link shall be concatenated and tested. The test method shall be the same used for the test described above. The evaluation criteria shall be established between the Owner and the Contractor prior to the start of the test.

9. All installed cables must meet or exceed the defined standards for performance. The Contractor shall take all steps and all expense necessary to clean, repair or replace any optic link not meeting the standard.

C. Test Results

1. Repair and resolve any shortcomings in the test results. Mitigation efforts may require re-termination or replacement of the jack, outlet or cable. Repairs or attempts to resolve test failures will be completed solely at the expense of the Contractor.

2. Provide test results to Manufacturer and Owner representative in native Tester format. Upon request, provide a copy of the tester software and license, if needed, at no charge to Owner representative.

3. Include PDF of full test results, summary index in electronic format on CD or memory stick in the O&M package upon project completion.

4. Cabling systems shall meet or exceed the electrical and transmission characteristics of the systems specified.

5. Cable segments and links shall be tested from both ends of the cable for each of the construction phases. (Verify that cable labeling matches at both ends).

6. The system shall not be considered certified until the tester has acknowledged that the performance of the physical layer of the system has been fully tested and is operational at the completion of the installation phase.

7. After the installation is complete, in addition to any other required testing as described herein, and at such times as the Owner/Engineer directs, the Contractor shall be present while the Owner conducts an operating test for approval. The installation shall be demonstrated to be in accordance with the requirements of this specification. Any defects revealed shall be corrected promptly at the Contractor's expense and the tests performed again.
8. After review of the completed test results, the Owner reserves the right to retest cables, utilizing the Contractor's tester and the Contractor's labor.
9. The test results information for each link shall be recorded in the memory of the field tester upon completion of the test. The tester shall be capable of storing test data in either internal or external memory. The external media used shall be left to the discretion of the user.
10. Test results saved by the tester shall be transferred into a Windows based database utility that allows for maintenance, inspection and archiving of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered as well as any printed reports generated from the software application.
11. Test results shall be provided in both native Tester format as well as comma separated variable (.csv), Portable Document File (.pdf), plain text (.txt), or hypertext markup language (.html/.htm). A copy of the tester native test software must be provided to Owner or Owner’s representative for comparison of results.
12. Test Results for CAT6/6A shall include the following:
    a. Applicable room number of jack location (room number per Contract Documents)
    b. Applicable Telecommunications Room number
    c. Circuit I.D. number with corresponding jack identifier
    d. Wire Map – shall include the following:
    e. Continuity to the remote end
    f. Shorts between any two or more conductors
    g. Crossed pairs
    h. Reversed pairs
    i. Split pairs
    j. Any other mis-wiring
    k. Length
    l. Insertion Loss
    m. Near-end Crosstalk (NEXT) Loss
    n. PS-NEXT (Power Sum Near End Cross Talk)
    o. FEXT (Far End Crosstalk)
    p. ELFEXT (Equal Level Far End Cross Talk)

q. PS-ELFEXT (Power Sum Equal Level Far End Cross Talk)

r. Propagation Delay

s. Delay Skew

t. Return loss

u. PSFEXT (Power Sum Far End Crosstalk)

v. PSACRF (Power Sum Attenuation to Crosstalk Ratio, Far End)

13. Test Results for CAT6A shall include all of the above, plus the following:

a. AACRF (Alien Attenuation to Crosstalk Ratio, Far End)

b. AFEXT (Alien Far End Crosstalk)

c. ANEXT (Alien Near End Crosstalk)

d. PSANEXT (Power Sum Alien Near End Crosstalk)

e. PSAACRF (Power Sum Alien Attenuation to Crosstalk Ratio, Far End)

14. Approved Tester Products:

a. Softing WireXpert series tester

b. Fluke DTX or later platform Cable Certification testers

c. Linkware Record Management Software

3.6. Project Closeout

A. Operating and maintenance manuals shall be submitted prior to testing of the system. A total of (4) manuals shall be delivered to the Owner. Manuals shall include all service, installation, and programming information.

B. Provide a full set of “as-built” (redline) drawings in AutoCAD DWG and PDF format. Drawings to depict final location and drop/cable identification numbers and labels which match the test reports. Include (1) hard copy paper format of all as-builts in 30”x42” size or equivalent, posted in each telecom room involved in the project.

C. Contractor to provide all warranty information to manufacture for processing. Manufacture will send warranty document direct to Owner.

3.7. Training

A. Provide four (4) hours training on the operation and installation of the data system, at job site, at no cost to owner.

B. Training shall be a walk thru of all systems cabling locations and required maintenance procedures.

END of SECTION

JOB:	PUSD-PVLLE-ALTERNATIVE EDUCATION COMPLEX
SPEC:	28 3100 - FIRE ALARM SYSTEM
DATE:	06-20-2019
JOB CAPT:	JEFF JACKSON
FILE NAME:	SPEC\PS\JEFF\MANGINI\PUSD\ALTERNATIVE ED COMPLEX\28 3100.doc
RSAI NO:	19021

SECTION 28 3100 - FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions, Divisions 0 and 1 and Sections 26 6000 and 26 7000 Specifications, apply to work of this Section.

1.2 SECTION INCLUDES

A. Emergency evacuation fire alarm system.

1.3 REFERENCES

A. State Codes

1) 2016 California Electrical Code (C.E.C.), Part 3, Title 24 C.C.R. (2014 National Electrical Code and California Amendments)

2) 2016 California Fire Code (C.F.C.) Part 9, Title 24 C.C.R. (2015 International Fire Code and California Amendments)

B. Electrical Industries Association (EIA):

1) EIA-232-D – Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange
2) EIA-485 –

C. National Fire Protection Association (NFPA):

1) NFPA 12 – Standard on Carbon Dioxide Extinguishing Systems.
2) NFPA 13 – Installation of Sprinkler Systems.
3) NFPA 15 – Standard for Water Spray Fixed Systems for Fire Protection.
4) NFPA 16 – Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems.
5) NFPA 16A – Standard for the Installation of Closed Head Foam-Water Sprinkler Systems.
6) NFPA 90A – Standard for the Installation of Air Conditioning and Ventilating Systems.
7) NFPA 101 – Life Safety Code.
8) NFPA 750 – Standard on Water Mist Fire Protection Systems.
9) NFPA 5000 – Building Construction and Safety Code.

D. Underwriters Laboratories (UL):

1) UL 268 – Standard for Smoke Detectors for Fire Alarm Signaling Systems.
2) UL 864 – Standard for Control Units and Accessories for Fire Alarm Systems.
3) UL 1971 – Standard for Signaling Devices for the Hearing Impaired.

1.4 SYSTEM DESCRIPTION

A. A new intelligent reporting, microprocessor-controlled fire detection and notification system shall be installed in accordance with the specifications and as indicated on the Drawings.

B. Each Signaling Line Circuit (SLC) and Notification Appliance Circuit (NAC): Limited to only 80 percent of its total capacity during initial installation.

C. Control Panel shall be expandable from 2 to 128 SLC loops as necessary to accommodate future expansion

D. Basic Performance:

1) Signaling Line Circuits (SLC) Serving Addressable Devices: Wired Style 6 (Class A).

2) Notification Appliance Circuits (NAC) Serving Strobes and Horns: Wired Class B (NFPA Style Z).

3) On Style 6 or 7 (Class B) Configurations: Single ground fault or open circuit on Signaling Line Circuit shall not cause system malfunction, loss of operating power, or ability to report alarm.

4) Alarm Signals Arriving at Control Panel: Not lost following primary power failure until alarm signal is processed and recorded.

5) Network Node Communications:
   a. System shall have the capability of networking with other Control Panels on single pair of copper wires or fiber optic cables.

6) Signaling Line Circuits (SLC):
   a. Reside in remote panels with associated audio zones.
   b. SLC modules shall operate in peer-to-peer fashion with all SLC modules in the Control Panel.
   c. On loss of an SLC module, each remaining panel shall continue to communicate with remainder of system, including all SLC and control functions

7) NAC Circuits: Arranged such that there is a minimum of 1 audible device per fire alarm zone.

8) Notification Appliance Circuits (NAC), and Control Equipment: Arranged such that loss of any 1 NAC circuit will not cause loss of any other NAC circuit in system.

9) NAC Circuits:
   a. Electrically supervised for open and short circuit conditions.
   b. If short circuit exists on NAC circuit, it shall not be possible to activate that circuit.

E. Basic System Functional Operation: When fire alarm condition is detected and reported by 1 of the system alarm initiating devices, the following functions shall immediately occur:

1) System Alarm LEDs: Flash.
2) Local Piezo-Electric Signal in Control Panel: Sound at a pulse rate.
3) 80-Character LCD Display: Indicate all information associated with fire alarm condition, including type of alarm point and its location within protected premises.
4) Historical Log: Record information associated with fire alarm control panel condition, along with time and date of occurrence.
5) System output programs assigned via control-by-event equations to be activated by particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.
6) Strobes flash synchronized continuously.
7) Audible devices sound continuous Temporal pattern until system is reset.

F. Fire Alarm System Functionality:

1) Provide complete, electrically supervised distributed, Style 7 networked analog/addressable fire alarm and control system, with analog initiating devices.
2) Fire Alarm System:
   a. Incorporate E3 Series multiprocessor-based control panel one or more Intelligent Loop Interface (ILI-MB-E3), and 80 character LCD annunciator.

3) Each ILI-MB-E3 SLC module: Incorporate 2 Signaling Line Circuits (SLC), with capacity to support up to 159 analog addressable detectors and 159 addressable modules per SLC.
4) Control Panel shall incorporate Boolean control-by-event programming, including as a minimum AND, OR, NOT, and Timer functions.
5) Control Panel shall have the capability to accept firmware upgrades via connection with laptop computer, without requirement of replacing microchips.
6) Control Panel shall have the capability of having an optional DACT (digital alarm communicator transmitter) that can report to single central station monitoring account.
7) Control Panel shall have the capability of storing its entire program, and allow installer to activate only devices that are installed during construction, without further downloading of system.
8) Password Protection: Each system shall be provided with 4 levels of password protection with up to 16 passwords.

1.5 SUBMITTALS

A. Comply with Section 01330 (01 33 00) – Submittal Procedures.

B. Include sufficient information, clearly presented, to determine compliance with the specifications and the Drawings.

C. Equipment Submittals:

1) Cover Page: Indicate the following:
   a. Project name and address.
   b. Engineered systems distributor's name and other contact information.
   c. Installing contractor's name and other contact information.
   d. Date of equipment submittals. Indicate on revised submittals the original submittal date and revised submittal date.

2) Table of Contents: Lists each section of equipment submittal.
3) Scope of Work Narrative: Detail indented scope of work.
4) Sequence of Operations: Use matrix or written text format, detailing activation of each type of device and associated resulting activation of the following:
   a. Control panel.
   b. Annunciator panels.
   c. Notification appliances.
   d. Building fire safety functions, including elevator recall, elevator power shutdown, door lock release, door holder release, HVAC unit shutdown, smoke evacuation system activation, and stair pressurization fan activation.

5) Bill of Material: Indicate for each component of system the following:
   a. Quantity.
   b. Model number.
   c. Description.

6) SLC Circuit Schedule: Detail address and associated description of each addressable device. Clearly provide information that indicates number of both active and spare addresses.
7) Battery Calculations: Show load of each of, and total of, components of system along with standby and alarm times that calculations are based on. Show calculated spare capacity and size of intended battery.

D. Shop Drawings:

1) Cover Page: Indicate the following:
   a. Project name and address.
   b. Engineered systems distributor's name and other contact information.
   c. Installing contractor's name and other contact information.
   d. Date of equipment submittals. Indicate on revised submittals the original submittal date and revised submittal date.

2) Floor Plans:
   a. Provide separate floor plan for each floor.
   b. If a floor plan must be split using match lines to fit on the page, provide match lines and match line references that refer to sheet number that shows area on opposite side of match line.
   c. Prepare using AutoCAD.
   d. Prepare to scale 1/8 inch = 1'-0", unless otherwise required by the Architect or Engineer.

e. Show equipment and device locations.
f. Show wiring information in point-to-point format.
g. Show conduit routing, if required by the AHJ.

3) Title Block: Provide on each sheet and include, at a minimum, the following:
a. Project name.
b. Project address.
c. Sheet name.
d. Sheet number.
e. Scale of drawing.
f. Date of drawing.
g. Revision dates, if applicable.

4) Control Panel: Provide sheet that details exterior and interior views of control panel and clearly shows associated wiring information.
5) Annunciator Panels: Provide sheet that details exterior and interior views of annunciator panels and clearly shows associated wiring information.

E. Certification: Submit with equipment submittals and shop drawings, letter of certification from major equipment manufacturer, indicating proposed engineered system distributor is an authorized representative of major equipment manufacturer.

F. Project Record Drawings:

1) Submit complete project record drawings within 14 calendar days after acceptance test.
2) Project record drawings shall be similar to shop drawings, but revised to reflect changes made during construction.

G. Operation and Maintenance Manuals:

1) Submit complete operation and maintenance manuals within 14 calendar days after acceptance test.
2) Operation and maintenance manuals shall be similar to equipment submittals, but revised to reflect changes made during construction.
3) Include factory's standard installation and operating instructions.

1.6 QUALITY ASSURANCE

A. Codes and Standards:

1) NFPA: System shall comply with the following NFPA codes and standards:
a. NFPA 12.
b. NFPA 13.
c. NFPA 15.
d. NFPA 16.
e. NFPA 16A.
f. NFPA 70.
g. NFPA 72.
h. NFPA 90A.

i. NFPA 101.
j. NFPA 750.
k. NFPA 5000.

2) ADA: System shall conform to American with Disabilities Act (ADA).

B. To ensure reliability and complete compatibility, all items of fire alarm system, including control panels, power supplies, initiating devices, and notification appliances, shall be listed by Underwriters Laboratories Inc. (UL) and shall bear "UL" label.

C. Fire Alarm Control Panel Equipment: UL-listed under UL 864 Ninth Edition.

D. Equipment, Programming, and Installation Supervision:

1) Provide services of approved Engineered systems distributor of Gamewell-FCI for equipment, programming, and installation supervision.
2) Provide proof of factory training within 14 calendar days of award of the Contract.

E. Software Modifications:

1) Provide services of Gamewell-FCI factory-trained and authorized technician to perform system software modifications, upgrades, or changes.
2) Provide use of all hardware, software, programming tools, and documentation necessary to modify fire alarm system software on-site.
3) Modification includes addition and deletion of devices, circuits, zones, and changes to system operation and custom label changes for devices or zones.
4) System structure and software shall place no limit on type or extent of software modifications on-site.
5) Modification of software shall not require power-down of system or loss of system fire protection while modifications are being made.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.

C. Handling: Protect materials from damage during handling and installation.

1.8 COORDINATION

A. Coordinate the Work of this section with the Work of other sections, including sprinkler systems, elevators, HVAC systems and security/door locking systems.

1.9 WARRANTY

A. Warranty Period for System Equipment: 1 year from date of final acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Gamewell-FCI, Honeywell Fire Systems, 12 Clintonville Road, Northford, Connecticut 06472. Phone (203) 484-7161. Fax (203) 484-7118. Website: www.gamewell-fci.com.

B. References to manufacturer's model numbers and other information is intended to establish minimum standards of performance, function, and quality. Equivalent equipment from Gamewell may be substituted for the specified equipment, as long as minimum standards are met. No other manufacturers, other than Gamewell-FCI, FCI, and Gamewell will be considered for use on this project.

C. Substitute equipment proposed as equal to equipment specified shall meet or exceed requirements of this section. For equipment other than Gamewell-FCI E3 Series Expandable Emergency Evacuation Fire Alarm System, provide proof that such substitute equipment equals or exceeds features, functions, performance, and quality of specified equipment. This proof shall be provided by submission of a copy of specification with each copy of the submittals that has had each paragraph marked as either compliant or non-compliant along with a letter from engineering manager or product manager at factory that certifies information presented as either compliant or non-compliant including a detailed explanation of each paragraph identified as non-compliant. In order to ensure that the Owner is provided with a system that incorporates required survivability features, this letter shall also specifically certify that the system is capable of complying with the test requirements of this section.

2.2 FIRE ALARM SYSTEM

A. Fire Alarm System: Gamewell-FCI E3 Series Expandable Emergency Evacuation Fire Alarm System.

2.3 CONTROL PANEL HARDWARE

A. Intelligent Control Panel: Supply user interface, including LCD or touch-screen 1/4 VGA display Intelligent Loop Interface Modules (ILI-MB-E3), manual switching, Control Panel shall consist of the following units and components:

1) System Cabinet (B-, C-, or D-Size Cabinet) with associated inner door.
2) Power Supply Module (PM-9) with batteries.
3) 80-Character LCD Display (LCD-E3).
4) Intelligent Loop Main Board Interface (ILI-MB-E3).
5) Optional Intelligent Loop Supplemental Interface (ILI-S-E3).
6) Optional DACT (DACT-E3).
7) Optional 1/4 VGA touch-screen display (NGA).
8) Optional Auxiliary Switch Module (ASM-16).

B. System Cabinet:

1) Surface or semi-flush mounted with texture finish.
2) Consist of back box, inner door, and door.
3) Available in at least 3 sizes to best fit project configuration.
4) Houses 1 or more PM-9 Power Supply Modules, 1 or more ILI-MB-E3 or ILI-S-E3 assemblies, and other optional modules as specified.
5) Construction: Dead-front steel construction with inner door to conceal internal circuitry and wiring.
6) Wiring: Terminated on removable terminal blocks to allow field servicing of modules without disrupting system wiring.

C. Power Supply Module (PM-9): Use latest technologies to provide power to the Control Panel and incorporate the following features:

1) Power-saving switching technology using no step-down transformers.
2) 9-amp continuous-rated output to supply up to all power necessary under normal and emergency conditions.
3) Integral battery charger with capacity to charge up to 55 amp-hour batteries while under full load.

D. Batteries:

1) Sufficient capacity to provide power for entire system upon loss of normal AC power for a period of 24 hours with 15 minutes of alarm signaling at end of this 24-hour period, as required by NFPA 72, Local Systems.
2) Sufficient capacity to provide power for entire system upon loss of normal AC power for a period of 60 hours with 15 minutes of alarm signaling at end of this 60-hour period, as required by NFPA 72, Auxiliary Systems.

E. LCD Display Module (LCD-E3):

1) LCD Display: 80-character RS-485 based textual annunciator with capability of being mounted locally or remotely. Provides audible and visual annunciation of all alarms and trouble signals. Provide dedicated LEDs for:
   a. AC Power On: Green.
   b. Alarm: Red.
   c. Supervisory: Yellow.
   d. System Trouble: Yellow.
   e. Power Fault: Yellow.
   f. Ground Fault: Yellow.
   g. System Silenced: Yellow.

2) 80-Character Alphanumeric Display: Provide status of all analog/addressable sensors, monitor and control modules. Display shall be liquid crystal type (LCD), clearly visible in dark and under all light conditions.

3) Panel shall contain 4 functional keys:
   a. Alarm Acknowledge.
   b. Trouble Acknowledge.
   c. Signal Silence.
   d. System Reset/Lamp Test.

4) Panel shall contain 3 configuration buttons:
   a. Menu/Back.
   b. Back Space/Edit.
   c. OK/Enter.

5) Panel shall have 12-key telephone-style keypad to permit selection of functions.

F. Intelligent Loop Interface (ILI-MB-E3): System shall be of multiprocessor design to allow maximum flexibility of capabilities and operation. Intelligent Loop Interface shall be capable of mounting in stand-alone enclosure as specified.

1) Field Programmable: System shall be capable of being programmed by Field Configuration Program (FCP), allowing programming to be downloaded via portable computer from any node on network.
2) RS-232C Serial Output: Supervised RS-232C serial port shall be provided to operate remote printers and/or video terminals, accept downloaded program from portable computer, or provide 80-column readout of all alarms, troubles, location descriptions, time, and date. Communication shall be standard ASCII code operating from 1,200 to 115,200 baud rate.
3) RS-485 Serial Output: Each ILI-MB-E3 shall incorporate RS-485 bus via ribbon harness for connection of modules inside same cabinet, and via 4-wire quick connector for connection of modules up to 3,000 feet from cabinet. Each ILI-MB-E3's RS-485 bus shall support up to 16 ASM-16 auxiliary switch modules, 6 LCD-E3 main annunciators, and 5 LCD-7100 annunciators.
4) Peer-to-Peer Panel Configuration: All Loop Interface Modules shall incorporate own programming, log functions, Central Processor Unit, and control-by-event (CBE) programming. If any loop driver becomes disabled, each remaining loop driver shall continue to communicate with remainder of network and maintain normal operation.
5) Control-by-Event (CBE) Program: ILI-MB-E3 shall be capable of programming using Boolean logic including AND, OR, NOT, and TIMING functions to provide complete programming flexibility.
6) Alarm Verification: Smoke detector alarm verification shall be standard option while allowing other devices such as manual stations and sprinkler flow to create immediate alarm. This feature shall be selectable for smoke sensors that are installed in environments prone to nuisance or unwanted alarms.
7) Alarm Signals: All alarm signals shall be automatically latched or "locked in" at control panel until operated device is returned to normal and control panel is manually reset. When used for sprinkler flow, "SIGNAL SILENCE" switch may be bypassed, if required by AHJ.

8) Electrically Supervised:

   a. Each SLC and NAC circuit shall be electrically supervised for opens, shorts, and ground faults. Occurrence of fault shall activate system trouble circuitry, but shall not interfere with proper operation of other circuits.
   b. Yellow "SYSTEM TROUBLE" LEDs shall light and system audible sounder shall steadily sound when trouble is detected in system. Failure of power, open or short circuits on SLC or NAC circuits, disarrangement in system wiring, failure of microprocessor or any identification module, or system ground faults shall activate this trouble circuit. Trouble signal shall be acknowledged by operating "TROUBLE ACKNOWLEDGE" switch. This shall silence sounder. If subsequent trouble conditions occur, trouble circuitry shall resound. During alarm, all trouble signals shall be suppressed with exception of lighting yellow "SYSTEM TROUBLE" LEDs.

9) Drift Compensation – Analog Smoke Sensors: System software shall automatically adjust each analog smoke sensor approximately once each week for changes in sensitivity due to effects of component aging or environment, including dust. Each sensor shall maintain its actual sensitivity under adverse conditions to respond to alarm conditions while ignoring factors which generally contribute to nuisance alarms. System trouble circuitry shall activate, display units that requires maintenance.

10) Analog Smoke Sensor Test: System software shall automatically test each analog smoke sensor a minimum of 3 times daily. Test shall be recognized functional test of each photocell (analog photoelectric sensors) and ionization chamber (analog ionization sensors) as required annually by NFPA 72. Failure of sensor shall activate system trouble circuitry, display "Test Failed" indication, and identify individual device that failed.

11) Off-Premises Connection:

   a. Fire Alarm System: Connect via leased telephone lines to central station or remote station.
   b. Fire Alarm System: Connect to local energy city master box.
   c. Fire Alarm System: Connect via Digital Alarm Communicator Transmitter (DACT) and telephone lines to central station or remote station. Panel shall contain disconnect switch to allow testing of system without notifying fire department.

12) Remote Station Option: Fire department shall be consulted regarding authorized remote station serving municipality. Fire alarm system shall transmit alarm, supervisory, and trouble signals with alarm having priority over supervisory and trouble signals. Required phone lines shall be provided and installed between incoming telephone service and fire alarm system by Owner's telephone contractor under separate contract. Owner will be responsible for phone company costs.

13) Local Energy City Master Box Option: Fire alarm system shall be connected to local energy city master box. City master box shall be coded and timed in accordance with requirements of fire department. Box shall be surface or flush mounted and located as specified by building engineer and fire department.

14) Central Station Option: Fire alarm control panel shall provide Digital Alarm Communicator Transmitter (DACT) for signaling to central station. DACT shall contain "Dialer-Runaway" feature preventing unnecessary transmissions as result of intermittent faults in system and shall be Carrier Access Code (CAC) compliant, accepting up to 20-digit central station telephone numbers. Fire department shall be consulted as to authorized central station companies serving municipality. Fire alarm system shall transmit both alarm and trouble signals, with alarm having priority over trouble signal. Contractor shall be responsible for all installation charges and Owner will be responsible for line lease charges.

15) Network Annunciator Option: Each ILI-MB-E3 and associated display shall provide option of being configured as network annunciator. Options for annunciation shall default as regional annunciator with capability of selecting global annunciation to provide system-wide protection and Acknowledge, Silence, and Reset capabilities.

16) Redundant History Log: Each ILI-MB-E3 shall contain full 4100 event history log supporting local and network functions. If a main processor or network node is lost the entire log shall be accessible at any other Loop Interface board. This shall be demonstrated by removing power followed by extraction of history log from any loop driver location

17) LEDs Indicator and Outputs: Each ILI-MB-E3 Loop Interface shall incorporate as a minimum the following diagnostic LED indicators:
    a. Power: Green.
    b. Alarm: Red.
    c. Supervisory: Yellow.
    d. General Trouble: Yellow.
    e. Ground Fault: Yellow.
    f. Transmit: Green.
    g. Receive: Green.

18) Auxiliary Power Outputs: Each ILI-MB-E3 Loop Interface shall provide the following supply outputs:
    a. 24 VDC non-resettable, 1 amp. maximum, power limited.
    b. 24 VDC resettable, 1 amp. maximum, power limited.

19) Microprocessor: Loop interface shall incorporate 32-bit RISC processor. Isolated "watchdog" circuit shall monitor microprocessor and upon failure shall activate system trouble circuits on display. Microprocessor shall access system program for all control-by-event (CBE) functions. System program shall not be lost upon failure of both primary and secondary power. Programming shall support Boolean logic including AND, OR, NOT, TIME DELAY functions for maximum flexibility.

20) Auto Programming: System shall provide for all SLC devices on any SLC loop to be pre-programmed into system. Upon activation of auto programming, only devices that are present shall activate. This allows for system to be commissioned in phases without need of additional downloads.

21) Environmental Drift Compensation: System shall provide for setting Environmental Drift Compensation by device. When detector accumulates dust in chamber and reaches unacceptable level but yet still below allowed limit, control panel shall indicate maintenance alert warning. When detector accumulates dust in chamber above allowed limit, control panel shall indicate maintenance urgent warning.

22) NON-FIRE Alarm Module Reporting: Non-reporting type ID shall be available for use for energy management or other non-fire situations. NON-FIRE point operation shall not affect control panel operation nor shall it display message at panel LDC. Activation of NON-FIRE point shall activate control by event logic, but shall not cause indication on control panel.

23) 1-Man Walk Test:

a. System shall provide both basic and advanced walk test for testing entire fire alarm system. Basic walk test shall allow single operator to run audible tests on panel. All logic equation automation shall be suspended during test and while annunciators can be enabled for test, all shall default to disabled state. During advanced walk test, field-supplied output point programming shall react to input stimuli, such as CBE and logic equations. When points are activated in advanced test mode, each initiating event shall latch input. Advanced test shall be audible and shall be used for pull station verification, magnet activated tests on input devices, input and output device, and wiring operation/verification.

b. Test feature is intended to provide for certain random spot testing of system and is not intended to comply with requirements of testing fire alarm systems in accordance with NFPA 72, as it is impossible to test all functions and verify items such as annunciation with only 1 person.

24) Signaling Line Circuits: Each ILI-MB-E3 module shall provide communication with analog/addressable (initiation/control) devices via 2 signaling line circuits. Each signaling line circuit shall be capable of being wired Class B, Style 4 or Class A, Style 6. Circuits shall be capable of operating in NFPA Style 7 configuration when equipped with isolator modules between each module type device and isolator sensor bases. Each circuit shall communicate with a maximum of 159 analog sensors and 159 addressable monitor/control devices. Unique 40-character identifier shall be available for each device. Devices shall be of the Velocity series with capability to poll 10 devices at a time with a maximum polling time of 2 seconds when both SLCs are fully loaded.

25) Notification Appliance Circuits: 2 independent NAC circuits shall be provided on ILI-MB, polarized and rated at 2 amperes DC per circuit, individually over current protected and supervised for opens, grounds, and short circuits. They shall be capable of being wired Class B, Style Y or Class A, Style Z.

26) Alarm Dry Contacts: Provide alarm dry contacts (Form C) rated 2 amps at 30 VDC (resistive) and transfer whenever system alarm occurs.

27) Supervisory Dry Contacts: Provide supervisory dry contacts (Form C) rated 2 amps at 30 VDC (resistive) and transfer whenever system supervisory condition occurs.

28) Trouble Dry Contacts: Provide trouble dry contacts (Form C) rated 2 amps at 30 VDC (resistive) and transfer whenever system trouble occurs.

G. Auxiliary Switch Module (ASM-16):

1) Each ASM-16 has 16 programmable push-button switches.
2) Each push-button switch has 3 associated status LEDs (red, yellow, and green), configurable to indicate any combination of functions.
3) Flexible switch configurations to allow auxiliary functions.
4) An insertable label to identify function of each switch and LEDs combination.
5) Provide capability to communicate with up to 16 ASM-16 modules locally, or up to 3,000 feet from the Control Panel.

H. Graphic Annunciator (NGA): Optical ¼ VGA, touch-screen annunciator with the following characteristics:

1) Custom Graphics: Panel shall permit uploading of custom bit-mapped graphic to display screen. Graphic shall display when all systems are normal.
2) Intuitive Functions: In alarm or trouble condition, annunciator shall display only information pertaining to event, including control switches.
   a. Trouble Condition: Display shall indicate cause of trouble. Only controls available to operator shall be Acknowledge and Reset functions.
   b. Alarm Condition: Display shall indicate cause of alarm. Only controls available to operator shall be Acknowledge, Silence, and Reset functions.

2.4 SYSTEM PERIPHERALS

A. Addressable Devices – General:

1) Provide address-setting means using rotary-decimal switches.
2) Use simple to install and maintain decade-type (numbered 0 to 15) address switches by using standard screwdriver to rotate 2 dials on device to set address. Devices which use binary address set via dipswitch packages, handheld device programmer, or other special tools for setting device address shall not be acceptable.
3) Detectors: Analog and addressable. Connect to fire alarm control panel's Signaling Line Circuits.
4) Addressable Thermal and Smoke Detectors: Provide 2 status LEDs. Both LEDs shall flash under normal conditions, indicating detector is operational and in regular communication with control panel, and both LEDs shall be placed into steady illumination by control panel, indicating alarm condition has been detected. If required, flashing mode operation of detector LEDs can be programmed off via fire control panel program.
5) Fire Alarm Control Panel: Permit detector sensitivity adjustment through field programming of system. Sensitivity can be automatically adjusted by panel on time-of-day basis.
6) Using software, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. Detectors shall be listed by UL as meeting calibrated sensitivity test requirements of NFPA 72, Chapter 7.
7) Detectors shall be ceiling-mounted and shall include separate twist-lock base with tamper-proof feature.

8) Following bases and auxiliary functions shall be available:
   a. Standard base with remote LED output.
   b. Sounder base rated at 85 dBA minimum.
   c. Form-C relay base rated 30 VDC, 2.0 A.
   d. Isolator base.

9) Detectors shall provide test means whereby they will simulate alarm condition and report that condition to control panel. Such test shall be initiated at detector itself by activating magnetic switch or initiated remotely on command from control panel.

10) Detectors shall store internal identifying type code that control panel shall use to identify type of device (ION, PHOTO, THERMAL).

B. Addressable Manual Stations (MS-7AF):

1) Manual Fire Alarm Stations: Non-code, non-break glass type, equipped with key lock so they may be tested without operating handle.
2) Operated Station: Visually apparent, as operated, at a minimum distance of 100 feet (30.5 m) from front or side.
3) Stations shall be designed so after actual activation, they cannot be restored to normal except by key reset.
4) Manual stations shall be constructed of Lexan with clearly visible operating instructions provided on cover. The word FIRE shall appear on front of stations in raised letters, 1.75 inches (44 mm) or larger.
5) Addressable manual stations shall, on command from control panel, send data to panel representing state of manual switch and addressable communication module status.

C. Intelligent Thermal Detectors (ATD-RL2F): Intelligent addressable devices rated at 135 degrees F (58 degrees C) and have rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. Connect via 2 wires to fire alarm control panel signaling line circuit.

D. Intelligent Photoelectric Smoke Detectors (ASD-PL2F): Use photoelectric (light-scattering) principal to measure smoke density and shall, on command from control panel, send data to panel representing analog level of smoke density.

E. Addressable Dry Contact Monitor Modules (AMM-2F):

1) Provide to connect 1 supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to 1 of the fire alarm control panel SLCs.
2) Mount in standard deep electrical box.
3) IDC Zone: Suitable for Style B operation.

F. Addressable Dry Contact Monitor Modules (AMM-2IF):

1) Provide to connect 2 supervised IDC zones of conventional alarm initiating devices (any N.O. dry contact device) to 1 of the fire alarm control panel SLCs.
2) Mount in 4-inch (101.6-mm) square, 2-1/8-inch (54-mm) deep electrical box.
3) IDC Zones: Suitable for Style B operation.

4) LEDs: Flash under normal conditions, indicating monitor module is operational and in regular communication with control panel.

G. 2-Wire Detector Monitor Modules (AMM-4F):

1) Provided to connect 1 supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (any N.O. dry contact device).
2) Mount in 4-inch (101.6-mm) square, 2-1/8-inch (54-mm) deep electrical box or to optional surface-mounted back box.
3) IDC Zone: Wired for Class A or B (Style D or Style B) operation.
4) LEDs: Flash under normal conditions, indicating monitor module is operational and in regular communication with control panel.

H. Strobes:

1) Compliance: ADA and UL 1971.
2) Maximum Pulse Duration: 0.2 second.
3) Strobe Intensity: UL 1971.
4) Flash Rate: UL 1971.
5) Strobe Candela Rating: Determine by positioning selector switch on back of device.

I. Speakers/Strobes:

1) Operate on 24 VDC
2) Have at least 2 audibility options
3) Maximum Pulse Duration: 0.2 second.
4) Strobe Intensity: UL 1971.
5) Flash Rate: UL 1971.
6) Strobe Candela Rating: Determine by positioning selector switch on back of device.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and surfaces to receive fire alarm system.

1) Notify Architect of conditions that would adversely affect installation or subsequent use.
2) Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION

A. Install fire alarm system in accordance with NFPA 72, NFPA 70, state and local codes, manufacturer’s instructions, and as indicated on the Drawings.

B. Conceal conduit, junction boxes, and conduit supports and hangers in finished areas. Conceal or expose conduit, junction boxes, and conduit supports and hangers in unfinished areas.

C. Do not install smoke detectors before system programming and test period. If construction is ongoing during this period, take measures to protect smoke detectors from contamination and physical damage.

D. Flush-mount fire detection and alarm system devices, control panels, and remote annunciators in finished areas. Flush-mount or surface-mount fire detection and alarm system devices, control panels, and remote annunciators in unfinished areas.

E. Ensure manual stations are suitable for surface mounting or semi-flush mounting as indicated on the Drawings. Install not less than 42 inches, nor more than 48 inches, above finished floor measured to operating handle.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Provide service of competent, factory-trained technician authorized by manufacturer to technically supervise and participate during pre-testing and acceptance testing of system.

B. Testing:

1) Conduct complete visual inspection of control panel connections and test wiring for short circuits, ground faults, continuity, and insulation before energizing cables and wires.
2) Close each sprinkler system control valve and verify proper supervisory alarm at Control Panel.
3) Verify activation of flow switches.
4) Open initiating device circuits and verify that trouble signal actuates.
5) Open signaling line circuits and verify that trouble signal actuates.
6) Open and short notification appliance circuits and verify that trouble signal actuates.
7) Ground initiating device circuits and verify response of trouble signals.
8) Ground signaling line circuits and verify response of trouble signals.
9) Ground notification appliance circuits and verify response of trouble signals.
10) Check installation, supervision, and operation of intelligent smoke detectors.
11) Introduce on system each of the alarm conditions that system is required to detect. Verify proper receipt and proper processing of signal at Control Panel and correct activation of control points.

12) Consult manufacturer's manual to determine proper testing procedures when system is equipped with optional features. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality, and similar.

C. Acceptance Testing:

1) Before installation shall be considered completed and acceptable by AHJ, a complete test using as a minimum, the following scenarios shall be performed and witnessed by representative approved by Engineer.

Monitoring company and/or fire department shall be notified before final test in accordance with local requirements.

2) Contractor's job foreman, in presence of representative of manufacturer, representative of Owner, and fire department shall operate every installed device to verify proper operation and correct annunciation at control panel.
3) Open signaling line circuits and notification appliance circuits in at least 2 locations to verify presence of supervision.
4) When testing has been completed to satisfaction of both Contractor's job foreman and representatives of manufacturer and Owner, a notarized letter co-signed by each attesting to satisfactory completion of said testing shall be forwarded to Owner and fire department.
5) Leave fire alarm system in proper working order and, without additional expense to Owner, replace defective materials and equipment provided within 1 year (365 days) from date of final acceptance by the owner.

3.4 DEMONSTRATION

A. Provide instruction as required for operating fire alarm system.

B. Provide hands-on demonstrations of operation of fire alarm system components and functions.

END OF SECTION 28 3100

SECTION 31 1000 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Clear and grub the site as shown on the Drawings and specified in this Section.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 31 2000: Earthwork.
3. Section 02 4100: Selective demolition.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide materials, not specifically described but required for proper completion of the work of this Section, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROTECTION

A. Protect existing utilities indicated or made known.

B. Protect trees and shrubs, where indicated to remain, by providing a fence around the tree or shrub of sufficient distance away and of sufficient height so trees and shrubs will not be damaged in any way as part of this Work.

C. Protection of persons and property:
1. Barricade open depressions and holes occurring as part of this Work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations under this Section.
4. Barricade and post or backfill all open trenches outside of fenced areas when not on job site.

D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

E. Maintain access to the site at all times.

3.3 CLEARING

A. Prior to earthwork operations, strip entire site of vegetation, organic topsoil. Clear surface and subsurface obstructions and miscellaneous debris from the proposed building, exterior concrete, and paving areas.
   1. Stripping: Approximately 3" deep. The actual depth of stripping will be reviewed by the responsible inspecting Geotechnical Engineer.

B. Clear organic matter, vegetation, rubbish, debris, and loose soil deposits from the banks and bottoms of the irrigation canal and ditch.

3.4 CONSERVATION OF TOPSOIL

A. Stockpile the stripped organic topsoil in an area clear of new construction in order to provide topsoil for areas shown on the Drawings to be turfed or planted, and to fill planters, without contamination with subsoils.

B. Maintain the stockpile in a manner which will not obstruct the natural flow of drainage.
   1. Maintain stockpile free from debris and trash.
   2. Keep the topsoil damp to prevent dust and drying out.

3.5 DISPOSAL

A. Remove brush, grass, roots, trash, and other material from clearing operations. Dispose of away from the site in a legal manner.

B. Do not store or permit debris to accumulate on the job site.

C. Dispose of any excess topsoil after fine grading has been accepted by the Architect.

D. Do not burn debris at the site.

E. Excavated Soils and Land Clearing Debris: 100% of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled, except for reuse, either on site or off site of vegetation or soil contaminated by disease or pest infestation.

   1. Refer to Section 01 7425.

3.6 UTILITIES

A. Coordinate with utility companies and agencies as required. See Section 02 3100.

B. Where utility cutting, capping, or plugging is required, perform such work in accordance with requirements of the utility company or governmental agency having jurisdiction.

END OF SECTION 31 1000

SECTION 31 2000 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, trench, excavate, fill, backfill, compact, and grade the site to the elevations shown on the Drawings and as needed to meet the requirements of the construction shown in the Contract Documents.

B. The work of this Section includes, but is not limited to, the following:
1. Preparation of sub-grade for buildings, walks, pavements, and landscaping.
2. Site grading, cut, fill, and finish, off-haul or import of soil necessary to meet finish grades indicated on the Drawings.
3. Excavation, backfill and compaction for filling construction and trenches.

C. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 00 3100: Geotechnical data.
3. Section 01 4520: Testing and inspection requirements.
4. Section 01 5725: Storm Water Pollution Protection Plan.
5. Section 01 7120: Field engineering.
6. Section 22 0000: Excavation and backfill for plumbing work.
7. Section 26 6000: Excavation and backfill for electrical work.
8. Section 31 1000: Site clearing, removal and storage of top soil.
9. Section 31 3115: Termite control.

1.2 QUALITY ASSURANCE

A. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

B. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the geotechnical engineer.

C. Verify all grade and trench elevations as specified in Section 01 7120.

D. All improvements within property owned by a City, County or State Entity shall be in accordance with the Standard Specifications of the authority having jurisdiction.

1.3 TRENCHING AND EXCAVATION SAFETY

A. All trenches and excavation in excess of 4'-0" in depth and areas of visibly unstable soils shall be shored or otherwise stabilized in conformance with current local or state codes, ordinances and requirements. In addition, the Contractor shall notify the Owner of suspected hazardous waste or other unusual physical conditions as provided by law.

B. All open trenches and excavations outside the fenced construction area shall be properly barricaded for public and worker safety. Trenches shall be adequately covered or backfilled prior to ceasing work or leaving the work site.

C. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

1.4 EXISTING UTILITIES

A. Field verify the location of all existing underground utilities prior to beginning any earthwork. Work around and protect all existing utilities during the course of the Work. Raise or lower each existing utility box flush with new finish surface.

B. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

C. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 SOIL MATERIALS

A. Fill and Backfill Materials: Fill shall consist of select material. Native soil, free from organic matter and rocks or cobbles larger than 3", may be used as fill at the site as follows:
   1. Satisfactory Soil Materials: Are defined as those complying with ASTM D2487 Soil Classification Groups GW, GP, GM, SM, SW, and SP.
   2. Unsatisfactory Soil Materials: are defined as those complying with ASTM D2487 Soil Classification Groups GC, SC, MH, ML, CL, CH, OL, OH, and PT.

B. Import Material: Import material, if required, shall consist of homogenous, non-corrosive, non-expansive, inorganic granular soils free of toxic materials and conforming to the following criteria:
   1. Gradation:
      a. 3" Sieve: 100% passing
      b. 3/4" Sieve: 80-100% passing
      c. No. 4 Sieve: 60-100% passing
      d. No. 200 Sieve: 12-50% passing
   2. Plasticity Index, ASTM D4318:
      a. Liquid limit: < 25
      b. Plasticity index: < 12
   3. Expansion Index: < 10
   4. Organic Content: < 3% by dry weight.
   5. Minimum "R" Value (pavement area): 40
   6. Corrosivity:
      a. pH: 6 to 8
      b. Minimum resistivity (ohm-cm): > 2,000
      c. Soluble sulfate (ppm): < 2,000

d. Soluble chloride (ppm): < 500

7. Import fill material shall be approved by the geotechnical engineer prior to transport to the site.

C. Engineered Fill Materials:
1. Satisfactory Soil Materials as defined in paragraph 2.2.A.1 above, or
2. Import Material defined in 2.2.B above.

D. Sand for Utility Bedding: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

E. Toxic Testing of Import Fill Material:
1. The Contractor shall notify the Owner, Architect, and Testing Laboratory for the project, of the location and origin of all fill material intended for this project. Such notification shall be not less than 21 days prior to transport of the material.
2. Both native and stockpile soils shall be subject to testing to determine suitability of the soil as related to toxic substances on school sites.
3. The Owner will pay for only one passing test from one import source. Additional tests, and retests of failed material shall be paid by the Contractor.
4. Should testing indicate toxic substances at levels above those acceptable on school sites by the State of California, Department of Toxic Substance Control (DTSC), the subject soil will not be permitted on the proposed school site.
5. Any delay caused by materials found not to be compliant, shall not be accepted as justification for contract time extension or related claims.

2.3 TOPSOIL

A. Topsoil:
1. Friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoils, roots, heavy or stiff clay, stones and gravel, noxious weeds, sticks, brush, litter, and other deleterious matter.
2. Provide from stockpile developed on site as specified in Section 31 1000.

2.4 ACCESSORY MATERIALS

A. Utility Identification Tape: 2" wide metallic plastic material inscribed with caution message related to the buried utility below (i.e., **ELECTRICAL LINE BURIED BELOW, SEWER LINE BURIED BELOW**, etc.) by McMaster-Carr or approved equal.

B. Provide a dry, free-flowing, dust-free chemical compound, soluble in water, capable of inhibiting growth of vegetation, and approved for use on this Work by governmental agencies having jurisdiction.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FINISH ELEVATIONS AND LINES

A. Comply with pertinent provisions of this Section, Section 01 7120, and the Grading Plan.

3.3 DEWATERING AND WATER CONTROL

A. Water Control:
1. Establish and construct storm drainage features at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils.
2 Completely drain construction site during periods of construction to keep soil materials sufficiently dry.
3. Temporary excavations for the project construction should be left open only for as short a time as possible and should be protected from water runoff.

B. Dewatering:
1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains, and other approved methods.
2. Keep excavations and site construction area free from water.
3. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
4. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations.
5. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from open excavations, unfinished fills, or other low areas to prevent softening of exposed surfaces.
6. Dispose of water away from the work in a suitable manner without damage to adjacent property or menace to public health.
7. Protect existing storm drain system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the Owner.

C. Unsuitable Soil Support: When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified.

3.4 DUST CONTROL

A. The San Joaquin Valley Air Pollution Control District regulates all dust control and emission standards throughout the Central Valley. Regulation VIII – Fugitive PM10 Prohibitions requires that a Dust Control Plan be completed for a large majority of construction projects.

B. This project disturbs less than 5.0 acres, thus a Dust Control Plan is not required.

C. A Construction Notification form shall be submitted to the San Joaquin Valley Air Pollution Control District at least 48 hours prior to commencing any earthmoving activities.

D. Whether a Dust Control Plan is required for the project or not, the Contractor shall be responsible for complying with the requirements of Rule 8021

3.5 PROCEDURES

A. Utilities:
1. Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.
2. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.

3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Architect and secure his instructions.
5. Do not proceed with permanent relocation of utilities until written instructions are received from the Utility Company.

B. Protection of Persons and Property:
1. Barricade open holes and depressions occurring as part of this Work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

D. Maintain access to adjacent areas at all times.

3.6 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. **Water or air pressure jetting** are not permitted, unless they comply with the following requirements.
1. All surfaces of the hole can be visually inspected with 6' maximum length and,
2. All objects shall be supported continuously to prevent sagging and,
3. The hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing Lab technician.

D. Comply with requirements of Section 01 7330.

3.7 SITE PREPARATION

A. Over-excavation and Preparation at Building Areas:
1. After clearing, excavate native soils in areas indicated to a depth of 2'-0" below stripped ground surface, or 1'-0" below bottom of proposed footing, whichever is deeper.
2. At a minimum, include entire building areas, and extend at least 5'-0" beyond exterior footing line, including 5'-0" beyond exterior column footing edges.
3. Remove roots and other vegetation remaining in excavated areas which are larger than ½" in diameter.
4. Scarify bottom of excavation to minimum depth of 6".
5. Moisture conditioned from 0 to 2 percent over the optimum moisture content and compact excavated area to a minimum of 90% of maximum dry density; ASTM D1557.
6. Place engineered fill materials required to establish finish grade in lifts no greater than 8" loose depth and compact to a minimum of 90% of maximum dry density; ASTM D1557.

B. Over-excavation and Preparation at Concrete Pavement Areas:
1. After clearing, excavate native soils in areas indicated to a depth of 2’-0” below stripped ground surface.
2. Scarify bottom of excavation to a minimum of 6”.

3. Moisture conditioned from 0 to 2 percent above the optimum moisture content, and compact excavated area to a minimum of 90% of maximum dry density, ASTM D1557.
4. Remove roots and other vegetation remaining in excavated areas which are larger than ½" in diameter.
5. Place engineered fill materials required to establish finish grade in lifts no greater than 8" loose depth and compact to a minimum of 90% of maximum dry density; ASTM D1557.
6. Compact the top 12" of pavement subgrade to a minimum of 95% of maximum dry density; ASTM D1557.

C. Root Removal at Trees:
1. Completely remove root systems to a minimum depth of 24" below the bottom of the lowest structure or footing or 36" below finished subgrade, whichever is lower.
2. Excavate root systems deeper than the elevation indicated above to allow no roots larger than 2" in diameter.
3. Treat roots remaining in the soil with a weed killer approved by the State of California for that purpose.
4. Backfill cavities resulting from root removal with earth materials placed and compacted as required by this Section.

3.8 EXCAVATION

A. Perform excavation of every type of material encountered within the limits of the Work to the lines, grades, and elevations indicated and specified herein.

B. Earth excavation includes excavation of pavements and other obstructions visible on ground surface; underground structures, utilities and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.

C. Rock excavation in trenches and pits includes removal and disposal of materials and obstructions encountered which cannot be excavated with a 1.0 cubic yard (heaped) capacity, 42" wide bucket on a track-mounted power excavator equivalent to Caterpillar Model 215, rated at not less than 90 HP flywheel power and 30,000 lb. drawbar pull. Trenches in excess of 10'-0" in width and pits in excess of 30'-0" in either length or width are classified as open excavation.

D. Surplus Materials: Dispose of unsatisfactory excavated materials, and surplus satisfactory excavated material, away from the site at disposal areas arranged and paid for by the Contractor.

E. Additional Excavation: When excavation has reached required subgrade elevations, notify Architect who will make an inspection of conditions. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Architect/Engineer. Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

F. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

G. Unauthorized Excavation:
1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Architect or the geotechnical engineer.
2. Under footings, foundations, or retaining walls:
   a. Fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering the required top elevation.
   b. When acceptable to the geotechnical engineer, lean concrete (minimum 2000 psi) may be used to bring bottom elevations to proper position.
3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the geotechnical engineer.

H. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.

I. Stability of Excavations:
1. Slope sides of excavation to comply with local codes and ordinances having jurisdiction.
2. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
3. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

J. Shoring and Bracing:
1. Provide materials for shoring and bracing as may be necessary for safety of personnel, protection of work, and compliance with requirements of governmental agencies having jurisdiction.
2. Maintain shoring and bracing in excavations regardless of the time period excavations will be open.
3. Carry shoring and bracing down as excavation progresses.

K. Use of Explosives: **NOT PERMITTED**.

3.9 FILLING AND BACKFILLING

A. Backfill excavations as promptly as progress of the Work permits, but not until:
1. Acceptance of construction below finish grade:
2. Inspecting, testing, approving, and recording locations of underground utilities;
3. Concrete formwork is removed;
4. Shoring and bracing are removed, and voids have been backfilled with satisfactory materials;
5. Trash and debris have been removed; and
6. Horizontal bracing is in place on horizontally supported walls.

B. Placing and Compaction:
1. Place backfill and fill materials in layers not more than 8" in loose depth.
2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
3. Compact each layer to required percentage of maximum density for the area.

C. Moisture Content:
1. When the moisture content of fill material is below the lower limit specified by the Geotechnical Engineer, add water until the moisture content is as specified.
2. When the moisture content of fill material is above the upper limit specified, the material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.
3. Do not place, spread, or compact fill while it is frozen or thawing or during unfavorable weather conditions. When work is interrupted by weather conditions, do not resume fill operations until moisture content and density of previously placed fill are satisfactory.
4. Where soil has been softened or eroded by flooding, by placement during unfavorable weather, remove damaged areas and recompact as described for fill and compaction.
5. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
6. Where subgrade is spongy or pumping due to conditions beyond the Contractor's control, and aeration or other methods do not bring moisture content within specified levels, stop work and contact the Architect and Geotechnical Engineer for further direction.

3.10 TOPSOIL

A. Place topsoil to the following compacted thicknesses:
1. Areas to be seeded: 6"
2. Areas to be sodded: 4"

3. Shrub beds: 18"
4. Flower beds: 12"

B. Topsoil Placement:
1. Where topsoil is to be placed, scarify surface to depth of 6".
2. Place topsoil during dry weather.
3. Remove roots, weeds, rocks, and foreign material while spreading.
4. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
5. Roll placed topsoil.

3.11 TRENCHING

A. Trenching:
1. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
2. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
3. Do not interfere with 45 degree bearing splay of foundations.
4. Cut trenches wide enough to allow inspection of installed utilities.
5. Hand trim excavations. Remove loose matter.
6. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
7. Remove lumped subsoil, boulders, and rock up to 1.0 cu yd measured by volume.
8. Remove excavated material that is unsuitable for re-use from site.
9. Stockpile excavated material to be re-used in area designated on site in accordance with this Section 31 2000.
10. Remove excess excavated material from site.

B. Preparation for Utility Placement:
1. Cut out soft areas of subgrade not capable of compaction in place. Backfill with engineered fill.
2. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
3. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

C. Backfilling:
1. Backfill to contours and elevations indicated using unfrozen materials.
2. Employ a placement method that does not disturb or damage other work.
3. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
4. Maintain optimum moisture content of fill materials to attain required compaction density.
5. Slope grade away from building. Make gradual grade changes. Blend slope into level areas.
6. Correct areas that are over-excavated.
7. Reshape and re-compact fills subjected to vehicular traffic.

D. Utility Installation: Install underground utilities according to the manufacturer's written recommendations. In addition to the manufacturer's recommendations, install underground utilities as follows:
1. Underground Utility Line Cover: No less than 12".
2. Bedding: Minimum of 6" compacted sand bedding under the pipe or conduit.
3. Envelope: Compacted sand extending 6" above and around the pipe or conduit.
4. Backfill Material: Remaining backfill material may consist of native soil or engineered fill material as described above.
5. Place and compact utility trench backfill in accordance with the requirements for engineered fill.

E. Utility Identification:
1. Utility Identification Tape: 2" wide metallic plastic material inscribed with a CAUTION message related to the buried utility.
2. Identify each utility pipe or conduit by the use of a continuous underground warning tape.
3. Locate tape 12" directly above the pipe or conduit, but not more than 12" below or not less than 6" below the finished grade.
   a. Where the top of the pipe or conduit exceeds 4'-0" below finish surface, locate one tape 12" directly above the pipe or conduit and one tape not less than 6" below the finished grade.
4. Provide one strip of identification tape for each 18" of trench width, horizontally.

3.12 GRADING

A. General: Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas. Smooth the finished surfaces within specified tolerance.

B. Finish Grading Outside Building Lines:
1. Grade areas adjacent to buildings to achieve drainage away from the structures, and to prevent ponding.
2. Finish the surfaces to be free from irregular surface changes, and:
   a. Shape the surface of areas scheduled to be under walks to line, grade, and cross-section, with finished surface not more than 0.10 foot above or below the required subgrade elevation.
   b. Shape the surface of areas scheduled to be under pavement to line, grade, and cross-section, with finished surface not more than 0.10 feet above or below the required subgrade elevation.
   c. Shape finish grade adjacent to building to slope a minimum of 2% away from the exterior footings and wall, for a distance of 5'-0".

3.13 COMPACTION

A. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D1557.

B. Moisture Control: Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.

C. Densities: Provide not less than the following maximum density of soil material compacted at optimum moisture content for the actual density of each layer of soil material in place, and as approved by the geotechnical engineer.

1. **Structures:** Scarify and compact the top 8" of subgrade and each layer of fill material or backfill material at 90% of maximum density.
2. **Lawn and unpaved areas:** Compact the top 6" of subgrade and each layer of fill material or backfill material at 85% of maximum density;
3. **Concrete Walks:** Scarify and compact the top 8" of subgrade and each layer of fill material or backfill material at 90% of maximum density.
4. **Trenches:** Provide a minimum of 6" of compacted sand bedding under pipe or conduit, and provide envelope extending 12" above pipe or conduit. Compact remaining backfill to 90% of maximum density except the upper 24" of those trenches located within structures, walks, and pavement areas which shall be compacted to a minimum of 95% of maximum dry density.
5. **Concrete Pavements:** Scarify and compact the top 12" of subgrade and each layer of fill material or backfill material at 95% of maximum density.

3.15 FIELD QUALITY CONTROL

A. Secure the Geotechnical Engineer's inspection and approval of subgrades and fill layers before subsequent construction is permitted thereon.

B. The Owner's testing laboratory will provide at least the following tests:
   1. At paved areas, at least 1 field density test for every 10,000 sq. ft. of paved area, but not less than 3 tests.
   2. In each compacted underlying fill layer, 1 field density test for every 7,500 sq. ft. of overlaying paved area, but not less than 3 tests.
   3. In building areas, at least 1 field density test for every 2,000 sq. ft. of building coverage.
   4. At least 1 field density test per every 200 lineal foot of trench over 3'-0" of trench depth.

C. If, in the Geotechnical Engineer's opinion based on reports of the testing laboratory, subgrade or fills which have been placed are below specified density, provide additional compacting and testing under the provisions of Section 01 4520 of these Specifications.

END OF SECTION 31 2000

San Joaquin Valley Air Pollution Control District
Regulation VIII – Fugitive PM10 Prohibitions

Construction Notification

Pursuant to section 6.4 of **District Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities***, the owner or operator of a construction project of at least 1.0 acre in size shall provide written notification to the District at least 48 hours prior to his/her intent to commence any earthmoving activities. Use the first two pages of this form to submit a written Construction Notification. There are no fees for filing a construction notification.

Larger construction projects, as outlined below, may be required to submit a full Dust Control Plan. If a Dust Control Plan is required the owner/operator does not need to submit a separate construction notification.

Dust Control Plan

Pursuant to section 6.3 of **Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities***, the owner or operator shall submit a Dust Control Plan to the District for a construction project that will involve any of the following:

- Residential developments that will include ten acres or more of disturbed surface area, or
- Non-residential developments that will include five acres or more of disturbed surface area, or
- Will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days of the project.

A Dust Control Plan identifies the fugitive dust sources at the construction site and describes all of the dust control measures to be implemented before, during, and after any dust generating activity for the duration of the project. The District will review and approve, conditionally approve, or disapprove the Dust Control Plan within 30 days of submittal. **Construction activities shall not commence until the Dust Control Plan has been approved or conditionally approved by the District.** A copy of the approved Dust Control Plan must be retained at the project site and made available upon request by a District inspector.

At least one key individual representing the owner or operator, or any person who prepares a Dust Control Plan must complete a Dust Control Training Course presented by the District. Please contact the District to find out when courses are being offered.

Pursuant to **District Rule 3135 – *Dust Control Plan Fee***, payment must accompany each Dust Control Plan submitted to the District. A separate fee is charged for any major modification made to an approved plan, such as modifying the size and scope of the project or making significant changes to the types of control or preventative measures. No fees are charged for administrative changes to an approved plan.

Regardless of whether a Construction Notification or Dust Control Plan is required, the owner or operator of any construction project shall comply with all other applicable requirements of Regulation VIII, and other District Rules.

Construction Notifications and Dust Control Plans should be submitted to the District's Compliance Division at:

San Joaquin, Stanislaus, Merced Counties	*Madera, Fresno, Kings Counties*	*Tulare, Kern Counties*
Northern Region Office 4800 Enterprise Way Modesto, CA 95356 (209)557-6400 Fax: (209)557-6475	**Central Region Office** 1990 East Gettysburg Avenue Fresno, CA 93726 (559)230-5950 Fax: (559) 230-6062	**Southern Region Office** 34946 Flyover Court Bakersfield, CA 93308

		(661) 392-5500 Fax: (661) 392-5585

Section 1 – General Information – Page 1

☐ **Construction Notification** (Complete section 1) ☐ **Dust Control Plan** (Complete sections 1-7)	Date Received: *(For District Use)*

1-A Project Name and Location

Project Name: _____

Project Address: _____

Major X-Streets: _____

City: _____ County: _____

GPS Coordinate(s): _____

Expected Construction Start Date: _____ End Date: _____

1-B Project Details

This project is: ☐ Residential ☐ Non-Residential (commercial, industrial, institutional, public, etc.)

Total project site area: _____ Acres

Total disturbed surface area: _____ Acres

Total disturbed areas that will be left inactive for more than seven days: _____ Acres

Maximum daily volume of earthmoving: _____ Cubic Yards

Average daily volume of earthmoving: _____ Cubic Yards

1-C Provide a brief description of the project's operations.

_____

1-D Indirect Source Review (ISR) (Rule 9510)

Final Land Use Approval: ☐ Discretionary ☐ Ministerial

☐ Approval is Pending ☐ Approval was granted on: _____

Air Impact Assessment (AIA) application submitted? ☐ No ☐ Yes Date: _____

ISR Project ID: _____ Type of space: _____ Project square ft: _____

☐ Exempt from ISR. Explain: _____

☐ I would like additional information about opportunities to reduce water usage on the project site.

Project Name: _____

1-E Contacts

Property Owner: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Mobile: _____ Email: _____

Developer: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact Person: _____

Phone: _____ Fax: _____

Mobile: _____ Email: _____

General Contractor: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact Person: _____

Phone: _____ Fax: _____

Mobile: _____ Email: _____

Other Contact: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Mobile: _____ Email: _____

STOP HERE FOR CONSTRUCTION NOTIFICATION ONLY

Section 2 – Dust Control Plan Implementation – Page 1

Project Name: _____

2-A This Dust Control Plan was prepared by:

Name: _____ Title: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Mobile: _____ Email: _____

Date training completed: _____ ☐ Copy of course certificate attached.

2-B Contractors

Provide the names, addresses, and phone numbers of the contractors involved in dust generating activities **or** performing dust control as part of this project (Rule 8021 Sec. 6.3.6.1). A supplemental list may be attached.

1. _____

2. _____

3. _____

4. _____

2-C Who will have the primary responsibility for implementing this Dust Control Plan?

(Rule 8021 Sec 6.3.6.1)

☐ Property Owner ☐ Developer ☐ General / Prime Contractor

☐ Sub-Contractor(s) ☐ Other: _____

Primary Project Contact: _____

Title: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

On-Site Phone: _____ Fax: _____

Mobile: _____ Email: _____

Date training completed: _____ ☐ Attach a copy of the course certificate

Section 2 – Dust Control Plan Implementation – Page 2

Project Name: _____

2-D Dust Generating Activity Dates

The expected start and completion dates of **dust generating activities and soil disturbance activities** to be performed on site. For phased projects, it may be necessary to report expected start and completion dates separately. (Rule 8021 Sec. 6.3.6.4)

Expected start date: _____ Completion Date: _____

Phase Project Start – A: _____ Completion – A: _____

Phase Project Start – B: _____ Completion – B: _____

Phase Project Start – C: _____ Completion – C: _____

2-E Other Locations

Identify whether any other locations should be included with this plan that are involved with this project. An example may include listing any site where bulk materials will be imported from or exported to. This does not need to include quarries or retailers of building materials. (Rule 8021 Sec. 6.3.2)

☐ No other locations are included with this project.

Location 1: _____

☐ No Dust Control Plan Required ☐ Included with this plan ☐ Included with another plan

Location 2: _____

☐ No Dust Control Plan Required ☐ Included with this plan ☐ Included with another plan

Location 3: _____

☐ No Dust Control Plan Required ☐ Included with this plan ☐ Included with another plan

Section 3 – Fugitive PM10 Sources – Page 1

Project Name: _____

3-A Sources of Fugitive Dust

This section describes the minimum requirements for limiting visible dust emissions from activities that cause fugitive dust emissions. (Rule 8021 Sec. 6.3.6.5) **Check at least one box under each category**.

Structural Demolition. (Rule 8021 Sec. 5.1, 6.3.3, & 6.3.6.5)

- ☐ No demolitions are planned for this project.
- ☐ Asbestos NESHAP notification and fees will be submitted to the District. (Rule 3050 and Rule 4002)
  Water will be applied to the following areas for the duration of the demolition activities:
  - Building exterior surfaces;
  - Unpaved surface areas where equipment will operate;
  - Razed building materials; and
  - Water or dust suppressants will be applied to unpaved surface areas within 100 feet of structure during demolition.

Pre-Activity (Rule 8021 Sec. 5.2)

- ☐ Not applicable for this project (Please explain why in Section 3-C).
- ☐ The site will be pre-watered and work will be phased to reduce the amount of disturbed surface area at any one time (Complete Section 4-A).

Active Operations (Rule 8021 Sec. 5.2)

- ☐ Water will be applied to dry areas during leveling, grading, trenching, and earthmoving activities (Complete Section 4-A).
- ☐ Wind barriers will be constructed and maintained, and water or dust suppressants will be applied to the disturbed surface areas (Complete Sections 4-A or 4-B, and 4-C).

Inactive Operations, Including After Work Hours, Weekends, and Holidays (Rule 8021 Sec. 5.2)

- ☐ Not applicable for this project (Please explain why in Section 3-C).
- ☐ Water or dust suppressants will be applied on disturbed surface areas to form a visible crust, and vehicle access will be restricted to maintain the visible crust. (Complete Section 4-A or 4-B, and 4-C)

Temporary stabilization of areas that remain unused for seven or more days (Rule 8021 Sec. 5.2)

- ☐ Not applicable for this project (Please explain why in Section 3-C)
- ☐ Vehicular access will be restricted and water or dust suppressants will be applied and maintained at all un-vegetated areas (Complete Section 4-A or 4-B, and 4-C).
- ☐ Vegetation will be established on all previously disturbed areas (Complete Section 4-C).
- ☐ Gravel will be applied and maintained at all previously disturbed areas (Complete Section 4-C).
- ☐ Previously disturbed areas will be paved (Complete Section 4-C).

Unpaved Access and Haul Roads, Traffic and Equipment Storage Areas (Rule 8021 Sec. 5.2 and 5.3)

- ☐ Not applicable for this project (Please explain why in Section 3-C)
- ☐ Apply water or dust suppressants to unpaved haul and access roads (Complete Section 4-A or 4-B)
- ☐ Post speed limit signs of not more than 15 miles per hour at each entrance, and again every 500 feet. (Complete Section 4-C)
- ☐ Water or dust suppressants will be applied to vehicle traffic and equipment storage areas (Complete Section 4-A or 4-B).

Wind Events (Rule 8021 Sec. 5.4)

- ☐ Water application equipment will apply water to control fugitive dust during wind events, unless unsafe to do so. Outdoor construction activities that disturb the soil will cease whenever visible dust emissions cannot be effectively controlled.

Section 3 – Fugitive PM10 Sources – Page 2

Project Name: _____

3-B Bulk Materials (Rule 8021 Sec. 6.3.6.6 and Rule 8031)

Outdoor Handling of Bulk Materials (Rule 8031 Sec. 5.0 A)

- ☐ No bulk materials will be handled during this project.
- ☐ Water or dust suppressants will be applied when handling bulk materials.
- ☐ Wind barriers with less than 50 percent porosity will be installed and maintained, and water or dust suppressants will be applied.

Outdoor Storage of Bulk Materials (Rule 8031 Sec. 5.0 B)

- ☐ No bulk materials will be stored during this project.
- ☐ Water or dust suppressants will be applied to storage piles.
- ☐ Storage piles will be covered with tarps, plastic, or other suitable material and anchored in such a manner that prevents the cover from being removed by wind action.
- ☐ Wind barriers with less than 50 percent porosity will be installed and maintained around the storage piles, and water or dust suppressants will be applied.
- ☐ A three-sided structure (< 50% porosity) will be used that is at least as high as the storage piles.

On-Site Transporting of Bulk Materials (Rule 8031 Sec. 5.0 C)

- ☐ No bulk materials will be transported on the project site.
- ☐ Vehicle speed will be limited on the work site.
- ☐ All haul trucks will be loaded such that the freeboard is not less than six inches when transported across any paved public access road.
- ☐ A sufficient amount of water will be applied to the top of the load to limit visible dust emissions.
- ☐ Haul trucks will be covered with a tarp or other suitable cover.

Off-Site Transporting of Bulk Materials (Rule 8031 Sec. 5.0 D)

- ☐ No bulk materials will be transported to or from the project site.
- ☐ Measures in section 5-B will be implemented to prevent haul trucks from becoming a source of visible emissions or carryout onto public roads. (complete Section 5-B)

Outdoor Transport using a Chute or Conveyor (Rule 8031 Sec. 5.0 E)

- ☐ No chutes or conveyors will be used.
- ☐ Chute or conveyor will be fully enclosed.
- ☐ Water spray equipment will be used to sufficiently wet the materials.
- ☐ Transported materials will be washed or screened to remove fines (PM10 or smaller).

3-C Comments

_____

Section 4 – Dust Control Methods – Page 1

Project Name: _____

4-A Water Application

Complete this section if water application will be used as a control method for limiting visible dust emissions and stabilizing surface areas. Check and answer everything that applies to this project.
(Rule 8021 Sec. 6.3.6.6)

Water Application Equipment:

☐ Sprinklers: Describe the activities that will utilize sprinklers:

_____

Minimum treated area: _____ ☐ Square Feet ☐ Acres

Maximum treated area: _____ ☐ Square Feet ☐ Acres

Minimum water flow rate: _____ Gallons/minute Duration: _____

☐ Water Truck, ☐ Water Trailer, ☐ Water Wagon, ☐ Other: _____

Describe the activities that will utilize this equipment:

_____

Number of application equipment available: _____

Application equipment capacity: _____

Application frequency (on a typical dry day): _____

Application rate: ☐ 650 gallons per acre ☐ _____ gallons per acre (Greater than 650)

Hours of operation: _____ to _____ ☐ Daily ☐ Mon-Fri ☐ Other: _____

Water application equipment is available to operate after normal working hours, on weekends, and holidays.

After-hours contact: _____ Phone No.: _____

After-hours contact: _____ Phone No.: _____

Water Supply: *Include the relative locations of these sources on the plot plan in Section 6.*

☐ Fire hydrants Number of hydrants available On-Site: _____ Off-Site: _____

☐ Storage tanks Number and capacity: _____

☐ Wells Number and flow rate: _____

☐ Canal, River, Pond, Lake, etc. Describe: _____

☐ Other: _____

Approval granted by the owner or public agency to use their water source for this project.

Owner or Agency: _____

Contact: _____ Phone No.: _____

Section 4 – Dust Control Methods – Page 2

Project Name: _____

4-B Dust Suppressant Products

Complete this section if a dust suppressant product will be used. These materials include, but are not limited to: hygroscopic suppressants (road salts), adhesives, petroleum emulsions, polymer emulsions, and bituminous materials (road oils). (Rule 8021 Sec. 6.3.6.6)

Copy this page if more than one dust suppressant product will be used.

☐ **Not Applicable.** No dust suppressant products will be used. **Skip to 4-C.**

Application Area: _____

Product Name: _____

Contractor's Name: _____ Phone No: _____

Application Rate: _____ Gallons of undiluted material per ☐ mile or ☐ acre treated.

Application Frequency: _____ Applications per ☐ week, ☐ month, ☐ year

Application Equipment: _____

Number of Application Equipment Available: _____

Application Equipment Capacity: _____

Attach each of the following information that fully describes this product. Use the checklist below to make sure all information is submitted with this plan.

- ☐ Product Specifications (MSDS, Product Safety Data Sheet, etc.)
- ☐ Manufacturer's Usage Instructions (method, frequency, and intensity of application)
- ☐ Environmental impacts and approvals or certifications related to the appropriate and safe use for ground application.

Section 4 – Dust Control Methods – Page 3

Project Name: _____

4-C Other Dust Control Methods

Check below the other types of dust control methods that will be employed at the construction site.
(Rule 8021 Sec. 5.2)

- ☐ Restricting unauthorized vehicle access:
  - ☐ Fences ☐ Gates ☐ Posts ☐ Berms ☐ Concrete Barriers ☐ Signs
  - ☐ Other: _____
- ☐ Wind barriers Describe: _____
- ☐ Posted speed limit signs that meet State and Federal Department of Transportation standards.
  (Rule 8021 Sec. 5.3)
  - ☐ Posted at 15 miles per hour ☐ Posted at _____ miles per hour (less than 15 MPH)
- ☐ Re-establish vegetation for temporarily stabilizing previously disturbed surfaces.
  Explain: _____
- ☐ Apply and maintain gravel:
  - ☐ On haul roads ☐ On access roads ☐ At equipment storage yards
  - ☐ At vehicle traffic areas ☐ For temporarily stabilizing previously disturbed areas.
  Explain: _____
- ☐ Apply pavement:
  Explain: _____
- ☐ Other: _____

4-D Contingencies

Contingencies to be implemented should the listed control measures fail to meet the stability and visible emission requirements. Examples include, but are not limited to: replacement equipment, additional equipment, increased water application, additional water resources, adding chemical/organic dust suppressants, restricting access, and additional staffing. Attach any additional information if needed.
(Rule 4102 and Rule 8021 Sec. 5.2)

_____

4-E Record Keeping (Rule 8011 Sec. 6.2)

Records and any other supporting documents for demonstrating compliance must be maintained, but only for those days when a control measure is implemented. The District has developed record keeping forms that may be used for complying with this requirement. Check one or both below:

- ☐ Records will be maintained using the forms developed by the District.
- ☐ Records will be maintained using documents or forms developed by the owner or operator.
  Explain and include copies: _____

Section 5 – Carryout and Trackout – Page 1

Project Name: _____

5-A Treatments for Preventing Trackout

Select the control devices that will be used for preventing trackout from occurring onto paved public roads. Trackout is any material that adheres to vehicle tires and is deposited onto a paved public road or the paved shoulder of a paved public road. Check one or a combination that will apply to this project.

☐ **Grizzly:** Rails, pipes, or grates used to dislodge debris off of vehicles before exiting the site. Extends from the intersection with the paved public road surface for the full width of the unpaved exit surface for a distance of at least 25 feet. (Rule 8041 Sec. 5.9.1)

Width: _____ Feet Length: _____ Feet

☐ **Gravel Pad:** A layer of washed gravel at least one (1) inch or larger in diameter, three (3) inches deep, and extends from the intersection with the public paved road surface for the full width of the unpaved exit surface for a distance of at least 50 feet. (Rule 8041 Sec. 5.9.2)

Width: _____ Feet Length: _____ Feet Depth: _____ Inches

Gravel Size: _____ Inches Clean-up Frequency: _____

☐ **Paved Surface:** Extends from the intersection with the paved public road surface for the full width of the unpaved access road for at least 100 feet to allow mud and dirt to drop off of vehicles before exiting the site. (Rule 8041 Sec. 5.9.3)

Width: _____ Feet Length: _____ Feet

Mud and dirt deposits accumulating on paved interior roads used for trackout control will be removed with sufficient frequency, but not less frequently than once per workday. Cleanup will commence within ½ hour of generating any carryout and trackout onto public roads. (Rule 8041 Sec. 5.8.2 and 5.9.3)

Clean-up Frequency: _____

☐ **Wheel Washer:** Uses water to dislodge debris from tires and vehicle undercarriage. (Rule 8011 Sec. 3.73)

Describe: _____

☐ **Other:** (Rule 8041 Sec. 5.8.1.2) _____

5-B Treatments for Preventing Carryout

Report the required treatments that will be used for preventing carryout from occurring on paved public roads. Carryout occurs when materials from emptied or loaded haul trucks, vehicles, or trailers falls onto a paved public road or paved shoulder of a paved public road. (Rule 8031 Sec 5.0)

☐ No haul trucks will be routinely entering or leaving the project site.

☐ Spillage or loss of bulk materials from holes or other openings in the cargo compartment's floor, sides, and tailgates will be prevented when material is transported onto any paved public access road.

Emptied Haul Trucks:

- ☐ Interior cargo compartments will be cleaned before leaving the project site.
- ☐ Cargo compartment will be covered with a tarp or suitable cover before leaving the project site.

Loaded Haul Trucks:

- ☐ Haul trucks will be loaded such that the freeboard is not less than six inches with water applied to the top of the load before leaving the project site.
- ☐ Cargo compartment and load will be covered with a tarp or suitable cover before leaving the project site.

☐ **Other:** _____

Section 5 – Carryout and Trackout – Page 2

Project Name: _____

5-C Cleaning up Carryout and Trackout

Check and report below the methods and frequency for cleaning up carryout and trackout from the surface and paved shoulders of paved public roads.

The use of blower devices, or dry rotary brushers or brooms, for removal of carryout and trackout from paved public roads is prohibited. (Rule 8041 Sec. 5.0)

Projects subject to a dust control plan are required to prevent and mitigate carryout and trackout beyond the minimum cleanup requirements. (Rule 8041 Sec. 5.3)

Cleanup Frequency:

☐ In the event the control device becomes insufficient to prevent carryout and trackout, removal of any carryout and trackout must be accomplished within one-half hour of the generation of such carryout and trackout. (Rule 8041 Sec. 5.8.2.)

Cleanup Method: Check the method below that will be used for cleaning carryout and trackout.

☐ Manually sweeping and picking up. (Rule 8041 Sec. 5.7.1)

☐ Mechanical sweeping with a rotary brush or broom accompanied or preceded by water. (Rule 8041 Sec. 5.7.2)

Describe the types of equipment that will used:

_____

☐ Operating a PM10-efficient street sweeper. (Rule 8041 Sec. 5.7.3)

Make and Model: _____

☐ Flushing with water: allowed if: (Rule 8041 Sec. 5.7.4)

- No curbs or gutters are present.
- Using water will not result as a source of trackout and carryout.
- Using water will not result in adverse impacts on storm water drainage systems.
- Using water will not violate any National Pollutant Discharge Elimination System permit program.

5-D Record keeping for Cleanup of Carryout and Trackout (Rule 8011 Sec. 6.2)

Records and any other supporting documents for demonstrating compliance must be maintained. The District has developed a record keeping form specific for cleaning carryout and trackout from paved public roads and may be used for complying with this requirement. Check one or both below:

☐ Records will be maintained using the form developed by the District.

☐ Records will be maintained using documents or forms developed by the owner or operator.

Explain and include copies: _____

Section 6 – Plot Plan

Project Name: _____

6-A Plot Plan

A plot plan identifies the type and location of each project. Attach appropriately sized maps with the project boundaries outlined or use the space in section 6-B to draw a plot plan. Attached maps may include tract maps, site maps, and topographic maps. Use the checklist below to make sure all areas have been identified on the plot plan. (Rule 8021 Sec. 6.3.6.2 & 6.3.6.5)

Identify the relative locations of actual and potential sources of fugitive dust emissions.

- ☐ Bulk material handling and storage areas.
- ☐ Paved and unpaved access roads, haul roads, traffic areas, and equipment storage yards.
- ☐ Exit points where carryout and trackout onto paved public roads may occur.
- ☐ Water supply locations if water application will be used for controlling visible dust emissions.

Identify the relative locations of sensitive receptors within ¼ mile of the project. (Rule 4102 Sec. 4.1)

- ☐ No sensitive receptors within ¼ mile of the project.
- ☐ Residential areas, schools, day care, churches, hospitals, nursing facilities, commercial, retail, etc.
- ☐ Freeways, roads, or traffic areas that may be affected by the dust generating activities.
- ☐ Other: _____

6-B Draw Plot Plan (if one is not attached)

May use the back of this form
Include a North Arrow

☐ Plot plan is attached (Skip to Section 7).

Section 7 – Certification

Project Name: _____

7-A Certification

The owner, principle operator, or the individual implementing must certify the plan. (Rule 8021 Sec 6.3). For Title V sources, the responsible official must provide the certification. (Rule 2520 Sec. 3.28 and 10.0).

I certify that all information contained herein and information submitted in the attachments to this documents are true and correct.

Print Name	Title
Signature	Date

Phone Number	Fax Number	Cell Number

SECTION 31 3115 - TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Provide soil poisoning to control subterranean termites as specified herein and needed for a complete and proper treatment.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 31 2000: Earthwork.

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures. **Provide additional copy of manufacturer's application recommendations and rates, to Architect and Inspector of Record, not less than 72 hours prior to application of termite treatment.**

1.3 QUALITY ASSURANCE

A. Qualifications of Applicator:
1. Properly licensed to provide such services by governmental agencies having jurisdiction.
2. Not less than five years' successful experience in soil treatment for subterranean termites.

1.4 SPECIAL WARRANTY

A. Upon completion of the Work, and as a condition of its acceptance, deliver to the Architect two copies of a special warranty and maintenance agreement signed by an authorized representative of the installing subcontractor, and co-signed by the Contractor, agreeing:
1. To make an inspection of the Work once each year for a total period of five years following Date of Substantial Completion for the purpose of detecting termite infestation;
2. If termite infestation is found during that five year period, to retreat in accordance with prevailing practices of the trade and within ten calendar days after such infestation is discovered;
3. To repair damage to the Work caused by termites during that five year period, to a maximum cost of $5,000;
4. To make such inspections, retreatment, and repairs at no additional cost to the Owner.
5. This Warranty and Maintenance Agreement shall be in addition to the warranty requirements of the Contract Documents, and the enforcement of its provisions, shall not deprive the Owner of any action, right, or remedy otherwise available to him.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions and requirements of State of California, and EPA.

PART 2 - PRODUCTS

2.1 TERMITE CONTROL MATERIALS

A. Acceptable Products:
   1. Wisdom TC Flowable by AMVAC.
   2. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Product Characteristics:
   1. Approved by governmental agencies having jurisdiction.
   2. Active ingredients: Minimum of 7.9% Bifenthrin

C. If combinations of toxicants are approved by governmental agencies having jurisdiction, provide toxicants having such approval and in the maximum strength so approved, at no additional cost to the Owner.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 APPLICATION

A. Apply toxicant at following locations:
   1. Under slabs-on-grade.
   2. At both sides of foundation surface.

B. Place all termite control materials in strict accordance with the manufacturer's requirements and recommendations. Follow printed labels and instructions in a manner as to provide complete coverage without jeopardizing public safety.

END OF SECTION 31 3115

SECTION 32 1720 - PAVEMENT MARKING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide pavement marking in the types and arrangements shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. Crosswalk, striping and graphics.
   2. Parking lot striping and graphics.
   3. Other lines and graphics as indicated.

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

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.
   3. Shop Drawings: Photographs, scale drawings, or other data acceptable to the Architect, showing types of graphics proposed to be used.

PART 2 - PRODUCTS

2.1 MATERIALS GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.1 PAVEMENT MARKING PAINT

A. Provide paint specifically formulated for use as pavement marking in automobile traffic areas, and in the colors selected by the Architect from standard no lead colors of the approved manufacturer.
   1. Slip-resistant coefficient of friction ≥ 0.6; ADA Standard A4.5.1, for all paint.
   2. Blue at accessible parking to be color #15090; Federal Standard 595B or equal.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following
   1. Zoneline by PPG Architectural Coatings; 100% acrylic.
   2. SetFast Acrylic Waterborne Traffic Marking Paint by Sherwin-Williams.
   3. Vin-L-Stripe W801 Series by Dunn-Edwards.
   4. 506 Traffic Paint by Frazee; 100% acrylic.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Allow a minimum of 24 hours before applying striping over asphalt paving fog seal.

3.2 APPLICATION

A. Secure the Architect's approval of graphics design and layout prior to start of application.

B. Using proper masking, stencils, and application equipment recommended for the purpose by the manufacturer of the approved paint, apply the approved paint in strict accordance with its manufacturer's recommendations.

C. **Provide 2 coats** of paint material at all markings.

3.3 PROTECTION

A. Provide traffic cones, barricades, and other devices needed to protect workmen and the paint until it is sufficiently dry to with-stand traffic.

3.4 CLEANUP

A. When paint is thoroughly dry, visually inspect the entire application, touchup as required to provide clean, straight lines and surfaces throughout.

B. Using a permanently opaque paint identical in color to the surface on which the paint was applied, block out and eliminate all traces of splashed, tracked, and/or spilled pavement marking paint from the background surfaces.

END OF SECTION32 1720

SECTION 32 1725 - TACTILE WARNING SURFACES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide tactile warning surface mats and accessories in the types and arrangements shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

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

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Samples: Submit 3 samples of each kind or type of tile.

1.3 QUALITY ASSURANCE

A. Americans with Disabilities Act (ADA): Provide tactile warning surfaces which comply with the detectable warnings on walking surfaces section of the ADA (Title 49, CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces.

B. Applicable provisions of California Building Code Chapter 11B and DSA IR 11B-4.

PART 2 - PRODUCTS

2.1 TACTILE WARNING TILE

A. Acceptable Manufacturers: "In-line" pattern, ADA/CBC compliant detectable warning mat and accessories from one manufacturer. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following;
1. Ada Solutions, Inc., (800) 372-0519.
2. Engineered Plastics Inc., (800) 682-2525.
3. Advantage Tactile Systems Inc., (800) 679-4022.
4. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Color: Yellow conforming to Federal Color No. FS 33538.

C. Accessories:
1. Adhesive: Manufacturer’s recommended adhesive.
2. Anchors: Color matched, corrosion-resistant, flat-head drive anchor; 1/4" diameter by 1-1/2" long provided by manufacturer.
3. Sealant: Manufacturer’s recommended sealant.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install tactile warning surfaces, adhesive, anchors, and sealant in accordance with the manufacturer's written installation instructions.

B. Set tactile warning surfaces true and square to the curb ramp area.

END OF SECTION 32 1725

SECTION 32 3115 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide chain link fence system where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 03 3000: Cast-In-Place Concrete

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings of manufacturer's fence system.

PART 2 - PRODUCTS

2.1 GENERAL

A. Manufacturers: Shall be an active member of the Chain Link Fence Manufacturers Institute.

B. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 MATERIALS

A. Posts, Rails, and Frames: ASTM F1083 Schedule 40 hot-dipped galvanized steel pipe, welded construction, minimum yield strength of 30 ksi.

B. Wire Fabric: ASTM A 392 zinc coated steel chain link fabric.

C. Barbed Wire: Zinc-coated steel, complying with ASTM A121 Type Z Coating Class 1; 2 strands of 0.099 inch diameter wire, with 2-pointed barbs at 4 inches on center.

2.3 COATINGS

A. Hardware: Hot-dip galvanized to weight required by ASTM A153.

B. Accessories: Same finish as framing.

2.4 FABRIC

A. Fabric: 2 inch diamond mesh interwoven wire, 9 gage thick, top and bottom selvage knuckle end closed.

B. Provide fabric in one piece widths.

2.5 POSTS, RAILS, AND ASSOCIATED ITEMS

A. End, Corner, Slope, and Pull Posts: Provide at least the following minimum sizes and weights:
1. Pipe, 2.5" nominal, 2.875" outside diameter, 5.79 lbs. per lineal foot.

B. Line Posts: Provide minimum sizes and weights as follows:
1. 8'-0" high and under: Pipe, 3" nominal, 3.500" outside diameter, 7.58 lbs. per lineal foot.
2. 12'-0" high and under: Pipe, 4" nominal, 4.500" outside diameter, 10.79 lbs. per lineal foot.
3. For fencing taller than 12'-0" refer to the plans for post sizes.

C. Gate Posts: Provide gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
1. 13'-0" wide and under: Pipe, 4" nominal, 4.500" outside diameter, 10.79 lbs. per lineal foot.
2. Over 13 feet wide, and up to 18 feet wide: Pipe, 6" nominal, 6.625" outside diameter pipe, 18.97 lbs. per lineal foot.
3. Over 18 feet wide: Pipe, 8" nominal, 8.625" outside diameter pipe, 28.55 lbs per lineal foot.

D. Top Rails:
1. Pipe, 1.25" nominal, 1.660" outside diameter pipe weighing 2.27 lbs per lin ft; or
2. Provide in manufacturer's longest lengths, with expansion type couplings approximately 6" long for each joint.
3. Provide means for attaching top rail securely to each gate, corner, pull, slope, and end post.

E. Post Brace Assemblies:
1. Provide at end and gate posts, and at both sides of corner, slope, and pull posts, with the horizontal brace located at mid-height of the fabric.
2. Pipe, 1.25" nominal, 1.660" outside diameter pipe weighing 2.27 lbs per lin ft for horizontal brace.
3. 3/8" diameter rod with turnbuckle for diagonal truss.

F. Tension Wire: Provide number 7 gage galvanized coiled spring wire at bottom of fabric.

G. Post Tops:
1. Provide steel, designed as weathertight closure cap.
2. Provide one cap for each post.
3. Provide caps with openings to permit through passage of top rail.

H. Stretcher Bars:
1. Provide one-piece lengths equal to full height of fabric, with a minimum cross-section of 3/16" x 3/4".
2. Provide one stretcher bar for each gate and end post, and two for each corner, slope, and pull post, except where fabric is woven integrally into the post.

I. Stretcher Bar Bands:
1. Provide steel, spaced not over 15" on centers, to secure stretcher bars to end, corner, pull, slope, and gate posts.
2. Bands may be used also with special fittings for securing rails to end, corner, pull, slope, and gate posts

2.6 GATES

A. General:
1. Fabricate gate perimeter frames of tubular members.
2. Provide additional horizontal and vertical members to assure proper operation of the gate, and for attachment of fabric, hardware, and accessories.
3. Space so frame members are not more than 8 feet apart.
4. Materials and dimension: Pipe, 1.90 outside diameter.
5. Weight: 2.72 lbs. per lineal foot.

B. Fabrication:
1. Assemble gate frames by welding with special malleable or pressed steel fittings and rivets for rigid connections.
2. Use same fabric as used in the fence.
3. Install fabric with stretcher bars at vertical edges as a minimum.
4. Attach stretchers to gate frame at not more than 15" on centers.
5. Attach hardware with rivets or by other means which will provide security against removal and breakage.
6. Provide diagonal cross-bracing consisting of 3/8" diameter adjustable length truss rods on gates where required to provide frame rigidity without sag or twist.

C. Gate Hardware: Provide following for each gate:
1. Hinges:
   a. Pressed or forged steel, “bulldog” type hinge allowing 180 degree opening.
   b. Provide 1-1/2 pr. of hinges for each leaf over 6 feet in nominal height.
2. Latches:
   a. Provide forked type or plunger-bar type to permit operation from either side of the gate.
   b. Provide padlock eye as integral part of latch.
   c. Delete any cane bolts or padlocks and provide panic hardware and other accessible hardware for all gates in exit discharge or accessible routes.
3. Keeper: Provide keeper for vehicle gates, which automatically engages the gate leaf and holds it in the open position until manually released.
4. Double gates:
   a. Provide gate stops for double gates consisting of mushroom or flush plate, with anchors.
   b. Set in concrete to engage the center drop rod or plunger bar.
   c. Provide locking device and padlock eyes as an integral part of the latch, requiring one padlock for locking both gate leaves.
5. Rolling gates: Provide manufacturer's standard heavy-duty inverted channel track, ball-bearing hanger sheaves, dual rubber wheels, overhead framing and supports, guides, stays, bracing, hardware, and accessories as required.
6. Accessible Gates: Comply with CBC 11B-404.2.10.
   a. Kick Plates: 10" high x full width kickplate, secure to chain link mesh on both sides of accessible gates.
   b. Lever Hardware (lever both sides) Comply with CBC Section 11B-309.4:

1	EA	STORE LOCK	L9466T 06A	626	Schlage
2	EA	CORE ONLY	23-030	626	Schlage
1	EA	LOCK BOX	K-BXMOR1-10G		Keedex
1	EA	STRIKE BOX	K-BXSTR		Keedex

2.7 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Wire Ties:
1. Fabric to Line Posts: 9 gage wire ties spaced 12" on centers.
2. Fabric to Rails and Braces: 9 gage wire ties spaced 24" on centers.
3. Fabric to Tension Wire: 11 gage hog rings spaced 24" on centers.
4. Manufacturer's standard wire ties will be acceptable if of equal strength and durability.

B. Concrete: Comply with provisions of Section 03 3000 for 2500 psi concrete.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. General:
1. Install posts at a maximum spacing of 10 feet on centers.
2. Install corner or slope posts where changes in line or grade exceed a 30 degree deflection.
3. Provide and install fencing, posts, fabric and accessories in accordance with industry standards.
4. Do not, in any case, install fabric or accessories in less than 7 days after placement of concrete.
5. **Chain link fabric shall not exceed the top rail by more than ½".**
6. Adjust accessible gates to open with not more than 5.0 lbs. pressure, as allowed per California Building Code, Section 11B-404.2.9.

B. Excavation:
1. Drill holes for post footings in firm, undisturbed or compacted soil, strictly adhering to the dimensions and spacing shown.
2. Post hole dimensions:
   a. Provide 30" deep by 8" diameter foundations for line posts for 5 foot fabric height and less.
   b. 4" dia. posts at 20' gates provide 42" deep by 12" diameter foundation.
   c. Provide 36" deep by 12" diameter foundations for all other posts.
3. Spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the site if so directed.
4. When solid rock is encountered near the surface, drill into rock at least 12" for line posts and at least 18" for end, pull, gate, and corner posts. Drill hole at least 1" greater diameter than the largest dimension of the post to be placed.
5. If solid rock is below soil overburden, drill to full depth required, except penetration into rock need not exceed minimum depths specified above.

C. Miscellaneous:
1. Use U-shaped tie wires, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns.
2. Bend ends of wire to minimize hazards to persons and clothing.
3. Fasteners:
   a. Install nuts for tension band and hardware bolts on side of fence opposite fabric side.
   b. Peen the ends of bolts to prevent removal of nuts.
4. Repair coatings damaged in the shop or field erection, using a hot-applied repair compound applied in accordance with its manufacturer's recommendations as approved by the Architect.

END OF SECTION 32 3115

SECTION 33 4000 - STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide storm sewage system where shown on the drawings, including pipe, manholes, cleanout and inlet structures, placing and compacting pipe bedding, final backfilling, compaction and grading. as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 01 5000: Temporary Facilities and Controls.
3. Section 01 5720: Storm Water Pollution Protection Plan.
3. Section 01 5725: Storm Water Pollution Protection Plan.
4. Section 01 7330: Cutting and Patching.
5. Section 31 2000: Earthwork.
6. Section 32 1210: Asphaltic Concrete Paving.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements. Provide Certificates of compliance for material.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Manufacturer's Installation Instructions: Indicate special procedures required to install products supplied.

1.3 QUALITY ASSURANCE

A. All improvements within property owned by a City, County or State Entity shall be in accordance with the Standard Specifications of the authority having jurisdiction.

1.4 COORDINATION

A. Verify that the location of existing utilities have been indicated at work site by utility authorities and the Owner.

1.5 EXISTING UTILITIES

A. The Engineer has made a diligent attempt to indicate on the plans the location of all main and trunkline utility facilities which may affect the Work. In most cases, however, the only available information relative to the existing location of said facilities was small scale undimensioned plats. The location of said facilities, therefore, shall be considered approximate only, until exposed by the Contractor.

B. Service laterals and appurtenances have also been shown where information was available as to their location. In most cases, however, the only available information relative to the existing location of said facilities was small scale undimensioned plats. The location of said facilities, therefore, shall be considered approximate only, until exposed by the Contractor.

C. At new work locations, expose by hand methods all existing utilities along the route of the new work prior to using any mechanical equipment. If mechanical equipment is allowed at a particular location, it may only be

used after the completion by the Contractor of a successful exhaustive search by hand methods to locate all existing facilities as indicated on the plans, and as indicated at the work site by District personnel.

D. Maintain all existing utility mains and service lines in constant service during construction of the Work.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Storm drain piping shall be reinforced concrete pipe (RCP), polyvinyl chloride pipe (PVC), or high density polyethylene pipe (HDPE), unless a piping material is specifically designated on the Drawings.

2.2 REINFORCED CONCRETE PIPE MATERIALS

A. Reinforced Concrete Pipe (RCP): ASTM C76; bell-and-spigot ends and gasketed joints with ASTM C443 rubber gaskets; appropriate pipe class shall be determined by the depth of cover listed below unless noted otherwise on the Drawings.
   1. Class III, Wall B minimum for cover depths from 2 feet to 3 feet.
   2. Class II, Wall B minimum for cover depths greater than 3 feet up to 9 feet.
   3. Class III, Wall B minimum for cover depths of greater than 9 feet up to 14 feet.
   4. Class IV, Wall B minimum for cover depths of greater than 14 feet up to 20 feet.
   5. Class V, Wall B minimum for cover depths greater than 20 feet up to 30 feet.

B. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

C. Flexible Watertight Joints: Rubber compression gasket joints, ASTM C443.

2.3 POLYVINYL CHLORIDE PIPE MATERIALS

A. Polyvinyl Chloride Pipe: ASTM D3034, SDR 35, Type PSM; bell and spigot style joint end.

B. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

C. Flexible Watertight Joints: Provide rubber type gaskets for PVC pipe; ASTM 3212.

2.4 HIGH DENSITY POLYETHYLENE (HDPE) PIPE MATERIALS

A. High Density Polyethylene Pipe (HDPE): Corrugated exterior, smooth interior pipe; ASTM D1248, Type III, Category 4, Grade P33, Class C; or ASTM D3350 cell classification 324420C.
   1. 4” to 10” diameter pipe shall meet the requirements of AASHTO M252.
   2. 12” to 36” diameter pipe shall meet the requirements of AASHTO M294, Type S.
   3. 42” and 48” diameter pipe shall have a minimum pipe stiffness of 19 PSI and 17 PIS respectively, at 5% deflection in addition the the requirements of AASHTO M294.
   4. A rubber or neoprene gasket shall be installed at all joints.

B. Fittings:
   1. Shall not reduce or impair the overall integrity of the pipe.
   2. May be either molded or fabricated.

   3. Couplings shall have sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joint.

4. Only fittings supplied or recommended by the pipe manufacturer shall be used.
5. A rubber or neoprene gasket shall be installed at all joints.

2.5 DRAINAGE STRUCTURES

A. General: Construct manholes, inlets, and junction structures of reinforced concrete or precast reinforced concrete, complete with metal frames and covers or gratings, and with fixed ladder rungs, and mortared joints where indicated on the Drawings.

B. Concrete: 2500 psi reinforced concrete as specified in Section 03 3000, unless otherwise noted on the Drawings.

C. Mortar for pipe joints and connections to other drainage structures, and manhole construction:
1. ASTM C270, type M, except the maximum placement time shall be one hour.
2. Hydrated lime complying with ASTM C141, type B, may be added to the mixture of sand and cement in an amount equal to 25% of the volume of cement used.
3. Provide a quantity of water in the mixture sufficient to produce a stiff workable mortar, which shall be clean and free from harmful acids, alkalis, and organic impurities. Use the mortar within 30 minutes after water is added to the mix.

D. Frames, Covers, and Gratings: Cast iron; ASTM A48, Class 25.:
1. Provide all gratings or covers from the same manufacturer.
2. Provide ADA compliant grates where located in walking surfaces; with spaces no greater than 1/2" wide in one direction. Orient elongated openings perpendicular to dominant direction of travel.

E. Precast Reinforced Concrete Manhole Sections: ASTM C478; resilient connectors, ASTM C 923; elliptical single line reinforcement is not allowed unless shown on detail drawing.

2.6 TRENCH BEDDING MATERIAL

A. Sand: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Identify location of proposed storm drainage facilities to be constructed. Expose connection points to existing system. Locate, identify, and protect existing above and below grade utilities from damage. Protect plant life, lawns, trees, shrubs, and other features not authorized for removal.

C. Employ equipment and methods appropriate to the work site. Protect excavated areas from drainage inflow, and provide drainage to all excavated areas. Dewater existing drainage basins and existing drainage pipeline systems as necessary to accomplish the work. Remove all interfering surface and subsurface improvements authorized for removal.

D. **PROVIDE WATER AND WATER TRUCK OR OTHER METHODS OF MITIGATING EXCESSIVE DUST ON THE SITE. KEEP SITE DAMP ENOUGH TO MINIMIZE POWDERING DIRT AND AIRBORNE DUST.**

E. Comply with Public Works Standards of the governing jurisdiction or these specifications, whichever is more stringent.

3.2 EXCAVATING, TRENCHING, AND BEDDING

A. Excavate, trench, and bed for site drains in accordance with pertinent provisions of Section 31 2000.

3.3 PIPE INSTALLATION

A. General:
   1. Carefully examine each pipe prior to placing.
      a. Promptly set aside defective pipe and damaged pipe.
      b. Clearly identify defects.
      c. Do not install defective pipe or damaged pipe.
      d. Install the pipe and fittings to the lines and grades shown on the construction plans.
   2. Place pipe to the grades and alignment indicated, with a tolerance of one in 1000 vertical and one in 500 horizontal, unless otherwise directed by the Architect.
   3. Provide adequate facilities for lowering pipe safely into the trenches.

B. Install pipe and fittings in accordance with the manufacturer's recommendations, and these specifications.
   1. Unless otherwise approved by the Engineer, lay all pipe upgrade from structure to structure, with bell or socket ends of pipe upgrade.
   2. Excavate suitable bell (or socket) holes in the bedding material, so that the bells do not bear on the subgrade or bedding. Provide uniform bearing of pipe barrel on bedding material.
   3. Ensure that all joints are properly "homed" and are watertight.
   4. Bed concrete pipe in sand envelope, and compact. Place and compact the bedding material under, around and over the pipe, filling the trench cavity and extending from the bottom of the trench (6" below the outside bottom of the pipe barrel) to a level 12" above the outside top of the pipe barrel.
   5. Do not place pipe in water, nor place pipe when trench or weather is unsuitable for such work.

C. High Density Polyethylene Pipe Installation: Installation shall be in accordance with ASTM 2321-89.

D. Utility Identification Tape:
   1. Provide metallic plastic caution ribbon in trench approximately 12" above the top of the pipe indicating "CAUTION STORM SEWER".
   2. Run ribbon continuous from inlet or manhole to each vertical structure.

3.4 DRAINAGE STRUCTURE INSTALLATION

A. Install drainage structures in accordance with the Drawings and with the manufacturer’s written installation instructions.

B. Form bottom of excavation clean and smooth to correct elevation.

C. Level top surface of base pad; sleeve concrete shaft sections to receive pipe sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated.

E. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.5 MANHOLE INSTALLATION

A. Place concrete base pad, trowel top surface level.

B. Place pre-fabricated manhole sections plumb and level, trim to correct elevations, anchor to base pad.

C. Form and place cast-in-place manhole cylinder plumb and level, to correct dimensions and elevations. As work progresses, build in fabricated metal items.

D. Cut and fit for pipe.

E. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.

F. Set cover frames and covers level without tipping, to correct elevations.

G. Coordinate with other sections of work to provide correct size, shape, and location.

3.6 BACKFILLING

A. Backfill and compact in accordance with pertinent provisions of Section 31 2000.

3.7 TESTING AND INSPECTING

A. Provide personnel and equipment necessary, and perform tests required to demonstrate that the work of this Section has been completed in accordance with the specified requirements.

B. Hydrostatic Test on Watertight Joints:
1. Test joints within the building area and outside the building area but within ten feet of exterior walls or faces of the buildings.
2. Make a hydrostatic test on each watertight joint. Test one sample of each type watertight joint used. If one sample fails because of faulty workmanship, test an additional joint.
3. Demonstrate that joints in reinforced and unreinforced concrete pipe comply with ASTM C443-01.
4. Comply with ASTM C425 for tests of joints in clay pipe.
5. Make tests in concrete pipe at an internal hydrostatic pressure of 10 psi for 24 hours.
6. Replace or repair joints found to be faulty. Repeat the test and repair cycle until joints are demonstrated to meet the specified requirements.

END OF SECTION 33 4000